TECHNICAL COMMUNICATION AS TEACHING: A GROUNDED THEORY STUDY OF COGNITIVE EMPATHY AND AUDIENCE ENGAGEMENT AMONG COMPUTER SCIENCE MAJORS IN A TECHNICAL COMMUNICATION CLASSROOM

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232 Pages   August 2015

This dissertation is a grounded theory study of empathy, ethical awareness, and audience engagement activities in students in a technical writing service course. The course was designed around an empathy-oriented approach to teaching technical writing and writing research. The students are primarily computer science majors, and the teaching methods include a genre and writing research approach as well as the use of an extended metaphor of technical communication as a form of teaching. Findings indicate that students respond to the metaphor by drawing upon positive and empathetically-informed models of teachers and teaching to guide how they would work with and write for their own audiences; however, students show moderate resistance to adopting the identity of "writer" and strong resistance to adopting the identity of "researcher."

I argue that teachers tend to undervalue and underutilize the two strongest areas of experience and observationally-derived identity knowledge that students possess (the teacher and the student) while asking them to take on roles or identities such as writer or researcher that we have only described to them but not shown them through direct

example. We also ask them to perform activities which we may not have not fully contextualized, or which may not be fully contextualizable given the location of that context outside of the students' areas of experience. The result is an imbalance between identity, performance, and expectations. I consider some pedagogical modifications which more closely follow the contours of student experience and needs, and which may result in improved outcomes in both willingness and ability to engage with diverse audiences and communities. I examine potential implications for technical communication and STEM fields more generally.

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A Dissertation Submitted in Partial
Fulfillment of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

Department of English
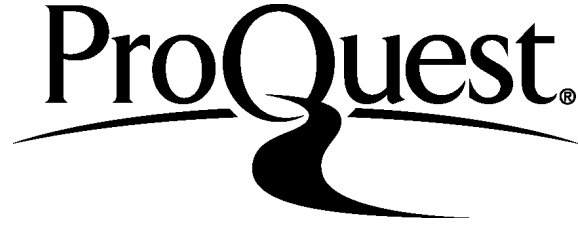
ILLINOIS STATE UNIVERSITY

2015

ProQuest Number: 3725400

ProQuest 3725400

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CHAPTER I

FIRST WORD: PROBLEMS

Introduction and Rationale

For the past several years, I have been developing an introductory technical writing course (English 249) that seeks to draw out a sense of cognitive empathy in my students in order to improve their ability and motivation to work collaboratively with their audiences, including audiences who are not part of their disciplinary peer group. In part, this pedagogy involves using an extended metaphor in which technical communication is likened to teaching. This dissertation reports the results of a study of the effectiveness of this approach on students, especially with regard to their perceptions and performance of empathy, ethical awareness, and engagement with their audiences and with selected communities. The course is designed with the needs of all students in mind, but in this study I am focused on the needs of computer science majors. Illinois State's technical writing service course, English 249, always includes a high percentage of students from the university's computer science department—typically 60 to 80 percent in each of the eight courses I've taught over the past three years. I have a strong background in computer programming and consulting, and I understand my fellow computer nerds, their culture, and their quirks quite well. The purpose of this dissertation is to examine the component factors of this course in the context of the need for improved communication skills among computer science majors, the role of empathy in learning

and communication, the pedagogical theories I've employed in the course's design, the aspirational goal of encouraging better digital citizenship among my computer science majors, and the case for making the technical communication classroom a location for such work.

If I could guarantee only one outcome for every class I teach, it would be this: that my students should become active and engaged citizens of their world, inquisitive and informed and collaborative in their interactions with others both online and in person. This is a lofty goal, and one that's not always easily converted into daily lesson plans. I mention it, however, because digital citizenship reflects two of my own core values: sharing knowledge, and making positive contributions to society and the people around me. My performance in the classroom is guided by these values in several different ways. First and most importantly is the recognition that I am not trying to create exact duplicates of my values or interests in any of my students, as that could easily become harmful to them. Instead, I work to create or expand their awareness of the great potential for knowledge sharing and creation that we enjoy in the current age. I do this by providing them with opportunities to work collaboratively and to research a variety of topics and writing genres online so that they see how working together can benefit themselves and others, and so that they see how much has been shared already by those who came before them.

Contemporary composition pedagogies include plenty of other worthy and functional approaches that I have chosen not to include or address in the interest of space and maintaining my focus. I also realize that I am being optimistic and that there's a modest undertone of "People are basically good" inherent to my approach which may or

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may not reflect reality. I don't claim to have all of the answers, much less a panacea or a global solution; I can only speak to what drives me. Teaching is my avocation, not simply a vocation. I choose to teach because it provides a medium of expression for my guiding principles. I believe firmly in the universal ownership of knowledge: with very few exceptions, the knowledge that humans gather and create is so densely interwoven and interdependent that it cannot and should not be hoarded or censored. It must be shared and distributed without unreasonable restrictions as a basic principle of freedom. I am also committed to the "campsite rule" in my interactions with the world: leave the place better than you found it. It's important to me to improve the physical, mental, intellectual, emotional, or financial well-being of those I interact with whenever it's in my power to do so, or at the very least to do no harm. This was true when I worked as a software designer, when I worked as a corporate trainer, when I worked as a journalist, and it is true now. I don't always live up to my own standards and sometimes I disappoint myself, but that has not diminished the importance of these principles in my life.

During my first year as a Masters student at Wichita State University, I read Paulo Freire's explanation of the "banking" concept of education and his alternative, a problem-posing approach to education. His argument resonated strongly with me. It wasn't the first time I'd thought about things such as oppression or freedom, but until that point most of the texts I'd been given on teaching were how-to guides rather than ethical arguments, concerned with the mechanics of education more than the soul of education. While students in America are certainly not subject to the same degree of oppression that Freire endured in Brazil, they are not altogether free from it. The setting and specific instances of oppression were much different for Freire in 1960s Brazil than in

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contemporary America, but the students in my courses nevertheless experience various forms of oppressive, hegemonic control systems, particularly in their educational lives. Freire emphasizes the importance of the question "Why?" for students who are struggling toward freedom; for me, the question became "Why am I teaching these students to write?" What larger purpose was I preparing them for? Or was I only grooming them for life in the cubicle? As someone who is belligerently unskilled at conformity, the idea of preparing my students for a life of docile obedience did not sit well. I couldn't reconcile that with my desire to help others. I resolved to integrate at least some *why*-work into my course plans, and to invite my students to think about the world beyond themselves and how they might (or might not) fit into it. In fact, I would credit Freire, at least in part, with my decision to pursue my doctorate and to make a life for myself as a teacher. Since that time, roughly eight years ago now, I've developed a wide variety of tools to encourage self-reflection and critical thinking among my students. Some of these tools have worked well, and others have been hit-or-miss, but the ongoing improvement of my own methods, metaphors, tools, and assignments became an indispensable component of how I teach. Occasionally I found myself grappling with my own assumptions about how writing (and other related subjects) should be taught, and in hindsight these conflicts turned out to be pretty good opportunities to practice some critical thinking myself.

To my surprise and delight, as I began my studies of technical communication at Illinois State I was introduced to more than a few scholars—a whole movement, in fact— whose view of technical communication as socially connected and interactive and roomy enough for critical thought harmonized quite well with my Freire-fied notions on education. The social turn is a philosophical awakening of sorts, in which the field of

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technical communication embarked on a robust, far-reaching, and continuing discussion about our work and the social context in which it takes place. We now understand that the work we do is not simply institutional transcription; it is inseparable from the human social and activity systems in which it takes place. That inseparability endows us with a great ethical responsibility toward all of our stakeholders: our employers, our co-workers, our fellow citizens, and our peers (Miller 1979; Katz 1992; Slack, Miller, and Doak 1993; Thralls and Blyler 1993; Bushnell 1999; Dombrowski 2000; Savage 2004). In their 2008 article "Commons-Based Pedagogies and the Social Turn in Technical Communication," Johndan Johnson-Eilola and Stuart Selber described the social turn as "enormously productive" and still ongoing; they also noted that technical communication pedagogies have not always stayed caught up with the theoretical conversations coming out of the field. It could be argued that the social turn was the rite of passage through which we became fully participating citizens; now it is incumbent upon us to act accordingly, including how we teach. Thus, in my view, the technical communication classroom is an ideal place to engage in discussions related to digital citizenship: what is the digital domain, after all, but one enormous and ongoing act of communication that humanity is having with itself? More to the point, having worked on and with the internet for over two decades now, I would argue that its single greatest unmet need is not programmers (those are abundant) but effective and skilled communicators.

The Communication Gap Among Computer Science Majors and Its Consequences

Although computer science majors are problem solvers, collaborative with their professional in-group or discourse community, and capable of intently focusing on a task

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or puzzle when given the necessary tools, they often lack the ability to communicate well with out-groups and sometimes tend to jealously guard their specialized knowledge from outsiders (Margolis "Caring" 1999; Barker "Defensive" 2002; Klawe 2002; Barker "Making" 2004; Beyer 2008; Levy 2010). Barker, Garvin-Doxas, and Jackson observed the social climate in computer science classrooms and found that "[t]he social environment of most of the computer science courses we observed can be characterized as impersonal, an environment in which it is easy to remain relatively anonymous and socially distant…. Students rarely responded to instructors or even spoke much in class, suggesting that the social environment was very guarded" (Barker "Defensive" 44-45).

Margolis, Fisher, and Miller found a noticeable difference in motivations and background experiences with computers among male versus female computer science majors; males tended to be more interested in the machine itself than in its contextual applications (i.e. exploring the machine itself versus using the machine to improve some part of the world outside of the machine) (Margolis "Caring" 7-9). They observe that

> This description of the pull to "figure out how it works" is something prevalent in the male interviews and almost non-existent in the female interviews. It positions the male students in a very active relationship to the machine. As young boys, males step right into the driver's seat, leaping from the outside to the inside. Many male students report programming to be a source of extracurricular pleasure, having done it since they were young (38% of the men among our sample, compared to 10% of the women). Male interviews are often filled with lengthy accounts of their computing experiences, jobs, and projects. Computing

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emerges as an integral part of their lives. (9)

Gender differences and related issues, including lower enrollment and retention of women in STEM (Science, Technology, Engineering, Mathematics) fields, are matters of ongoing concern for all STEM subdisciplines, including computer science. These issues are not my primary focus in this text, although I understand their importance and believe that my work may ultimately have some positive impact on them. Though some of the particulars will differ, many of the behavioral attributes and communication shortfalls found among computer science majors can also be applied to STEM majors more broadly. This inquiry will focus on computer science majors, but they should be regarded as a subset of the sciences rather than a separate group.

The Introduction to Technical Writing course at Illinois State typically serves juniors and seniors in a variety of majors, although computer science is the most prevalent. One common trait among these students (and others too) is a tendency to think of writing as a school phenomenon, one that will go away or shrink once they're out in the working world. When I ask incoming students to speculate about what kinds of writing they'll do in the workplace, their responses tend to downplay or minimize the role of writing in their future careers. "In-line comments in my source code" is a popular one among the computer science majors, as is "emails to other programmers I work with" or "emails to the boss." These answers aren't wrong, but they suggest a limited understanding of just how much these young men and women will be expected to interact with the people around them—their employers, co-workers, other peers, customers, and citizens in general.

Computer science majors, like majors in other fields, are in training to become

experts. They spend most of their time in school with people who think like them, talk like them, and see the world like them. As Barker et al. and Margolis et al. observed above, male computer science majors have a tendency to focus on the machinery they're working with, sometimes to the exclusion of the people they're also working with. The most frequent challenge I've run into in working with computer science majors is getting them to shift their perspective and place themselves in their readers' shoes, particularly when the reader is likely to be an out-group member (someone who is not one of their peers or colleagues). These students tend to write from their own perspective first and foremost, with the needs of the reader frequently a distant second. More than their grammar or mechanical writing skills or design abilities, this limited perspective is where their writing is usually weakest. I will examine the nature and role of empathy in more detail in Chapter Two, but I feel that it's important to be clear on this point: I *do not* believe that the problem is an absence of empathetic capacity. That may be true in a few individual cases, but not for most of this population. Instead, it would be more accurate to characterize the problem as a lack of sufficient models of, and suitable incentives for, empathetic performance between themselves and those who are not members of their peer group. For now, the reader should understand that I'm interested in *cognitive empathy* in particular, which is a term drawn from social and behavioral psychology (Hodges and Myers 297). It refers to one's ability to consider the world (or part of it) from another person's point of view. Cognitive empathy is the technical term for what we mean when we say "Put yourself in their shoes."

In my experience, computer science majors are inquisitive and driven to explore; if given the proper tools for the job, they tend to be able to focus very intently on a

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particular task or problem, often to the exclusion of other events, social cues, or people around them (Margolis "Caring" 1999; Barker "Defensive" 2002; Klawe 2002; Barker "Making" 2004; Beyer 2008; Levy 2010). Despite the stereotype in popular media, they are *not* all isolated, awkward, or anti-social; their tendency toward apparent isolation is often a result of their task focus. They often socialize fairly well with their peers (people with whom they can identify), but they may not always communicate successfully with people who are not part of their in-group. They are often competitive but also inherently collaborative, inclined to share the information they find and to rely on information discovered and shared by their peers as well. They are technologically savvy, have immersed themselves in computers or related tech from a young age, and can have a difficult time code-switching to talk with non-peers without becoming frustrated. The "early and persistent magnetic attraction between themselves and computers" that these students often experience can lead to "a myopic focus on the machine" and a "detach[ment]…from people and other concerns," or at least it can appear so (Margolis, Fisher, and Miller "Caring" 1999).

Barker and Garvin-Doxas observe that computer science students experience a highly competitive classroom environment which privileges prior computer knowledge and inhibits new-member inclusion. Education, they note (citing a host of other researchers), "*is essentially a communicative activity* [emphasis mine]. Educational researchers in the socio-cultural tradition have long been convinced that language, verbal, non-verbal, and paraverbal, mediates the way and the degree to which students construct knowledge" (120). Promoting collaboration and team-based work in the classroom is encouraged and endorsed by both industry and the academy, in part because it appears to

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make for a more appealing learning environment for underrepresented student types. However, the competitive nature of the actual computer science classroom tends to create a "defensive communication climate" which works against those goals (Barker and Garvin-Doxas 119-120). While collaboration can and does take place in the computer science classroom, it frequently occurs within an informal hierarchy of posturing (Barker's term) or nerd-dominance (my term) and limited peer support (Barker, Garvin-Doxas, and Jackson 46). This conflicting set of messages about the computer science major's passion or focus can make it difficult for students to clearly see the value of effective and non-confrontational communication, especially when communicating with out-groups whose apparent separateness is reinforced by the in-group as a whole.

Computer science professionals have an enormous role to play in the ongoing growth of our economies, cultures, and societies, yet their ability to successfully communicate within a complex set of activity systems is either assumed, overlooked, or downplayed by most college curricula. Surveys of management and employer needs have consistently shown good writing skills to be both desirable and hard to find in potential employees. In 2012, the *Chronicle of Higher Education* published a survey titled "The Role of Higher Education in Career Development: Employer Perceptions," in which they surveyed managers and executives from a broad cross-section of industries. The survey's findings showed that employers expect colleges and universities to prepare their students with written and oral communication skills (80 % of respondents), but only 60 % of respondents felt that these skills were actually being imparted. Professionals in all fields, including computer science, are increasingly expected to write the support materials and documentation which accompany the primary product of their particular expertise

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(Spinuzzi and Jakobs 2008).

The need for effective communication skills may seem obvious: every job requiring a college degree will involve at least a little talking and writing. However, many jobs require much more writing than students may expect, and shifts in global production and documentation practices are expected to drive up the demand for skilful writing in a wide variety of professions. In "Integrated Writers, Integrated Writing, and the Integration of Distributed Work," Clay Spinuzzi and Eva-Maria Jakobs examine the concept of the *integrated writer*, who they describe as "knowledge workers who own processes and who routinely combine knowledge, methods, and information with their work on those processes. Such integrated writers (e.g., engineers, general managers, accountants, health technologists) do not see themselves as writing professionals, but nevertheless integrate writing with their other tasks across the organization" (120). The term may be relatively new, but the idea is not—it brings us back, full circle, to the engineers of yesteryear whose writing skills failed them on the job (Brockmann 1998; Longo 2000; Connors 2004). Specialists will need to write, whether they enjoy it or think of it as a tiresome secondary task. Computer science majors are not all destined to be hardcore programmers; large umbrella terms such as "Information Technology" or "Computer Science" cover a wide variety of jobs, duties, and activities in and out of the workplace. Even for those who prefer writing code, communicating well with the members of their team, their other co-workers, their employers, their clients, their vendors or suppliers, and their peers at other firms is a key component to both job and career success, to say nothing of general life satisfaction (which rarely comes up in surveys like those above, but should).

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The Graduate Management Admission Council's 2011 "Corporate Recruiters Survey" showed that 86 % of survey respondents ranked communication skills as a key attribute when recruiting job candidates, and the ability of a given school to produce skilled students played a role in their decision to actively recruit from that school. Northeastern University's "Innovation Imperative: Enhancing Higher Education Outcomes" (2013) survey showed that business-leader respondents strongly favored soft skills such as written communication and problem-solving over hard skills such as applied training and industry-specific abilities. "Being well-rounded with a range of abilities" (including soft skills) beat out "Having specific industry experience" by 73 % to 27 % among business leaders. Job-specific skills, it was felt, could be learned on the job; the implication is that soft skills are harder for an employer to train (for any number of reasons) and that the employer expects those soft skills to already be in place even if the employee hasn't fully mastered them yet.

In 2011, as part of an exercise in a class where I was a student, I conducted an interview with Dr. Adriana Jones from Illinois State University's Computer Science Department. The topic was writing in computer science classrooms. As with most STEM disciplines, Jones said, scholarly literature in computer science leans much more heavily on *logos* (characterized by clarity and efficiency of language and reliance on facts-as-persuasion) than on *ethos* or *pathos*. This characterization was not surprising to me, given the high value a machine audience places on logical argumentation. Jones noted that as computer science majors learn to integrate their craft and their workplace practices and to communicate about both of these, they will look to the body of literature in their field (as we all do in our respective fields) for cues and examples (Jones 2011). Technical

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communication's own earned wisdom on clarity, efficiency, and logic is that they're worthwhile attributes but not the end goal of communication. As Spinuzzi and Jakobs observe, professionals who have to write "often demonstrate deficient problem-solving strategies in their writing (e.g., intensive text planning, but weak revising and a weak addressee orientation; see Jakobs, 2008). In their perception, writing is a less important and unloved part of their work, yet these writing tasks are often vital" (120). In spite of its necessity and value, writing is often not prioritized by the computer science field for any number of entirely legitimate reasons: self-perceived lack of expertise by the teachers, too much other material and too little time, a sense that writing education is the responsibility of other departments, and so forth (Taffe 17-18). Nonetheless, writing is very important to these students' future personal and professional success (Taffe 1989; Pomykalski 2006; Falkner and Falkner 2012).

Computer Science: The Academic Discipline and Its Students

Computer science departments have a very full plate. For much of the field's existence, and particularly the latter three decades, advances in hardware capability and software complexity ratcheted each other ever upward. One of the results of this rapid evolution is that computer science pedagogy has a constantly expanding slate of materials which could be taught, including older systems and languages such as FORTRAN (1957) or COBOL (1959) which have remained in service far longer than one might expect. In spite of its newness as a field, computer science suffers from many of the same problems that affect the rest of academia, including isolation from other disciplines, jealous guarding of its perceived boundaries, and an inability (sometimes an unwillingness) to

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prepare its students to fully interact with the working world by incorporating soft skills into coursework. These soft skills include communication, both written and verbal. The lack of communication skills by computer science majors is a matter of ongoing concern to both the discipline itself and to employers. However, it has not yet resulted in effective or cohesive treatment of written communication in the computer science classroom (Taffe 1989; Pomykalski 2006; Jones 2011; Falkner and Falkner 2012).

Over 25 years ago, William Taffe outlined some important reasons for including writing as a substantial component of a computer science curriculum. "[O]ur computer science students need strengthened communication skills," he argues, "not only for personal enrichment, but also for professional activity. Computer scientists must communicate with each other as clearly as with their machines. And, an extremely important Computer Science subdiscipline, the 'man-machine interface,' clearly rests on a thorough understanding of human communication" (18). Taffe offers a frank explanation of possible reasons why writing hadn't caught on: its importance isn't recognized by some engineering or science programs; faculty in technical disciplines feel unprepared to teach such a class or think it should be done by some other department; some technical students have more difficulty with writing than students in the humanities or social sciences (which suggests they need more instruction rather than less); students may focus more on programming languages because their ability to communicate with machines seems paramount (17-18). "Indeed," Taffe says, "the stereotypical 'nerd' is often portrayed as impoverished in written and oral human language skills" (18). Taffe gives a nod to Writing Across the Curriculum (WAC) as a broader and less isolated approach to writing than relying on one or two composition courses to carry that heavy

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load. Ideas from WAC, he says, "are beginning to influence the Computer Science curricula," pointing to Janet Hartman's "Writing to Learn and Communicate in a Data Structures Course" which had been published in *SIGCSE Bulletin* earlier that year. Unfortunately, even though they recur periodically, calls for more writing in computer science have generally gone unheeded. (See also Pesante 1991; Kay 1998; Michael 2000; Reimann 2001; Anewalt 2002; Hoffman, Dansdill, and Herscovici 2006).

In 2006, James Pomykalski proposed a writing-intensive approach to a systems analysis and design course within a computer science program. Like Taffe and many other proponents of improving computer science majors' communication skills, Pomykalski cites the needs of employers, peers, and the individual students themselves. "Writing and critical thinking skills are as important to information systems professionals as their technical skills, because the inability to write and think critically put information systems professionals at risk of being let behind in a rapidly changing technological environment," he argues (3). As a test case, he proposed revising the assignments of one tech-intensive course (systems analysis and design) such that students turn in more and longer written materials to demonstrate and deepen their understanding of the course concepts. While "more writing" generally has a greater chance of yielding improvement in communication skills than "less writing" does, Pomykalski's method faces some of the same limitations of skill transfer that the traditional five-paragraph essay has. Writing skills learned in one genre (such as the essay) often do not transfer easily to other writing genres or contexts. In Chapter Two, I will discuss the challenges of skill and knowledge transfer in more detail. Pomykalski does not propose his approach as *the* solution but as one of (hopefully) many ways in which writing can be incorporated into the university

classroom. Katrina Falkner and Nicholas Falkner, writing in 2012, report that computer science majors are still lagging behind; these students often fall "at the middle and lower end of the spectrum of communication skills" (379). In spite of the recognized need by both employers and teachers, and in spite of repeated calls to action, very few programs or departments include courses to help their majors communicate as professionals within their (future) work environments. Those with writing courses for their majors often focus on general writing skills rather than the robust professional communication skills they will need in order to succeed in the workplace (Falkner 379).

Social Turns

The communication gap is not a new problem, and it is not localized to computer science majors. A century ago, educators and employers complained about the abysmal writing skills of engineering graduates (Connors 2004). Fifty years ago, technical writers focused on clarity and conciseness, often ignoring the socially-situated nature of their work (Malone 2011). The scholarly works of that time period largely took a mechanistic approach to technical writing, weighing in on the importance of clarity, precision, and other obvious but narrow metrics. However, in the late 1970s and early 1980s, scholarly thought began to turn toward the *social* significance, impact, and obligations of technical writing—in other words, the ways in which technical writing engaged or could engage in discourse with the larger social systems of which it was a part. This richly productive period later became known as the social turn, primarily due to the recurring motif of technical communication as a multilayered and socially-connected activity. It continues today, broadening out into considerations of cultural impacts and the effects of different social contexts interacting with one another. Three decades on, the impact of this work

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cannot be overstated: it has fundamentally altered how we conceive of our role as authors and communicators in the workplace, the classroom, the courts, and the world (See Miller 1979; Sullivan 1990; Paradis 1991; Rutter 1985 and 1991; Katz 1992; Sauer 1992 and 1993; Porter 1993; Sims 1993; Slack, Miller, and Doak 1993; Thralls and Blyler 1993; C. Taylor 1994; Coe 1996; Johnson-Eiloloa 1996; Savage 1996, 1999, and 2004; Bushnell 1999 and 2003; Cleary 2000; Dombrowski 2000; Johnson-Eilola and Selber 2008; Starke-Meyerring 2010; St. Amant and Ballentine 2011; Kline and Barker 2012).

Johnson-Eilola and Selber identify three somewhat sequential waves of thought and focus in technical communication's social turn. The first wave added a social perspective to what had previously (though not unanimously) been treated as a purely mechanistic process of transmitting information from source to receiver. The second wave complicated the idea of "social" as "an intellectual category for a wide range of humanistic ideas, which are not always in agreement with each other." The third wave is still emerging, and is characterized by a shift "from a focus on representation (what things mean) to action (how things function, and to what effect)." They observe that

> Third-wave scholars build on previous work in the social realm, especially ideological work and work that examines the conditional and contingent nature of communication events. And they embrace the historical legacy and basic tenets of social construction. Their program of inquiry, however, shows a contrast when it comes to questions of identity and human agency. Although issues of representation are crucial to any social project, third-wave scholars tend to locate value in what works for people in problem-solving situations. ("Commons-Based Pedagogies")

In their footnotes to the third-wave section of this article, Johnson-Eilola and Selber

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revisit Jennifer Daryl Slack (one of the trio Slack, Miller, and Doak, whose 1991 article "The Technical Communicator as Author: Meaning, Power, Authority" has been profoundly influential in the field). Slack penned a follow-up to that article in 2003 titled "The Technical Communicator as Author? A Critical Postscript." Johnson-Eilola and Selber summarize Slack's critiques of the field thus:

> [Slack] admonishes the field to concentrate less on defining identity and more on understanding what particular identities might enable (or not) in specific communication situations and on understanding how affective relations shape the possibilities and prospects for communication exchanges. Her recommendation is to stay focused on mapping the actual practices of technical communicators, because identity categories, even well-defined or mature ones, cannot guarantee respect, stability, or agency for either practitioners or the field.

The still-evolving nature of the technical communicator's identity is only one thread of a complex and ongoing conversation. The idea of authorial identity or the activities that might follow from it (or perhaps conflict with it) will be considered in more detail in Chapters Four and Five.

In some ways, the most important aspect of the technical communicator's identity is that it exists. It is its own phenomenon or item, rather than an extension of our employer's will, and its emergence has been at least a little bit disruptive. We in technical communication have added our own chair to the stakeholder table alongside the institutions which rely on our work as practitioners, educators, and scholars. Perhaps even more disruptive is the addition of a third seat to the table for the lay audience, sometimes called our users, readers, customers, workers, students, or simply people.

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Inherent to our expanded ethical construct (or at least some versions of it) is the idea that we ought to proactively serve the needs of all of our stakeholders, including those who may not have a direct voice but whose lives and well-being can be impacted by our work. The essential ethical question of our livelihood is no longer "How can we best serve our institutions and their information?" but "How can we mediate fairly between our institutions and our society?" It could be argued that the field of technical communication once had to overcome its own communication gap. We did so, generally speaking, and now we are in a position to mentor or assist those who are currently struggling with it.

Social turns are not that uncommon; even casually researching the term "social turn" reveals that it is being or has been discussed as a phenomenon in a variety of fields, from architecture to geography to computer science, and the term itself is only one of many possible descriptors. What's interesting about computer science's social turn in particular is that writing on the subject comes from both inside and outside of academia. Authors such as Gabriella Coleman, Cathy Davidson, Richard Stallman, Eric Raymond, Yochai Benkler, Lawrence Lessig, and Paul Graham have written aspirational texts: books or articles that ask us to consider what we could do and should do, big picture style, with regard to our new digital universe, and aimed at a broad public audience rather than just a scholarly one. These aspirational texts are not simply a proposal for action; they propose action *which is informed by an ethic*. Thus, when Raymond, Benkler, Coleman, or Stallman argue in favor of greater participation in the shaping of our digital future, they are not merely fulfilling a technological fantasy. They are making a two-part ethical case: one, X is something we should do because it's the (or at least a) right thing to do; two, X is something that an ethical hacker (a computer explorer) does or desires to do.

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The specific details of X vary from author to author, as one might expect, but the concept behind their proposal remains the same: ethical stewardship of information.

The word *information* is packed with significance, much like the word medicine. Does it refer to the practice? The practitioner? The product? The outcome? Some combination of these, plus more besides? It would be irresponsible in the extreme to claim that I had a definitive answer here; for this work's purposes, however, information will carry the denotation of "data applied within a context" and the connotations of the machinery and labor which allowed, conveyed, or otherwise facilitated that application. Like medicine, information is of special import to human society; it has the potential to fundamentally alter our lives, both literally and figuratively. More importantly to this discussion, information is the nexus which connects technical communication and computer science. Our work is bound to information and our respective ethics operate in close parallel to one another. It is, I believe, no coincidence that the field of technical communication embarked on its social turn at the same time that the personal computer began to alter our society's relationship with information. Computing machinery had been growing in power and shrinking in size for decades before the Social Turn began, but the tipping point for the relationship between humans and computers may have come in 1977 when three personal computers were introduced to the mass market: the Apple II, the Commodore PET, and the TRS-80 (Chandler 134-135).

The social turn and most of its scholars or their works don't deal explicitly with personal computers as a topic, but it's easy to see (from my vantage point, anyway) that empowering the masses with the ability to manage and manipulate information on a rapidly growing scale would have a knock-on effect on conversations in adjacent fields.

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Most of the lessons and insights from that ethically-productive period could be viewed as taking responsibility for our own role as information stewards. My inclusion of some aspirational texts should not be interpreted as an explicit endorsement of any particular one of them, nor is it meant to suggest that any specific project they promote (such as open-source software) is my main or only concern in this research project. I am emphatically *not* attempting to induce my students to work on or produce open-source software, or to take up a hacker lifestyle, or to become vocal advocates for changes to intellectual property law. The authors I've selected make their own cases for each of those activities and more, and better than I could here. That said, I recognize the value of the aspirations they describe, both to my students as empowered and literate individuals and to free and open societies more generally. If my students choose to pursue any of these activities, effective and empathetic communication skills will serve them very well.

Description of Research

My grounded theory study of an introductory technical writing service course will seek to answer the following three questions:

1. How does the metaphor of technical communication as teaching impact students' perception of their work in technical writing?

2. How do students discuss or demonstrate empathy, ethics, and engagement in their reflective writing about the work of the course?

3. How do student perceptions of their role as writers and writing researchers within a larger activity system impact their work in technical writing?

Primary research for this dissertation took place in a Fall 2014 section of Introduction to

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Technical Writing (English 249). A total of 16 students were enrolled. A secondary set of data from an earlier course (Spring 2013) will be used in a few places as well. Both courses and their participants are covered by IRB Batch Protocol 2012-0168. Unless otherwise specified, all references to "the course" will indicate the Fall 2014 section. The course was taught with an emphasis on writing research and in-class collaboration. A central component of my approach to this course is an extended metaphor in which technical communication is compared with the act of teaching. One of the goals of this metaphor is to engage students in an ongoing discussion of what makes for effective teaching, with the expectation that students will identify or can be encouraged to identify the importance of an attentive, empathetic teacher and a supportive learning environment (Caine and Caine 2006; Cozolino and Sprokay 2006; Wolfe 2006; Zull 2006 and 2011; Clore and Palmer 2009; Ambrose et al. 2010). This understanding can then be turned around and applied to my students' own efforts to analyze, understand, and effectively communicate with their audiences. Materials collected include the primary assignment documents, self-analysis documents for each assignment, research journal entries, short in-class writing assignments, and responses to three surveys. Because most of the data is qualitative, a modified grounded theory approach will be applied to my rhetorical analysis of the data. The "modified" qualifier will be explained in Chapter Three.

Overview of Chapters Two through Five

        The research questions listed above are meant to tease apart student reception and response to my pedagogical and philosophical approach to the class. Chapter Two will examine the intellectual roots of my course, particularly genre theory and activity theory;

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the nature and role of empathy in learning and in communication; and the ethical, aspirational, and social imperatives which drive the call for digital citizenship. Chapter Three will describe my course plan and materials in more detail, and explain the methods used in my analysis of the gathered data. As noted above, I will be performing a rhetorical analysis of my students' writing as it changes or doesn't change over time. My research methodology is a variation of Glaser and Strauss's grounded theory approach, with additional insight on this theory drawn from Strauss and Corbin and other methodological theorists.

Chapter Four will present the data gathered during my Fall 2014 Introduction to Technical Writing class. Data includes journal entries, survey responses, group and individual assignments, and responses on a self-assessment instrument called the Genre Understanding Sheet or GUS. I will look at how different activities and identities emerged from the students' self-analysis and reflective responses. To a limited extent, I will also examine student performance and GUS responses for group assignments. Group and individual assignments are challenging to cross-compare because the breakdown of group-member contributions is not always apparent, even with the aid of the GUS. Chapter Five will present my conclusions, particularly focusing on the activities of the theoretical possibilities that could explain my findings, and possible implications which emerge from this line of inquiry. I will examine some potential improvements to the teaching methods and materials used in the research stage. Connections with and benefits for existing approaches to technical communication pedagogy and computer science pedagogy will also be considered.

CHAPTER II

TEACHING, EMPATHY, AND TEACHING EMPATHY

Writing as a Human Activity

In the first chapter, I described computer science students as a population who will need to write and communicate well in the workplace and the digital domain but who are not being educated by their discipline in ways that effectively support this critical need. I also discussed my own motivations in encouraging more empathetically-informed communication and digital citizenship among my students. This chapter examines the problem and practice of teaching students to write, including a pedagogical framework which incorporates genre theory, activity theory, and their relation to both the writing classroom and the workplace; the critical and often undervalued role of empathy in communication; the necessity (to the workplace and the worker) of a strong ethical framework founded upon applied empathy; the call for digital citizens and some of the many ways that digital citizenship can grow and flourish.

I have tried, in Intro to Technical Writing and in other classes, to explain to my students just how much writing they'll be doing after college. It rarely sticks. Instead, I've found it much more effective to show them. I've constructed my professional writing courses, including Business English and Intro to Technical Writing, to guide students toward a more well-rounded understanding of how they will interact with their colleagues, their customers, their employers, and the world around them. Surveys of

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managers and employers regularly cite communication as a key *and* lacking skill even in college-educated workers. Scholars working in computer science and other STEM fields periodically publish articles written to their peers, reminding them that writing is still important and still not present in STEM curricula; Big Thinkers in computer science write books calling on their field and their fellow travelers to join them in taking on the grand ethical and societal questions that a distributed global information network evokes. A conflict arises, however, between all of these concurrent discussions on how important and beneficial writing is (discussions which the students may not even encounter until after they graduate, if then), and the students' actual lived experience in college. A first-year composition course such as Illinois State's English 101 could be the only writing class a student takes in their entire college career. It's no wonder that students may think of writing as relatively unimportant for their future when the institution has often portrayed it that way.

One of the important goals in any college composition course is (or should be) to help students understand the critical role that writing and other communication will play in their working and personal lives. In my approach to this goal, I apply a particular combination of strategies intended to play to the strengths and shore up the weaknesses of my computer science students. These students are problem-solvers and well-accustomed to working collaboratively with their peers, though they sometimes resist working as well with people outside their in-group. I employ an extended metaphor of technical communication as an act of teaching and learning (two tasks which are familiar and generally valued by these students) in order to de-center their perception of audiences as out-groups. During class we discuss the acts of teaching and learning and their

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components, and for most assignments I ask my students to describe how (or if) performing the assignment from a teacher's perspective was helpful to them.

The aim of this technique is to show them how to employ a suite of empathetic cognitive tools when mentally constructing their audiences and those audiences' needs. As we will discuss in more detail below, meaning cannot be given whole to someone else—it must be made by each person, though meaning-making can happen collaboratively (Wolfe 39). Similarly, the teacher or writer can't compel another person to feel empathy or to understand a topic and its significance, but we can supply a rich bounty of ingredients from which the student or reader can fashion their own understanding. Instead of thinking of the reader as a passive recipient of data, I ask my students to think of the reader as a person they're directly or indirectly collaborating with to create meaning(s). I emphasize the idea that working with other people and their ideas doesn't always happen side-by-side or simultaneously—we can collaborate with another person by using their ideas long after the person has moved on. The course also introduces students to writing research as informed by genre theory, providing them with a flexible set of tools they can use to solve the problems of any unfamiliar writing situation (Artemeva and Fox 2010; Bawarshi and Reiff 2010). In computer software and hardware design, data is conceived of as an object that can be stored, retrieved, manipulated, or transmitted by the machine at will. In human interactions, this mechanistic approach to sharing or conveying information is highly problematic. By showing my students how to research and reproduce any type of writing they might encounter and reframing communication as an act of teaching and learning, I am working to reposition my students' concept of writing in the workplace as a *human* activity.

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Pedagogical Design: Genre, Writing Research, and Activity Theory

The ability to communicate competently and to navigate among the systems of human activity in the workplace (and elsewhere in their lives) are generally considered "soft skills" (Bancino and Zevalkink 2007). College curricula tend to focus on hard skills or technical competencies, while employers are generally content to train their employees in job-specific skills but would prefer that college graduates come equipped with better soft skills (GMAC 2011; Chronicle 2012; Northeastern 2013). In many cases, college students are not provided with substantial training in (or even the opportunity to discuss) how they will perform their role among a group of other people in the workplace—how to successfully integrate themselves into that workplace's activity systems. Students are sometimes asked to practice by way of group projects or assignments, or by taking on an internship with a local company, but this is not the same as explicitly explaining and guiding them toward such integration or describing what successful integration might look like. "Integration" as I'm using it here refers to more than just social interactions among co-workers, although that's definitely important. Integration also involves learning how to research, create, and deliver the information, documents, or other artifacts their future co-workers will require to get their own work done.

This is one of the challenges facing any college educator: the setting in which our work takes place is a controlled and artificial environment that lacks the full interactivity among participants that a workplace or other "live" environment will have (Freedman and Adam 1996; Artemeva, Logie, and St. Martin 1999; Blakeslee 2001; Kain and Wardle 2005; Artemeva and Fox 2010). The result is that we can't always adequately convey to our students what it will really be like when they work with others, depend on

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others, are depended upon by others, or produce artifacts to be used by others in the working world. Someday it may be possible (and affordable) to faithfully simulate a complex environment like this for educational purposes, but not now. Instead, the closest we can come is to help our students understand through description, explanation, discussion, and reflection that the specialties they're learning in college will not be performed in isolation (as they've so far been practicing) but instead will be augmented, complemented, frustrated, and sometimes even undermined by the people and artifacts who share their workplace. Two of the critical needs I try to address over the course of the semester are the ability to write well for a variety of situations and audiences, and an understanding of the socially-connected nature of all of the work they might do regardless of their specific major or career.

Genre Theory

In my time at Illinois State University, I've fortunately been introduced to two valuable and highly compatible frameworks that have helped to shape my pedagogy: genre theory and activity theory. These two theories (sets of theories, really) both deal with human interaction within larger complex systems, and because they are both at least somewhat fluid theories-in-progress, they can be coaxed to overlap in interesting and productive ways for the writing classroom and for the writing world beyond that. Genre theory's development has been exhaustively chronicled by Anis Bawarshi and Mary Jo Reiff in *Genre: An Introduction to History, Theory, Research, and Pedagogy.* In the book's preface, Charles Bazerman describes genre as being located "at a central nexus of human-sense-making, where typification meets utterance in pursuit of human action." If

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we want to communicate effectively, Bazerman continues, "we need to know what kind of situation we are in, what kinds of things are being said, and what kinds of things we want to accomplish" (xi). Being able to identify and adapt to these attributes and circumstances, particularly as they shift around us over time, is an important aspect of human communication—and one we learn how to perform (at least verbally) at a very early age. In composition pedagogy, genre theory is sometimes put into action as writing research: students learn *how to learn* about each genre of communication they might encounter, as well as how to replicate or modify that genre themselves (Artemeva, Logie, and St. Martin 1999; Kain and Wardle 2005; Artemeva and Fox 2010; Bawarshi and Reiff 2010). Genre theory, which draws from numerous disciplines, has the potential to substantially impact how composition is conceived and taught.

> [Researchers have] revolutionized the way we think of genre, challenging the idea that genres are simple categorizations of text types and offering instead an understanding of genre that connects kinds of texts to kinds of social actions. As a result, genres have become increasingly defined as ways of recognizing, responding to, acting meaningfully and consequentially within, and helping to reproduce recurrent situations. (Bawarshi and Reiff 3)

Genre is not viewed just as a classification tool for types of writing, but as a way of describing "a powerful, ideologically active, and historically changing shaper of texts, meanings, and social actions" (Bawarshi and Reiff 4).

Studying or teaching genres as more-than-texts opens up space to discuss contiguous topics such as social impacts and social participation, relations between and

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among readers and writers and texts, and the complexities of meaning. Teachers in many different disciplines could potentially find something to latch onto here when discussing writing in their own field or classes. Bawarshi and Reiff specifically note the contributions of researchers in the fields of technical communication, applied linguistics, TESOL, rhetoric, composition studies, critical discourse analysis, sociology, education, and literary theory (3). A genre-oriented approach to the use and production of texts disrupts more traditional composition methods such as those that attempt to master a particular genre like the essay. The weakness of the mastery approach is in its underlying assumption that the writing skills one learned in crafting the perfect essay should and would easily transfer to other types of writing (Russell 1997). Ongoing research in a number of fields including composition pedagogy has revealed that the process of skills transfer from one type of activity to another is far more complex and less linear than previously thought (Perkins and Salomon 1992; Artemeva, Logie, and St. Martin 1999; Reiff 2002; Tuomi-Gröhn and Engeström 2003; Rounsaville, Goldberg, and Bawarshi 2008; Artemeva and Fox 2010; Bawarshi and Reiff 2010; Reiff and Bawarshi 2011).

<u>Skills and Transfer</u>

The concept of transfer was first theorized by Thorndike and Woodworth in 1901 in "The influence of improvement in one mental function upon the efficiency of other functions." Salomon and Perkins revisited the idea of transfer in a series of articles in the 1980s and 1990s, and in 1989 ("Rocky Road to Transfer") they proposed the need for divisions within the concept of transfer to accommodate the apparent fact that "transfer is not at all a unitary phenomenon. Rather, transfer can occur by different routes dependent

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on different mechanisms and combinations of mechanisms" (115). In a later article, Perkins and Salomon offer this explanation of transfer:

> Transfer of learning occurs when learning in one context or with one set of materials impacts on performance in another context or with other related materials. For example, learning to drive a car helps a person later to learn more quickly to drive a truck, learning mathematics prepares students to study physics, learning to get along with one's siblings may prepare one for getting along better with others, and experience playing chess might even make one a better strategic thinker in politics or business. (Perkins and Salomon "Transfer of Learning")

These examples are the ideal; Perkins and Salomon point out that transfer from learning experiences very often *does not* occur, especially when the new context's conditions are different enough from the learned material that person must think abstractly about the connections or similarities between them (this is called high road transfer). Even when the conditions are similar (low road transfer), such as driving a car and driving a small truck, transfer of skills is not guaranteed.

Now that we better understand the nature of transfer, it complicates matters for the writing instructor. Traditional modes of instruction (such as those which emphasize the five-paragraph essay) don't tend to instill transferable writing skills. A more adaptable approach to the teaching of writing is needed, and that's one of the strengths of an approach that combines genre theory and practices of writing research. Instead of being taught to master a single genre through interminable rote repetition (which comes with its own harms), students are taught how to analyze and think critically about the

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writing they encounter, the context it's found in, and the human activities it's trying to support. Bawarshi and Reiff report that genre has been applied in writing classrooms around the world and across a spectrum of age groups (126-131). These applications have involved different languages and different writing exercises, emphasized different disciplines such as linguistics, rhetoric, or education, and focused on different degrees of sophistication on the part of the writer; in spite of all these variables, the amount of overlap apparent in the many articles on the subject suggests that a genre approach in the writing classroom is rooted in fertile and productive ground. Its utility in school settings is not the end but the beginning, as even more research has been done on genres in workplace and professional contexts.

Genres and Contexts

Compared to school genres, workplace genres have greater intertextual density, take part in a more complex communicative web, and fulfill different purposes beyond the immediate expediency of demonstrating class knowledge and ranking student progress (Bawarshi and Reiff 133). Infusing one's pedagogy with genre and writing research should have implications for a student's remaining academic career, but (at least for college students) that career has an expiration date. In the workplace, the graduate will be asked to write or perform in far more genres or genre hybrids than any writing course could hope to discuss. Bawarshi and Reiff cite researchers Aviva Freedman and Christine Adam, who studied the differences between college students learning new genres in class and workers learning new genres on the job. Freedman and Adam's conclusion was that "when students leave the university to enter the workplace, they not

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only need to learn new genres of discourse, they need to learn new ways to learn such genres" (qtd. in Bawarshi and Reiff 134). In other words, teaching genres in a classroom setting does not guarantee transfer of skills either, because workplace genres are often learned through tacit acquisition rather than through explicit instruction.

Even though the production of workplace genres serves a vital function of creating, disseminating, and negotiating knowledge among co-workers; studies suggest that workers who are made more explicitly aware of the existence of genres and shown how to navigate them while on the job tend to have better outcomes (Bawarshi and Reiff 135-136). Generally speaking, most if not all genre pedagogies treat genres as socially, culturally, and linguistically embedded; variations in these pedagogies may focus on teaching particular genres, building on prior knowledge to learn new genres, or analyzing and modifying existing genres (Bawarshi and Reiff 175-176). The difficulties described by Freedman and Adam are echoed in a study by Jane Ledwell-Brown, who found that

> the genre expectations of the workplace—presenting cases in ways that will get desired results—are "a far cry from the demands placed on writers in school, where writing is hardly expected to change anything, desired outcomes other than grades are not in the balance, and the single reader does not expect to be informed or changed by the writing." (Bawarshi and Reiff 134)

The differences between school and workplace writing situations or contexts is clearly a complicating factor when teaching writing in the college classroom, and direct hands-on experience with an item or activity in its proper context is often more effective than studying the subject at a distance.

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Activity Theories

Because of genre theory's interest in the socially-situated nature of texts, it pairs well with activity theory. Activity theory has had many contributors who have pulled it in different directions, so it should not be thought of as a single cohesive theory but a class or group of theories about how humans are affected—even psychologically constructed—by their interaction with objects of all sorts. In *Acting with Technology*, Victor Kaptelinin and Bonnie Nardi write about the role of activity theory in human-computer interaction (formerly called the man-machine interface and now sometimes called interaction design). They argue that the "activity" in the theory refers to the purposeful actions of any subject (not limited to human beings) on or with any object where some mutual transformations between the end-points of subject and object occur. The subjects or objects by themselves are not the focus in this broad view; it is the interaction between them that matters (Kaptelinin and Nardi 30-31). Activity theory can also be scaled up to examine many interactions simultaneously, particularly those which occur in the same workplace or some other situated context Kaptelinin and Nardi 87-89). Such a setting is referred to as an activity system. Activity systems by their mere existence pose a substantial challenge to any college graduate who has the schooling but not the work experience: these systems are where theory meets practice, and the results are rarely pretty unless theory is prepared to get its hands dirty.

Activity theory has its deepest roots in Russian psychological work of the 1920s and 1930s (especially the works of Lev Vygotsky and Aleksey Leontiev), with a long and wandering path between there/then and here/now. Kaptelinin and Nardi are quick to point out that activity theory is *not* "an esoteric teaching that claims to possess deep truths

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obtained from a mysterious source" (35). It is instead part of a very long scholarly and literary tradition of examining the nature and impact of our actions on the world around us. In activity theory (and in other related theories as well), the human mind is understood to be a social entity; it is embedded in and develops from the ongoing accretion of interactions with other minds rather than from solitary study or a divine spark (Kaptelinin and Nardi 36-37; see also Cozolino and Sprokay 2006). In human-computer interaction, activity theory has been helpful in moving the conversation on technology design toward a more context-aware approach—emphasizing or at least being mindful of the activities it will be engaged in (Kaptelinin and Nardi 4). Through the 1980s and 1990s, conceptions of activity between humans and machines were typically stunted, dealing with discrete tasks rather than sustained or entangled interactions. Kaptelinin and Nardi suggest that their field needs to expand its perception from user-and-system interaction to subjects operating in the social world, with more attention paid to the meaningful goal-directed actions of users, real-life use, and long-term developmental changes in all members of the system (users, technologies, their interactions, and the overall context) (34-35).

In composition pedagogy, activity theory and its variants (such as cultural-historical activity theory or CHAT) are now being used as a means of illuminating the connections between the writing a student produces, the people who will use that writing, and the situations in which it will be used (as in Kain and Wardle or Prior and Shipka, all discussed below). Much like Kaptelinin and Nardi's proposals, the actions of humans who create or use an artifact, plus the context in which the actions occur, are worthy of greater consideration. This may not seem like a substantial development, but it is.

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Consider the difference in literary theory between formalist criticism and reader-response criticism. The first treats the artifact (the text) as isolated from and unaffected by its surroundings, its socio-political context, its culture, and perhaps most importantly its reader. The second not only acknowledges the existence of the reader as a seat of consciousness but invites readers to participate in the text's conversation. The reader, the writer, and the text or artifact are no longer isolated (not that they ever really were); instead, they are participants in an ongoing system of knowledge-making which is in turn a component of and composed of other overlapping systems.

In "Building Context: Using Activity Theory to Teach About Genre in Multi-Major Professional Communication Courses," Donna Kain and Elizabeth Wardle discuss the weaknesses of the classroom setting mentioned previously: "The communication practices of workplace professionals occur in contexts that are more dynamic, fluid, and collaborative than the contexts of classrooms where objectives and activities are primarily scripted by instructors and enacted by students in response" (113). In the writing class, activity theory is used to explore the interactions between humans and artifacts in everyday settings, especially (though not exclusively) communication tools, documents, or genres in the workplace. Kain and Wardle examine activity theory as a pedagogical aid in a professional writing class with majors from a variety of disciplines. They note that some institutions with more robust programs in writing across the curriculum (WAC) or writing in the disciplines (WID) offer courses that are tailored to individual majors or disciplines where the purpose is "to create classroom contexts that focus on specific professions and that immerse students in tasks that resemble those practiced by professionals. The communication aspects of such programs focus on

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introducing students to the genres and discursive practices of particular fields" (114). Many schools do not have such focused course offerings, however, so attending to the needs of a variety of students simultaneously is entirely commonplace.

Kain and Wardle's approach is interesting here not because it is unique but because it acknowledges and attempts to fill in a longstanding gap in the composition classroom learning experience. The most critical measure of their work's effectiveness is the students' abilities to transfer the skills learned in this class to other situations, including low-road transfer in similar situations and high-road transfer in substantially different situations (Salomon and Perkins 1989; Perkins and Salomon 1992). For an example of low-road transfer in the context of writing, consider a student who learns to write a traditional five-paragraph essay in English 101. This class may build upon the student's prior knowledge of English or essay-writing from high school or earlier, but it often won't push her to do anything particularly new or novel with the essay genre. When that student moves to History 101 and is asked to write an essay, she will typically engage in low-road transfer of her essay-writing skills from one context to a very similar context, even if it isn't a perfect fit.

High-road transfer, on the other hand, asks a learner to think abstractly about both the skills they've previously picked up and the requirements of some new task they're confronted with, reassembling and applying those skills on the fly to produce something notably different than whatever they were originally learned for. The student will be asked (and expected) to perform in a wide variety of other genres and contexts in college and beyond, while being offered little if any direct training in those genres. For many years it was assumed that high-road transfer would and should take place without

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intervention by the teacher; this explains how the five-paragraph essay or theme paper became so deeply embedded in the concept of "what it is to write." The truth, unfortunately, is that high-road transfer often doesn't happen unless it is explicitly encouraged, and the idea that it does is one of the most stubbornly enduring myths in education (Perkins and Salomon "Transfer of Learning").

Transfer can be challenging to measure (or to induce) because it isn't a single event but a complex set of activities, insights, interactions, and behaviors, some of which may not fall into place until months or years after the original learning event occurred. Kain and Wardle's conclusion notes that their class experiment is limited because they are evaluating themselves and they have no means of extending the evaluation beyond the end of the class (134). However, the conditions they build into their course for the expressed purpose of facilitating or encouraging transfer are mostly replicable by the students without the instructors' oversight, once the students have had some practice. These conditions will be discussed in more detail in Chapter Three, but they can be summarized thus: students are given regular opportunities to practice, encouraged to draw abstract principles from and make connections between each writing situation they encounter, asked to reflect on their own work and progress, and asked to create or consider analogies and metaphors that explain the new material and its relation to other concepts or experiences.

Another vector of approach to cultural-historical activity theory and the complexity of meaning-making comes from Paul Prior and Jody Shipka. In "Chronotopic Lamination: Tracing the Contours of Literate Activity," Prior and Shipka examine the writing processes of several different academic writers (students and teachers). They

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draw the term "chronotopic lamination" from Bakhtin as a means of describing literate activity as a union between times, locations, and expressions; however, it is ragged, fractured, fluid, and forever unfinished (186). Writing does not occur as a smooth, single event, nor even in a single place or time; it is an assemblage or collage of thoughts, notes, interactions, reversals, erasures, edits, activities, and moods. The subjects cited by Prior and Shipka describe the places and processes involved in their writing, including hand-drawn diagrams of the rooms they were in, descriptions of the physical movements they made while writing (such as going downstairs to take the laundry out of the dryer and using that time to reflect on the writing that had been happening upstairs), and other ways and places where some component of the writing process could be found (180-181).

Prior and Shipka present the following argument:

CHAT and Writing Studies could both benefit from a greater awareness of chronotopically laminated chains of acts, artifacts, and actors that are woven together and unwoven in polyvalent moments of being; from greater attention to sense, affect and consciousness, to the messy ever-moving interactions of individuals being-in-the-world; and finally from attention to the ways that people select, structure, and make environments to regulate their consciousness and promote or impede their actions. Within these broad contours, there is room for a variety of methodologies to explore the specific patterns and processes that emerge in local and dispersed literate activity. (231)

Although I don't precisely follow Prior and Shipka's recommendations on expanding awareness of chronotopic laminations in my classes, I do ask my students to write about

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and reflect upon their writing processes regularly. This reflection is not always tied to a specific assignment. Students often start out shaky and uncertain about this type of analytical work, perhaps in part because it exposes so much messiness and chaos in how they engage in literate activities. Once they realize that messiness and chaos aren't automatically judged as "bad," they typically perform their reflective work with greater confidence. I've lost count of the many times I've been truly impressed by the thoughtfulness of students' reflective work, but I keep myself open to that experience of impressedness. Sincerely-performed reflective work can often serve as an important indicator of personal growth, and the privilege of witnessing that growth is one of the perks of the job. I will examine my students' reflective work at length in Chapter Four.

<u>Connections of Activity Theory to Computer Science</u>

Most if not all of the articles cited in Chapter One which argue in favor of more and better writing instruction for computer science majors can be read from an activity theory point of view. Human activity systems of all kinds depend upon communication in the same sense that commerce depends upon currency. It is the medium through which meaning is created and exchanged. The particulars, such as the pieces of data or information being exchanged, are less important than the fact that they can be exchanged with relative ease and fidelity. Carolyn Boiarsky, writing in "Teaching Engineering Students to Communicate Effectively: A Metacognitive Approach," makes her case early on that engineering students cannot thrive simply by being good at engineering—the workplace *will* demand more from them, asking them to perform in ways that engineering classes simply aren't preparing them for.

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The need for engineering students to learn to communicate effectively has never been greater if they are to have the ideas they propose accepted, the products they design developed, and the systems they develop utilized appropriately. Today's engineering students must acquire an array of rhetorical strategies and skills that have expanded exponentially over the past twenty years. (Boiarsky 251)

It would be just as accurate to insert "software" or "hardware" in front of the word "engineering" above, and as Boiarsky points out, one of the chief problems in engineering (as in computer science) is an over-abundance of material in the curriculum and not enough time to cover it all, much less to add one or more writing courses. Her approach is to teach her engineering students how to adapt to the writing situations they encounter, rather than to try to teach them about every possible genre. She also recommends emphasizing problem-solving skills and flexibility rather than heavy expertise in a single area (Boiarsky and Dobberstein 1998). From an activity theory point of view, this gives her students a much better chance of not gumming up the works of the complex activity systems they'll soon encounter.

Even for trained technical communicators, the evolving realities of writing in the workplace can clash with the expectations received from their training; Hillary Hart and James Conklin observe that "the contemporary workplace is experiencing the emergence of more inclusive management practices and more collaborative and empowered work practices" (395). What this means for technical writers moving forward, they say, is "less emphasis on one-way communication through texts, and more emphasis on the creation of opportunities for two-way communication between those who create technology and

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those who implement and use technical innovations in specific workplace or social environments" (396). At the conclusion of their examination of workplace roles for the technical communicator, Hart and Conklin report that their participants shared one common self-concept: "a representation of technical communicators as boundary-spanners who create and manage linkages within networked organizations (413). The idea of technical writing as a practice which spans and crosses boundaries is a familiar one in technical communication pedagogy, as is the idea of crossing boundaries as an aspect of transfer in learning; both can be connected with activity theory, which attends to the intersections of subject and object (see Slack, Miller, and Doak 1993; Spinuzzi 1996; Blakeslee 2001; Cook 2002; Barab, Schatz, and Scheckler 2004; Savage 2004; Rounsaville, Goldberg, and Bawarshi 2008). In the next section we will turn to empathy, which we might describe as boundary-crossing for the mind.

The Role of Empathy in Communication and Learning

The general term *empathy* deals with our cognitive or emotional interactions with other people. Emotional or affective empathy is commonly divided by psychologists into three subcategories: emotional contagion, or witnessing and then "catching" the same emotion as another person (as with crying); personal distress, or one's own feelings of distress in response to perceiving someone else's plight (as with feeling upset when a friend describes their own depression); and empathic concern or sympathy, or feeling compassion for another person (Hodges and Myers 296). Cognitive empathy does not necessarily involve an emotional response; it is the ability to see the world from another person's point of view, and to recognize that another person may have distinct and

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different reactions, responses, and needs than oneself (Hodges and Myers 297). For brevity, I will sometimes use the term "empathy" in this document as a shorter stand-in for "cognitive empathy," and I will explicitly refer to "affective empathy" as such.

Cognitive Empathy

Cognitive empathy "is intimately linked to the development of a theory of mind" or ToM (Hodges and Myers 297). This theory considers how we employ cognitive empathy to construct our concept of other people's minds as separate and distinct entities from our own mind and not simply imaginary extensions of the self. Theory of Mind is "the intuitive understanding of one's own and other people's minds or mental states— including thoughts, beliefs, perceptions, knowledge, intentions, desires, and emotions— and of how those mental states influence behavior" (Alic). More than just a philosophical or psychological phenomenon, empathy is now understood as a (somewhat) measurable neurological event as well:

> ToM has been considered to be one of the essential independent cognitive domains for social interaction and cognition. Its impairment has been considered to be associated with deficits in social interaction and social functioning, such as found in the autistic spectrum disorders and schizophrenia. Neuroimaging studies have identified the neural substrates for ToM in the medial prefrontal cortex (MPFC), superior temporal sulcus (STS) and the temporal pole adjacent to the amygdala (TP/Amy) in normal adult individuals[4] and in normal children. (Moriguchi et al. 355)

Researchers using an fMRI machine have observed brain activity during a test called

Reading the Mind in the Eyes (RMET), which has been described as "an advanced test of theory of mind…as it involves processing subtle social stimuli in a way that allows one to infer the mental states of others" (Mascaro, Rilling, Negi, and Raison 49). In "Compassion meditation enhances empathic accuracy and related neural activity," Mascaro et al. observe that empathy and pro-social behavior may be improvable through external means. This is important to my own work because I am also attempting to help my students improve their sense of empathy as part of the larger goals of the class. Mascaro's experiment, which involved guided meditation aimed at improving empathic feelings and behaviors, showed positive and promising results. Although this study had a fairly small sample size and shouldn't be considered conclusive, it (and the other literature which the authors summarize) suggests that empathy is not a fixed or unchangeable attribute and that it may be adjustable, either by the individual alone or with the help of others. (See also Klein and Hodges 2001; Carr et al. 2003; Smith 2006; Cheng, Meltzoff, and Decety 2007; Domes et al. 2007; Twenge et al. 2007; Singer et al. 2008; Gleason, Jensen-Campbell, and Ickes 2009; Rameson and Lieberman 2009; Adams et al. 2010; Dumontheil, Apperly, and Blakemore 2010; Guastella et al. 2010; Churchland and Winkielman 2012; Cox et al. 2012; Klimecki et al. 2013).

Empathy in Communication, Teaching, and Learning

The ability and willingness to see things from another person's perspective has long been discussed as a vital component of competent and effective communication (Allen and Brown 1976; Wiemann and Backlund 1980; Redmond 1985 and 1989; Slack, Miller, and Doak 1993; Blyler 1994; Bushnell 1999; Graham 2004; Bourelle 2012;

Cleary and Flammia 2012). Like communication more generally, teaching and learning are also greatly enhanced by empathy, especially on the part of the teacher. Recent neurological research has shown what many teachers have known for ages: an empathetic teacher who understands her or his students is better able to tailor materials to meet their needs, and a learner who feels that the teacher understands and supports them is more likely to retain and integrate new information (Cozolino and Sprokay 2006; Wolfe 2006; Ambrose et al. 2010). Neuroscience researcher James Zull explains that emotion is foundational to learning:

> Emotion systems [in the brainstem] are ancient, but they extend their influence throughout our modern brain…. The chemicals of emotion act by modifying the strength and contribution of each part of the learning cycle. Their impact is directly on the signaling systems in each affected neuron. ("Key Aspects" 7)

Learning can take place without a strong emotional accompaniment, and some emotions such as fear may cloud or interfere with learning. However, Cozolino and Sprokay argue that "we all need others who show interest in us, help us feel safe, and encourage our understanding of the world around us. Brains grow best in this context of interactive discovery and through cocreation of stories that shape and support memories of what is being learned" (11).

Cognitive Styles

STEM majors in general, and computer science majors in particular, face two challenges with regard to their empathetic behavior—their ability or willingness to see

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the world from another person's point of view, particularly a person who is perceived to be outside of their peer group. The first challenge is related to their cognitive style, and the second is related to their prior socialization. Autism researcher Simon Baron-Cohen has proposed that cognition styles can be divided into three general sets: empathizing, systemizing, and empathizing-systemizing. People with a predominantly empathizing cognitive style tend to be more attuned to relationships and interactions among people, while people with a predominantly systemizing style are better at figuring out logical systems such as machinery, software, or mathematics. Empathizing-systemizing people are generally able to find a balance between the two.

It's important to understand that Baron-Cohen's theory is <u>not</u> a measure of intelligence or potential but of a person's *style* of thinking and perceiving the world around them. While empathizing traits and systemizing traits can coexist, individuals with a strong tendency toward systemizing behavior can have difficulties in recognizing emotions in others or in understanding and performing an appropriate response to the emotional state of others; in cases where the person's systemizing traits are very high and their empathizing traits are low, they may fall somewhere along the autism spectrum (Baron-Cohen 71-72). A small but growing set of researchers, following up on Baron-Cohen's work, have examined the overlap between cognitive styles and choice of college major. When it comes to one's choice of college major and career, the tendency is that systemizing-prone people are drawn to the sciences and empathizing-prone people are drawn to the humanities (see Billington, Baron-Cohen, and Wheelwright 2007; Focquaert et al. 2007; Lai et al. 2012; Takeuchi et al. 2014).

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Prior Socialization

The second challenge for STEM students and computer science majors is one of prior socialization. The conflict between wanting to be smart and wanting to be included is an ongoing topic of study among educational researchers. Cross, Coleman, and Terhaar-Yonkers (1991) call this "Managing the Stigma of Giftedness." Miraca Gross (1989) describes it as a forced choice between "the Pursuit of Excellence" and "the Search for Intimacy." Pfeiffer and Stocking (2000) write about the "Vulnerabilities of Academically Gifted Students." Students may respond to their giftedness and the dilemma it presents by adopting coping mechanisms that leave both wants (being smart and being liked) unfulfilled:

> For those who respond to the dilemma by masking their giftedness,
> meeting the need for acceptance by peers may be associated with
> emotional frustration resulting from portraying identities at odds with their
> true identities and levels of development. For those who respond by
> pursuing academic achievement, the possible lack of intimate peer
> relationships may have detrimental social impacts, which could then
> reduce their ability to fully realize their academic potential. (Jung,
> McCormick, and Gross 16)

In all likelihood, not all students who major in computer science would be considered "gifted" by the criteria of *Gifted Children Quarterly* or *Journal for the Education of the Gifted*. Even so, social exclusion may also have the potential to decrease a person's empathetic or prosocial behavior. Twenge et al. describe prosocial behavior as something one does to benefit others rather than to benefit oneself, with the payback

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being inclusion in a culture and access to its rewards (56). Twenge notes that "a threat to one's belongingness may reduce one's willingness to perform prosocial acts" (56). Their study of the matter suggested that deliberately excluding a person (or causing them to feel that they've been excluded) can indeed have a negative impact on that person's ability to empathize with others and may (temporarily at least) interfere with their desire or willingness to engage with others or to perform prosocial acts (64). It's more than just a stereotype that smart kids are often ostracized by their peers, and this unfortunate reality can have continuing consequences.

Paul Graham's essay "Why Nerds Are Unpopular," the first chapter in Hackers & Painters, offers a more personal examination of the social and cultural forces that he sees as being at work in the contemporary American school system. Graham argues that these forces conspire to make life difficult for smart young people. Where *hacker* is a badge of honor, he says, *nerd* is a symbol of commiseration. Graham observes that teenage kids seem to spend an enormous amount of time and energy on becoming and staying popular. "Nerds serve two masters. They want to be popular, certainly, but they want even more to be smart. And popularity is not something you can do in your spare time, not in the fiercely competitive environment of an American secondary school" (3). What this produces is a steady supply of young men and women who may have banded together with others of their kind for mutual protection, and who may therefore have a hard time shedding their distrust of "outsiders" once they land in the societal chafing dish that is college. Graham's observations are not presented here as conclusive or universal evidence; certainly, plenty of confident and outgoing smart people go into computer science as well—where they will then interact with their warier or less confident peers.

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I don't believe for a moment that my students, or most STEM students, lack the *capacity* for empathy, but they may have lost sight of its benefits or haven't had much experience in thinking reflectively about it. Similarly, my students often find the self-assessment instrument (the GUS) to be challenging at first, with more than a few of them remarking in conversations or journal entries that they hadn't spent much time thinking about their own thought process or learning practices before this. Throughout the semester, using a variety of different assignments and other instruments, I ask my students to reflect on their own learning activities and on the practice of teaching and learning more generally. The purpose of this work is to help them become more aware of their own learning process for two reasons. The first is for its own sake: knowledge, as the saying goes, is power, and knowledge of oneself is an under-valued commodity and a hard one to Google. The second reason is so that we can use the linkage between learning and empathy as a practical, relatable means of practicing and improving their ability to see things from another person's perspective. In turn, this contributes to a framework for improving their communicative competence more generally.

Empathy in Teaching and Learning

Ongoing research in the neuroscience of adult learning suggests that the human brain favors experience-based learning in a challenging yet supportive and socially-connected environment. A positive and alert emotional state *physically readies the brain* to receive and incorporate new information, a condition known as neuroplasticity or neural plasticity. Louis Cozolino and Susan Sprokay cite a host of recent biological research that has revealed how this mechanism works: "It turns out that a moderate level

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of arousal triggers neural plasticity by increasing production of neurotransmitters and neural growth hormones, enhancing neural connections, and cortical reorganization" (13-14). As we improve our understanding of how the brain works, educators are better able to create or encourage the optimal conditions for learning, retention, and integration. Cozolino and Sprokay note that "the most effective adult educators may be unwitting neuroscientists who use their interpersonal skills to tailor enriched environments that enhance brain development. The brain is a social organ innately designed to learn through shared experiences" (Cozolino and Sprokay 11). Real-time brain scans of people working and thinking and learning have begun to reveal the mechanics behind what many teachers have already been doing.

In the past few decades, as researchers have studied the brain within the context of its owners' lived experiences, their findings have shattered the older Western paradigm of the mind as a solitary phenomenon (Cozolino and Sprokay 13). Pat Wolfe says that "[w]hat the new research on learning and the brain now reveals is that when learners are actively experiencing, new neural networks are created in the same way that networks of neurons are created from birth as children begin experiencing their world" (38). Cozolino and Sprokay draw upon their experiences in counseling and psychotherapy, which is certainly a focused type of learning for the client. They suggest that the same general principles or requirements for an effective learning environment apply both in the classroom and throughout a learner's life:

- A safe and trusting relationship with an attuned other
- Maintenance of a moderate level of arousal [where the learner is attentive and motivated to learn]

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- Activation of both thinking and feeling

- A language of self-reflection

- Co-construction of a narrative that reflects a positive and optimistic self (Cozolino and Sprokay 12-13)

This list may seem like a dauntingly abstract set of conditions to create for one's students, but—as noted previously—experienced teachers often intuit their way toward best practices that neuroscience is now explaining from a biological perspective. It's also important to note the recurrence of affective elements in Cozolino and Sprokay's list: a learner's emotional state is a crucial element in determining how well they will retain and integrate information. Rather than trying to make students feel happy or entertained, however, the teacher's attention should be on earning and maintaining the students' trust and their focused attention. Excessive stress, shifting or unclear expectations, or a sense of disconnect between the work done at home and the lectures given in class can all negatively impact students' ability (not to mention their desire) to stay positive and focused. (See also Caine & Caine 2006; Sheckley & Bell 2006; K. Taylor 2006; Zull 2006; Clore & Palmer 2009; Ambrose et al. 2010; Opitz & Ford 2014). In my research, I attempt to use the empathic relationship that *can* exist between teacher and learner as a means to induce or encourage improved cognitive empathic awareness in my students. To put it another way, I want to encourage my students to use positive and empathetically-informed models of teachers and teaching (drawn from their own lives and from our discussions) to guide how they work with and write for their own students/audiences.

Ethics and Engagement: Problem Solving on a Higher Plane

Like many of humanity's puzzles, such as life after death or the meaning of existence, ethics is a broad concept of good and bad behavior, with as many variations as there are people to come up with them. For our purposes, the definition of ethics will be limited to "social morality," or the relations between and among human beings. Thiroux and Krasemann describe this subset as "the most important aspect of morality, in that it cuts across all of the other aspects [of morality] and is found in more ethical systems than any of the others. … For a majority of ethicists, the most important human moral issues arise when human beings come together in social groups and begin to conflict with one another" (11). We will take as an assumption that good or ethical behavior includes that which benefits others (or more than just oneself), and bad or unethical behavior includes that which harms or causes suffering in others. In both technical communication and in computer science, ethics necessarily include not just how we interact with our peers or our employer but how we interact with the people whose lives and livelihood are impacted by our work. Our interactions with objects, ecologies, or systems which are not primarily human-centric are also important parts of ethics discussions, but most of those interactions are beyond the scope of this inquiry.

Ethics in Technical Communication

We live with the effects of technical communication in the same way that we live with the effects of electromagnetism. It is all around us, permeating and enriching nearly everything we do. Like electromagnetism, its importance often fades into the background of our consciousness, and the subtle but influential ethical concerns of the field are still

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under vigorous discussion and debate by scholars or practitioners but invisible to the public at large. The ethics of a society or a subset of that society are similarly translucent; we make ethical choices every day almost entirely by rote, just as with most of our other social interactions. As Paul Dombrowski reminds us, "ethics cannot be reduced to the mechanical conformance to rules, because generalized rules cannot capture the complex contingency of real, particular situations, and because ethical conduct usually involves a heavy measure of personal judgment and decision making" (4). Ethical conduct is necessarily connected to the society or system from which it originates, and multiple overlapping or competing systems sometimes result in multiple overlapping or competing ethical constructs, as with a socially-aware technical writer working within a traditional business community. The particulars of ethical conduct are difficult to legislate (though we humans have tried for eons and still try); they always seem to come down to an individual making a choice.

For most of its existence, the field and practice of technical communication primarily concerned itself with mechanical matters of writing rather than the social impact. Technical writing was to be clear, precise, and sharp (Britton 114). As the field grew in size, particularly during the post-WWII boom in industry and technology, technical writing experienced its own boom in both practicing members and in available work, drawing writers from many different sources. "For the first time," historian Robert J. Connors tells us, "technical writing was more than just an adjunct function of some other activity—it was a job in itself" (12). This in turn led to a large volume of technical writing textbooks and other materials written for practitioners, as well as the establishment or expansion of technical writing courses in colleges and universities around the country, typically within English departments (12-14). Economic and

industrial advances led to further increases in technical writing enrollment (though it had its ups and downs), and by the early 1980s from which Connors wrote, his take on the field's prospects within the academy is upbeat:

> Technical writings scholarship is thriving, and there is a healthy tone of innovation and skepticism in the essays found in today's technical writing journals; the received wisdom is being tested against new situations and needs as never before, and the field is more vital than ever because of it. (17)

Where earlier scholarship on technical writing tended to mine a fairly narrow vein of process-oriented material, scholars in the late 1970s and onward hit the mother lode with the assertion that technical communication was inseparable from the human activity systems in which it was situated. With the full spectrum of human activity now exposed for consideration, scholarship entered a period of vigorous exploration and discovery which continues through the present. In Carolyn Miller's later preface to the reprint of her article below, she remarks on how sparse the technical writing field's literature was in 1979 (49). By the end of the 1980s, the trickle of articles analyzing technical writing as a discipline and a social subsystem had swollen to a flood. Miller's 1979 article "A Humanistic Rationale for Technical Writing" emerges following a committee discussion in her department over whether a technical writing course could reasonably be said to fulfill one of the university's humanities requirements. After establishing her premise that a case can be made for technical writing's humanistic value, Miller deconstructs some of the common arguments (particularly those in Cox and Roland's 1973 article "How Rhetoric Confuses Scientific Issues") that positioned technical writing as the opposite of rhetoric. She notes the many ways in which rhetoric presents itself in Cox and Roland's

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article and elsewhere in technical writing, despite its own claims of objectivity and impartiality that presumably set such writing apart from all other human communication.

Miller then pairs the windowpane theory of language and the positivist view of science which lead to the conclusion—erroneous, in her view—that clear and precise language is sufficient to provide a "real" view of the world, and that the only meaningful advancements in scientific knowledge come from that which can be observed with the senses and thus empirically verified (49). She observes that a positivist view "is no longer held by most philosophers of science or by most thoughtful scientists"; therefore, the practice and teaching of technical writing must also consider the recent epistemological developments of cultural anthropology, cognitive psychology, and sociology which assert that "whatever we know of reality is created by individual action and communal assent. Reality cannot be separated from our knowledge of it; knowledge cannot be separated from the knower; the knower cannot be separated from a community" (51). Miller concludes that technical writing can be approached as both a practical endeavor and an opportunity to examine and understand one's own activity and consciousness (53).

If our writing as technical communicators is rhetoric, as scholars have argued for the past several decades at least, then writing *about* technical writing likewise has a persuasive function. When Carolyn Miller describes a humanistic rationale for technical writing, or when Steven Katz illustrates the stark ethic of expediency, or when Jack Bushnell notes the importance of questioning and critique in the tech writing classroom, they are arguing that we as a field of professionals *should* do this or *should* avoid that. They are making proposals for how we ought to shape our future behavior and the society we impact with it. In the previous chapter I used the term "aspirational" to describe writings about what computer science specialists (and anyone else who cares to join them)

ought to be mindful of, to guard against, or to strive for. The term could be applied to many of those scholars who contributed to the social turn as well. I believe that computer science is undergoing its own turn, different in the particulars than ours but no less phenomenal to watch. It is because of this—our turn, then, and their turn, now, that I see not only a need for better and more robust attention to the development of digital citizens but also that I see technical communication as uniquely situated to offer its assistance.

Partners in the Information Economy

Computer science and technical communication share numerous common elements, but chief among them is our special relationship with information. We each create it and manage it, gather it and store it, and most importantly we share it with others or enable others to do so. We are key players in what Yochai Benkler describes as the networked information economy. "Information, knowledge, and culture are central to human freedom and human development. How they are produced and exchanged in our society critically affects the way we see the state of the world as it is and might be; who decides these questions; and how we, as societies and polities, come to understand what can and ought to be done" ("Wealth of Networks" 1). The changes brought about by humanity's new ability to rapidly and massively exchange information across the globe is both deep and structural; "[i]t goes to the very foundations of how liberal markets and liberal democracies have coevolved for almost two centuries" ("Wealth of Networks" 1). The opportunities for fundamental and broadly beneficial change that Benkler describes are at least equally matched by clear and present dangers posed by the usual suspects: money, power, and greed. However, new technology and a new playing field have brought with them new rules, or at least scrapped some of the old rules: "At the heart of

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the economic engine, of the world's most advanced economies, we are beginning to notice a persistent and quite amazing phenomenon" ("Wealth of Networks" 59). That phenomenon, which "should not be there, at least according to our most widely held beliefs about economic behavior," is the rise of peer production and sharing in the software industry ("Wealth of Networks" 59).

Changes to the software business, it turns out, were only the first act. In the past decade, we have witnessed the rise in cooperative social production of journalism, music, film, literature, and other digital cultural artifacts. We have also seen political activities, social and criminal justice work, and other forms of engaged citizenship erupt online (and sometimes vanish just as quickly). Benkler examines this seemingly odd and anti-economic behavior in more detail in *The Penguin and the Leviathan*, first deconstructing the conveniently pro-capitalist idea that humans are essentially and primarily motivated by self-interest (*Penguin* 25-27). While self-interest is still a core part of the human psyche and perhaps even our biology, Benkler argues that its ascendancy as *the* explanation for human behaviors seems to have peaked, and the study and practice of cooperation is on the rise. "Current evolutionary science is beginning to offer us new, revealing insights into cooperation. It is helping us explain not only why acting cooperatively, or altruistically, increases our individual chances of passing along our genes, but also why groups can benefit from having strong cooperative practices and proclivities" ("Penguin" 38).

Benkler acknowledges early on that the apparent renaissance of interest in cooperative practices is not about to wipe out humanity's capacity for selfishness, but it does open the door on many new possibilities:

For decades we have been designing systems tailored to harness selfish

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tendencies, without regard to potential negative effects on the enormous

potential for cooperation that pervades society. We can do better. We can

design systems—be they legal or technical; corporate or civic;

administrative or commercial—that let our humanity find a fuller

expression; systems that tap into a far greater promise and potential of

human endeavor than we have generally allowed in the past. ("Penguin"

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Benkler is only one of many scholars and thinkers who have great and largely positive

expectations for humanity as we build and explore our new digital world. I should

reiterate here that I'm aware of my optimistic view, and of the optimism in what Benkler

and others write in these aspirational texts. What Benkler describes above may not be

possible in the short term, maybe not even in the long term. Nonetheless, I am resolute in

my conviction that these are suitable and worthy ideals to strive for. I proposed earlier

that computer science is experiencing a turn toward better understanding its own socially-

embedded nature, as evidenced in part by the numerous aspirational ethnographies

written by programmers, hackers, information technology specialists, and computer nerds.

Although I can't yet say that these texts have reached a critical mass, one message seems

to come through quite clearly: "We are on the verge of something unprecedented and

amazing in human social / cultural / intellectual / economic development, and we'd better

be careful not to screw it up."

Aspirations and Expectations

The selected aspirational texts below frequently use the word *hacker* as a badge of

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honor, reclaiming its positive denotations from underneath the heap of negative connotations that have sullied it in popular media. The hacker is an explorer, an innovator, and definitely a risk-taker, though this usually doesn't mean daredevilry. Paul Graham describes them as "makers" and likens them to others who produce creative works. "Along with composers, architects, and writers, what hackers and painters are trying to do is make good things. They're not doing research per se, though if in the course of trying to make good things they discover some new technique, so much the better" (18). The hacker does not necessarily need to be a computer programmer, although that was part of its original meaning. Exploration, innovation, and the creation of beauty can take many compatible forms.

Coding Freedom: The Ethics and Aesthetics of Hacking, by E. Gabriella Coleman, discusses the free and open-source software (F/OSS) movement in which people from around the world contribute to the development of myriad software tools and applications. This is not simply a set of side projects or highly-specialized tools with few intended users, though certainly those exist. Open-source software includes operating systems (GNU/Linux), office productivity suites (OpenOffice, LibreOffice), web servers (Apache), web browsers (Firefox), content management systems (Drupal), image editing software (GIMP), and numerous others. Many of these programs compete directly with commercial software, not just in terms of cost but in quality, support, and security as well. Perhaps more importantly, they represent a massive disruption to both the business model and the legal construct of intellectual property. "Coding Freedom" is not a glib title; Coleman argues articulately that the right and ability to create, distribute, and manage software is a vital component of a free, open, and participatory society:

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Although hackers hold multiple motivations for producing their software, collectively they are committed to *productive freedom*. This term designates the institutions, legal devices, and moral codes that hackers have built in order to autonomously improve on their peers' work, refine their technical skills, and extend craftlike engineering traditions. This ethnography is centrally concerned with how hackers have built a dense ethical and technical practice that sustains their productive freedom, and in so doing, how they extend as well as reformulate several key liberal ideals such as access, free speech, transparency, equal opportunity, publicity, and meritocracy. (3)

Liberal and liberalism, as Coleman uses them, are cultural rather than political concepts. The F/OSS movement and the hackers who support it share a philosophical view that "knowledge, self-cultivation, and self-expression [are] the vital locus of freedom" (3).

The Cathedral & the Bazaar is one of my favorite titles for the images it evokes; the schism between methodical, controlled, centralized work (of any kind) and seat-of-the-pants innovation and barely-managed chaos is a long-standing one in the arts and the sciences both. The book's author, Eric S. Raymond, is another strong proponent of a decentralized and open-source approach to software development. He observes that the people within "hacker culture" are actually rather diverse in their views, much like in any other culture. Narrowing the definition down (temporarily) to views on open source projects, he points out that hacker attitudes range from zealous adherent to casual supporter, and views on commercial software likewise range from vigorous ideological opposition to pragmatic preferences. The people who might contribute their time or

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energy don't all do so by means of initial coding (such as beta-testers or documentation writers), and those who do the initial coding are very often trying to solve a problem for themselves rather than to create a widely-used program. "The best hacks start out as personal solutions to the author's everyday problems, and spread out because the problem turned out to be typical for a large class of users" (Raymond 49). Raymond's focus is on coding and related technological solutions, but he repeatedly mentions the communicative efforts that went into the different projects he's discussing. Like Graham and Coleman, Raymond believes firmly in access to information and its tools as a core requirement of modern society. In the book's foreword, Red Hat CEO Bob Young equates business success with the degree of freedom afforded that business's industry. This freedom does not mean "free to dump toxic waste," but free to make productive use of human knowledge—and as programmer and open-software evangelist Richard Stallman also observed, software and programming languages are critical parts of that body of knowledge (Stallman 47).

Like Gabriela Coleman and Steven Levy, Pekka Himanen is in some ways an outsider looking in on hacker culture, where Graham, Raymond, and Stallman are coders from way back. Himanen's book *The Hacker Ethic* does more than just describe hackers doing hacker things, though that's an important part of the setup. Himanen, much like Levy, is interested in the ethical principles that can be extrapolated from hacker behavior. He coins the term *nethic*, a portmanteau like netiquette that combines net(work) and ethic. Although the term failed to catch on, the nethic concerns itself with freedom of speech and expression, freedom from surveillance, and freedom of activity within the digital domain. Himanen invokes the 1999 war and ethnic cleansing campaign in Kosovo as an

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example of how the internet and its related technologies can be used to circumvent government censorship, to document human rights abuses, and to spread critical information to those who need it (90-96). This is an extreme case, one might argue, but in the last few years the world has witnessed massive protests, civil uprisings, and even rulers forced from power in a dozen countries including the United States, all enabled or dramatically enhanced through the use of communicative tools such as cell phone videos, text messages, email, and Twitter.

Perhaps the strongest case for the power of writing is made by Lawrence Lessig in *Code*. The internet is made almost entirely out of language, and the writing that forms the internet and its appendages is computer code. Even in network hardware with no traditional disk drive, *some* code is almost always present. The code operates simultaneously as regulation and law, and as an artist's sketchbook. It is orderly and chaotic, governed and ungovernable (Lessig 1-8). That was its original state, at least. Lessig says that, without significant involvement and pushback against legislative and market forces, the internet will indeed be tamed and made to serve two specific masters: government and commerce. He does not suggest that either of these interests is wrong or invalid, but they do tend to bristle at the thought of chaos and freeform creativity without the means to regulate or monetize them. His argument is that we must remain actively involved in the ongoing stewardship of this extraordinary tool if we don't want to see it locked down and sanitized. Logically, the people who actually write the code have the greatest (potential) ethical stake in how they will be asked to work and how their work will be used. Will they be asked to censor? To create software that invades privacy? To write code that selectively throttles bandwidth if Net Neutrality should fall? These are

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difficult issues or choices for anyone to face, particularly when career advancement or even continued employment are on the line.

Although parts of Paul Graham's *Hackers & Painters* are bittersweet, his message for young readers is really an optimistic one: most of the problems that plague smart students in junior high and high school will eventually go away. "It's important for nerds to realize, too, that school is not life. School is a strange, artificial thing, half sterile and half feral. It's all-encompassing, like life, but it isn't the real thing. It's only temporary, and if you look, you can see beyond it even while you're still in it" (16). With this perspective in mind, a re-reading of the ethnographies introduced previously (Barker and Garvin-Doxas; Margolis, Fisher, and Miller; Klawe; Beyer; Boiarsky) might be revelatory. The focus, drive, and depth of interest have been there for a long time. So have the defensive and distrustful behaviors. These behaviors didn't start in college, but college is where they should start to drop away. What the ethnographies in Chapter One describe (at least to me) is a group of students who are still in pupae form: they cocooned themselves for protection a long time ago—well before they got to college—and now they have the opportunity to break out of that cocoon but not necessarily the motivation or the know-how. Unlike an actual cocoon, breaking down or reprogramming years of accumulated defense mechanisms is not just a matter of persistence or physical strength. It takes both courage and encouragement, internal and external resources. "Here's how you do X; now go get a job doing X" doesn't really qualify as encouragement.

What the authors of my selection of aspirational texts describe are heady ideals for anyone to live up to, much less for a set of individuals whose interpersonal skills may lag behind their technological skills or even sometimes get in the way. In my view, this

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particular set of ideals is also *eminently* worth striving for. They are ideals which don't require a specialized background or training to support or appreciate, but hackers are especially well suited to act as the "voice of science" that Randy Olson describes in *Don't Be* Such *a Scientist*—not just to evangelize for open-source software or the freedom of information, but more broadly than that: to interact with their peers, their clients, their colleagues, and the media as needed. Paul Graham draws a distinction between hackers and scientists, where the former are makers and the latter are sometimes too focused on being cerebral (he's like Olson in this respect) and thinking in terms of research papers or managerial duties. "Like painting," Graham says, "most software is intended for a human audience. And so hackers, like painters, must have empathy to do really great work. You have to be able to see things from the user's point of view," (30). He describes empathy as "probably the single most important difference between a good hacker and a great one. Some hackers are quite smart, but practically solipsists when it comes to empathy. It's hard for such people to design great software, because they can't see things from the user's point of view" (31).

In order to achieve their full bloom, to become problem solvers on a higher plane, the hackers I work with must be able to communicate well and with empathy. Technical communication must likewise avoid the scientists' mistake of assuming that the core concepts of their field (in this case, the roles of empathy and effective communication in making the world better) are so obvious that they don't need explaining. The distance between a nerd in high school and a computer science major graduating from college is no doubt significant in terms of mental and emotional development; the distance between the same college grad and the self-actualized, participatory, world-rattling hacker

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described in these aspirational texts is greater still. The college experience stops far short of truly preparing its graduates for that kind of ambitious work, and maybe it is beyond their purview. I don't think it is, and I *do* think that communication skills are among the key missing ingredients.

Summary

In this chapter I have described the theoretical and practical underpinnings of my pedagogical blend: genre and writing research mixed with activity theory and a healthy dash of cognitive empathy. I have also examined some of the recent research and theories on brain function that inform my tech-comm-as-teaching metaphor and my expectation that giving students (computer science majors and non-majors alike) a solid, relatable model for how to more empathetically conceive of one's audience will lead to improved communication skills as well as a foundation for ethical awareness and community engagement. In the next chapter, I will describe my course plan and assignments, the instruments I used for gathering data from students, my research questions, and the methodology I applied in the course of my study.

CHAPTER III

THE COURSE AND THE RESEARCH

Teaching Philosophically

Chapters One and Two described the theories and context which underlie my pedagogical choices and my motivations in approaching writing instruction as I do. This chapter presents the makeup of the student cohort in the class that serves as my dataset, the details of my Introduction to Technical Writing course, and the methodology used in analyzing the dataset. I will explain how my assignment choices, readings, class discussions, and overall course design are intended to work together to help my students achieve a better understanding of the basics of technical communication. The course design is also meant to improve students' ability and willingness to exercise cognitive empathy, or a thoughtful awareness of the needs or perspective of others, as a part of their writing and audience analysis. As I discussed in Chapter One, one of my goals for this experimental course is to encourage my students to think more deeply and broadly about how they interact with the digital world, not as an isolated concept but in concert with their personal and professional writing practices. My philosophy of teaching, which naturally informs my teaching style in all of my writing classes, can be distilled to produce the following five goals for the people I teach:

Goal One: To write well and to see writing as something they can enjoy as a part of human interaction.

Goal Two: To think about their audiences as people with human dignity and individuality.

Goal Three: To recognize that the technical writer helps other people who are trying to do work in the world, and comprehending that work is an important part of the technical writer's job.

Goal Four: To be aware of their role in activity systems and how they can best interact with other professionals in those activity systems, including other technical and professional writers.

Goal Five: To expand their awareness of how they can contribute to the digital world.

These goals emerged in the above form as a part of my discussions with my dissertation director and my ongoing efforts to parse and explain my own deeper motivations; previously, they floated through my mind unseen and unarticulated. I would not put them on the same level as my learning outcomes for the course, though they definitely inform those learning outcomes. Rather, these are aspirational goals which guide my ongoing reflection on and revisions to the course materials and assignments. Cognitive empathy is an important component here and in my explicit learning outcomes as well, because it relates to how or whether students will take the needs of others into account as part of their decision-making processes.

In our class textbook, *Technical Communication* (10th Edition) by Mike Markel, the author lists "care" as one of the four parts or standards of ethics and ethical treatment. Citing ethicist Manuel G. Velasquez, Markel describes the application of care much as one might describe empathy: "This standard concerns the relationships we have with

other individuals. We owe care and consideration to all people, but we have greater responsibilities to people in our families, our workplaces, and our communities" (19). Markel's treatment of ethical matters throughout the textbook (a full chapter on the subject, plus "Ethics Notes" in other chapters) is one of the reasons I selected this textbook for my 249 class. The other three standards from Velasquez are human rights, justice, and utility; taken as a whole, these four standards can be re-framed as components or descriptors of digital citizenship as well. While it would be possible to teach an introductory course in technical communication without discussing the importance of ethics or of thoughtful treatment of others in our writing, I wouldn't be comfortable doing so. That said, the class is not a course on digital citizenship or ethics, so these aspects are treated as components of what it is to be a technical writer rather than the primary focus of the course.

During my time at ISU, as I learned more about teaching and more about technical communication, I started noticing parallels between them. It would be reasonable to argue that teaching is an act of technical communication, and in turn it's fair to say that technical communication is often comparable to the act of teaching. By asking technical writing students to think of themselves as teachers and showing them how to teach, I am making use of their extensive experience as observers of teaching and helping them to reorient their own approach to gathering and sharing information and knowledge with their fellow humans. Broadly speaking, technical communication and teaching share several attributes in common: both are concerned with the conveyance of complex subject matter to audiences of mixed expertise and with explicit accommodations built in for those who are not already experts; both rely on user, reader,

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or student feedback and multi-directional discourse (in many forms) for self-correction and improvement; both have a strong interest in the creation of new knowledge as opposed to simply rearranging existing knowledge; and both are interested in the ethics of knowledge and its use and distribution in society. My emergent awareness of these commonalities is what initially drove me to start using the tech-comm-as-teaching metaphor in my classes. The semester-long experiment blends activity and genre theories with pedagogical practices, not to create an entirely new worldview for students but to reveal and reinforce the idea that they are already part of a network of activity systems of information design and dissemination, and that their prior and current experiences with teaching can help them to enhance their performance within those activity systems.

My research questions are as follows:

1. How does the metaphor of technical communication as teaching impact students' perception of their work in technical writing?

2. How do students discuss or demonstrate empathy, ethics, and engagement in their reflective writing about the work of the course?

3. How do student perceptions of their role as writers and writing researchers within a larger activity system impact their work in technical writing?

The qualitative data for this study is largely connected to students' ability to analyze, reflect upon, and possibly alter or improve their own thought process—particularly with relation to their writing and their self-perception *as* writers. Students are sometimes asked to respond to these questions directly, as in the surveys, but more often their responses come in parts collected over the semester. Note that all three questions deal with or leave room for some alterations that may take place, and those alterations are anticipated to

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occur gradually and in a non-linear manner rather than as a rapid or complete transition from one state to another. Thus, students are queried repeatedly throughout the semester (especially by the GUS) about their writing and research processes and their perception of those processes. Major data collection (involving most or all students) occurred roughly every three weeks, while other data collection occurred based on the individual students' choices throughout the semester (as with periodic journal entries).

The dataset includes several different types of student assignments (see the Course Details section below) and responses to three surveys administered via SurveyMonkey. Because the data is mostly qualitative rather than quantitative, a modified Grounded Theory approach will be employed in the analysis (see Research Methodology). Data was gathered electronically as assignments were submitted via Google Drive, email, or SurveyMonkey. Portions of the total dataset have been copied to a custom Microsoft Access database which I wrote as a data analysis and reporting tool. I have extensive experience in this type of database design, having worked as a database programmer and consultant (specifically with Access) for the past 15 years.

Student Details

Primary data for this analysis was gathered from students in my Fall 2014 Introduction to Technical Writing course (ENG 249) taught at Illinois State University. Prior to this, I had collected data from another class in Spring 2013; that data was used to fulfill the pedagogy portion of my comprehensive exams. Institutional Review Board (IRB) approval was sought and received for the Spring 2013 cohort under **Batch Protocol 2012-0168**, and for the Fall 2014 cohort as an extension of the same Batch

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Protocol. The Spring 2013 group will be treated as a backup dataset for this analysis; some findings from the primary cohort may be checked against the secondary cohort, but the focus will be on the Fall 2014 students and their data. References to "the cohort," "the class," or "the students" will indicate the Fall 2014 course unless otherwise specified.

ENG 249 is capped at 16 students and typically sees full enrollment. The Fall 2014 class had 16 students. Two students declined the consent request that was administered at the beginning of the semester; specific details from their course materials will not be cited here. The *n* for this study is 14. The most common category of student in this course is a male computer science major. The Fall 2014 cohort had 14 males and 2 females, and 9 CS majors and 7 non-CS majors (three of these were listed as undeclared, which is unusual). Non-CS majors include English, biology, and journalism. For reporting purposes, all students have been given a gender-matched pseudonym. The list of participant pseudonyms and majors is below (Table 1).

Table 1
Participant Pseudonyms and Majors

Pseudonym	Major
Arvin	Undeclared
Brett	Network & Telecomm Mgmt
Chad	Information Systems
Earl	Political Science
Felix	Network & Telecomm Mgmt
Greg	Information Systems
Harold	Biological Sciences
Irving	Network & Telecomm Mgmt
Jane	Information Systems
Keith	Information Systems
Lance	English
Ned	Information Systems
Otto	Information Systems
Percy	English

Source: Fall 2014 Cohort Roster (IRB Consent Given)

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Selecting a good, representative sample is critical to most research. Janice Morse, in describing the principles of qualitative sampling, says that "[i]t is necessary to locate 'excellent' participants to obtain excellent data" (231). Excellent participants or informants in either ethnography or grounded theory, she says, are those who have been through or at least observed the experience or phenomena being investigated (231). In one sense this is an impossible task for my research; my participants are in the class specifically because they haven't had it before. They are also in the class by their own choosing and not because I asked them to join. This puts my cohort into the category of *convenience sampling*, where the participants are selected on the basis of accessibility, as opposed to *purposeful sampling* where the participants are selected more deliberately through interviews or other screening (Morse 235). The pitfalls to avoid with a collection of convenience samples, Morse notes, are "ignor[ing] variation within the experience, or with the sample; defin[ing] the phenomenon too narrowly, because of the lack of variation, and not scoping adequately to identify the boundaries; [and] terminat[ing] sampling too soon…because 'no new data are emerging'" (235). On the first and second points, I can only say that I kept them in mind as I coded and analyzed my data; on the third point, the finite nature of a college course (not to mention an IRB) terminated sampling for me, but I gathered data at regular intervals throughout the semester.

Course Details

At Illinois State, ENG 249 and other composition courses are typically taught in a writing lab equipped with computers for each student. This allows students to conduct course work and related online research during class time. The Fall 2014 course was

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taught in a Macintosh lab (room STV 408). Some additional learning curve issues were present in the Mac lab, as most computer science students (and the instructor) were more familiar with PCs than with Macs; however, this does not appear to have had any significant impact on the course outcome. The course's printed or digital materials included a first-day syllabus, learning goals for the class, the learning contract, three online surveys, a list of exercises and assignments for each of the four projects, some articles and other outside reading matter, and a textbook on technical writing (Mike Markel's *Technical Writing*, 10th Edition). I also provided some materials and lectures on teaching and a frank explanation of my reasons for this approach to the class. I explained the nature and purpose of the course's experimental component early on, partly to reassure them that my experimentation would not interfere with the "regular" tech writing components of the course and partly to extend an invitation to join me in the experiment.

Students worked in groups of 3 or 4 which were assigned in the second week; each group worked on four assignments together (for course projects 1 through 4) as well as on their own individual assignments. The four projects can be broadly categorized as an introductory document analysis, visual rhetoric and design, instructions, and open-source or collaborative documentation. The full course plan (not including my First-Day Syllabus) can be reviewed in Appendix D. Although I am always interested to see the actual documents the students produce, I am at least equally interested in their thought process in researching and creating the assignments—and in getting *them* to be aware of and interested in their thought process as well. For the last several semesters, I have captured this metacognitive information in a document I call the Genre Understanding Sheet (GUS; see Appendix A), so named because it produces a tidy acronym. The GUS

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asks them to reflect in depth on the work they just did, and its questions usually break down along the conceptual lines of the course's learning goals (Appendix C). For this course, I added two questions that deal explicitly with the concept of technical communication as an act of teaching. The reader may recall that I employ this metaphor as a way of re-contextualizing the work that a technical writer performs. This provides students with something very familiar (teaching and learning) that they can latch onto, and it also provides a solid base on which to build a case for the importance of empathy (or care, as Markel might put it) in our interactions with others.

Grading for each class was contract-based (see Appendix E; Danielewicz and Elbow 2009), meaning that students were guaranteed a final grade of B as long as they fulfilled the terms of the contract, such as turning in all assignments and meeting a minimum standard of quality in their work. Students also had the option to turn in advanced assignments to bump their grade up to an A (or to offset a regular assignment that just didn't go well). The flexibility in how the students approached their individual or group assignments is not only (typically) appreciated by the students once they get used to it, but also allows them to spend more time on the self-analysis portion of each assignment. As noted in Chapter Two, my pedagogical strategy for all of the courses I've taught at ISU has been heavily influenced by a genre-based approach to writing research. The genre approach and the grading contract were not new to me for this course; however, every semester I find at least a few small ways to improve my methods, explanations, or assignments.

Three surveys were conducted to assess student perception of teaching activities in general and as those activities relate to the student's own coursework and future career

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work (see Appendix B). I've used these surveys in every ENG 249 class since Spring 2013, though only the IRB-approved responses will be discussed here. The surveys were treated as regular class assignments, intended to help both me and the students to gauge their initial understanding of concepts and their later progress. Survey exercises were used in place of free-form essays in order to reduce the nervousness factor that may come with being asked to write a self-analytical essay of this type, and to help keep student answers constrained to the topic and free of ramblings. The first survey was given at Week 4 of the semester, the second survey at Week 10, and the third survey at Week 15. The surveys were administered via Survey Monkey. Other materials collected include the students' regular written assignments, student evaluation of their own performance on those assignments (the GUS), and research journals kept by each student. The surveys, self-evaluations, and journals provide a means to observe the students' own perceptions of this approach and its effectiveness in helping them to navigate between the roles described above.

I drew on several sources in constructing a framework of "what it is to teach" that would serve this course's purposes, including Carnegie-Mellon University's Eberly Center, the Danielson Group, a revised and updated version of Bloom's Taxonomy (courtesy of Rex Heer and the Iowa State University's Center for Teaching and Learning), and my own experiences and observations as a teacher for the past 21 years (13 in corporate training and 8 at the university level). The construction of this document is by no means complete, and the research revealed—perhaps not surprisingly—that the concept of "what it is to teach" is unsettled and sometimes contested. The document was used, therefore, as a loose guideline rather than a roadmap. I expected that the students'

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interactions with the material would likewise be uneven. It was anticipated that students would have at least a rudimentary concept of "what it is to teach" of their own, based on their life experiences to date, which they would be able to draw on and add to over the course of the semester. As we will see, however, this prior knowledge will serve as both an asset and a possible impediment to development.

The Carnegie-Mellon document and the updated Bloom's Taxonomy document ended up getting the most vigorous workouts in our class discussions, probably owing at least in part to their visual elements. The Carnegie-Mellon document also had the added benefit of a simple triad of teaching components: Learning Objectives, Assessments, and Instructional Activities. We frequently touched upon these three in our discussions, mapping them onto our writing activities where we could and making note of where that mapping didn't seem to work. It was not my intention to provide a set of fixed rules for teaching, although I know at least some of my students would have preferred that—in fact, the point of blending several different sources for what's involved in teaching or learning was to illustrate that there are many paths available, and that the teacher or writer has to do some analytical work before (and while, and after) selecting a path just as they do with the genres they're writing in.

In August 2013 I attended a Future Professors Workshop put on by ISU's Center for Teaching, Learning, and Technology (CTLT). The workshop was quite productive, and I was able to put some of the ideas into use right away. I added a "Big Question" to my Intro to Tech Writing class that fall, as well as several short in-class writing assignments. The Big Question is meant to provide a scenic overview of the course, and its purpose is to give students something easily remembered that they can take away and

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reflect on well past the course's end. It is similar in purpose to Markel's first chapter: he describes the characteristics of a technical document as addressing particular readers, helping readers to solve problems, using design to increase readability, and so forth. He augments these characteristics with "measures of excellence" in technical communication, including honesty, clarity, accuracy, comprehensiveness, and others. I found these two sets of descriptors valuable, but I also wanted to provide a second perspective that might be easier for students to recall later. The Big Question I crafted for this course is "How do we successfully explain complex things to others?" The wording was carefully chosen so that I could drill down on each component word (with an assist from PowerPoint) in class as a part of our discussion about what it is to be a technical communicator. A text-only version of the slides can be found in Appendix F. Starting in Fall 2013, I modified the GUS and Survey 3 to include references to the Big Question.

The short writing assignments, which CTLT instructors called "One Minute Essays," are low-stakes discussion-starting devices. The One-Minute Essay tool proved to be productive in starting conversations in this class and in my Business English classes; originally I asked students to write their answers down on 3x5 cards, but I eventually switched to having them type up their answers in a shared Google Drive document or emailing their answers to me during class. I used a variety of different questions depending on the discussion I was trying to jump-start, but the most fruitful and revelatory question by far was one I started asking on the first or second day of each new semester: "What role do you think writing will play in your personal and professional life?" At the end of each semester, I gave each student a copy of their earlier answer and asked them to reflect on how or if they'd changed their mind over the past few months.

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Regrettably, no data was gathered on this baseline question from Spring 2013.

The semester's work is divided into four projects titled One through Four. Except for the first project, I generally provide multiple assignment choices for both group and individual work. Students select one group assignment and one individual assignment for each project, with advanced (extra-credit) assignments also becoming available starting in Project Two. In Project One, students are introduced to the field and practices of technical communication (using Markel's descriptions and my own). We review the learning goals for the course (Appendix C) and the concept of genre and writing research using in-class exercises and explanatory handouts that I've produced and refined over the past few years with help from my colleagues. I also introduce the metaphor of technical communication as an act of teaching, and that metaphor recurs in assignments and discussions throughout the semester. The group and individual assignments for Project One ask students to analyze documents that they've found and brought to class on the third day of class for this specific purpose (with the option to replace those documents with better choices as their understanding of technical communication improves). The individual assignment for Fall 2014 also asked students to write an instruction set for imaginary colleagues who wanted to produce the kind of document being analyzed.

Project Two introduces the idea of visual rhetoric, and students are asked to integrate graphics, illustrations, charts, and other visual components into their document design. Two cases from Markel's textbook are used as the group assignment choices: "Design an Informational Flyer," Case 11 on page 303, and "Create a Report with Graphics," Case 12 on page 347. The individual assignment options are to create a persuasive advertisement for their academic department (though I expressly rule out

flyers for this assignment), or to create an infographic in support of a new exhibit at a museum or zoo (this option was added after the Spring 2013 class was finished). The advanced assignment option for this project is to create a Quick-Start Guide for a common household object of their choice. Beginning with Project Two, each assignment also requires the completion of a GUS (Appendix A) in which the students analyze and evaluate their own work.

Project Three covers instructions and documentation. We return to our discussion of technical communication as teaching in this project, as well as an examination of how teaching and learning generally work (as described above). The group choices are to create one of three types of guides for a small technical communication consultancy: a netiquette guide, a human resources policies and procedures guide, or a training guide for new technical writers joining the firm. The individual assignment choices are to create a guide or tutorial for a particular piece of computer software (of their choice), a written plan of study for a new student who wants to major in the student's own field, or a guide or tutorial for a moderately complex non-software task of the student's choosing. This last option was added with the input of students in the Spring 2013 cohort. The advanced assignment asks students to create an improved version of an existing set of instructions (such as the side of a food package) and using the same dimensions, font, and other restrictions as the original. For all of these options, I encourage students to bring the lessons of Project Two forward with them and design their instructional documents both visually and textually.

Project Four could be considered the "digital citizen" project, though it's my hope that all of the projects feed into that concept at least a little. In this project, students are

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asked to find, analyze, and create or contribute to documents in the larger world outside the university. With a semester of practice behind them, students reprise their group work in Project One by selecting a non-profit organization and then analyzing and critiquing some of its online documentation. The individual assignment options ask them to find a collaborative website, wiki, or other open-source project that interests them. Students can either write up a detailed proposal for changes and additions (addressed to the site or project managers), or make actual contributions to the site or project using their best technical writing skills. The first advanced option invites students to create a wiki (a user-editable online repository of information) for (a) new and current students in their major, (b) a club or group they belong to, or (c) their current employer. The second advanced option is to write a proposal for such a wiki, addressed to the appropriate people.

The course also has a set of floating assignments which are not tied to any specific project. These assignments include the three surveys on teaching and learning (Appendix B), a weekly journal documenting their observations, understandings, discovered connections, and other thoughts connecting our class with some other aspect of their lives, and two additional advanced assignment choices (Appendix D). Except for the surveys, these assignments are due at the end of the semester. I ask students to write roughly one journal entry each week, though they sometimes get bunched up toward the end of the semester.

The types of work I asked my students to produce could be divided into two broad categories: proof of performance and proof of reflection. Performance-focused documents are evaluated primarily on whether the student has performed the genre successfully and appropriately (meeting the specific terms of the assignment description

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and the general terms of the learning contract). Their understanding of the performance and the research and other knowledge-work that went into it is evaluated in the uptake documents described below. These documents are assessed quantitatively and qualitatively; quantitatively in that some standards of acceptable quality are expected for their writing, research volume, layout and design, and other genre attributes, and qualitatively in that some allowances are given for mediocre performance which may be shored up by a strong self-analysis. Reflection may also be referred to as self-analysis, metacognition, or uptake (though that term has a related but different meaning in genre studies). For my classes, documents in this category are evaluated primarily on whether the student has articulated (1) how they went about researching, analyzing, creating, and/or revising the assignment, or (2) their understanding concepts and connections to other work, classes, or ideas. These documents represent the bulk of the qualitative data gathered during the study. Reflection exercises were deployed as one-time tools to gauge understanding before moving on and as repeated periodic snapshots to measure a person's changing understanding over time. Performance and reflection are factored into their grade on each assignment, per the terms of our learning contract. This two-part approach is one that I've used for the past several years at ISU, and (to my way of thinking at least) it's an outgrowth of the genre and writing research approach employed by the Writing Program.

The full dataset for this study includes individual responses to three online surveys, group and individual responses on the Genre Understanding Sheet instrument, in-class responses to two One-Minute Essay exercises (OME1 and OME3), and periodic journal entries made by each student between August and December. For reasons

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unknown, four students chose not to turn in their journals at the end of the semester. Two students also did not submit individual assignments for one project (Projects 3 and 4, respectively), and two students were absent on the day that OME3 was administered in class. Under our learning contract, students had the option to turn in additional advanced (extra credit) assignments to raise their grade or to offset an assignment that didn't go well; a total of 12 of these assignments (which included a GUS) were turned in. All of the data was collected in digital format and every instrument included a date stamp. Total volume of collected data for the Fall 2014 cohort stands at approximately 130,000 words. Using Microsoft Access XP, I created a relational database to warehouse this data, breaking it out into appropriate tables and fields to allow for flexible analysis by date, by code or code category, by respondent, by instrument, or by specific questions on an instrument. During and after the coding process, I used Access's querying and reporting tools to summarize the codes and look for patterns or heavy uses of particular codes or types of codes; this facilitated, but did not determine, my categorization process in the later stages of my analysis.

Research Methodology

The methodology I've selected to analyze my data is grounded theory. This inductive methodology was developed by sociologists Barney Glaser and Anselm Strauss and first applied in their 1965 book *Awareness of Dying*. Over the next few years, Glaser and Strauss produced two more books describing and illustrating their theory: *The Discovery of Grounded Theory* (1967) and *Time for Dying* (1968). In the 50 years since its introduction, grounded theory has experienced numerous splits and subdivisions,

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including a rift between Glaser and Strauss over the best way to follow and apply their theory to qualitative data analysis. The theory has also benefited from refinements and expansions by researchers in other fields. Because this theory is intended for use with qualitative rather than quantitative data, particularly (or at least originally) data involving human participant responses or behaviors, it appeared to be a good candidate for use in my own work.

One of the more challenging facets of grounded theory, at least based on my initial readings and impression, was the need to approach one's data without preconceptions, to hold off on reviews of literature or other boundary-establishing devices or practices until later stages of the research. I have been working on this general approach to teaching technical communication for several years now; I've read many dozens of articles and written my comprehensive exams and other papers around it (though sometimes indirectly). It would be hard to honestly call myself "objective" in the sense that I lacked any preconceived notions of what I'm interested in. In their introduction to *The SAGE Handbook of Grounded Theory*, Antony Bryant and Kathy Charmaz address this issue directly. "First, in keeping with [Ian] Dey, an open mind does not imply an empty head" (Bryant and Charmaz 20; Dey 176). Researchers can hardly avoid having *some* preconceived ideas about what is to be researched and the directions it might take them. "Second, the advice about postponing exploration of the literature usually emanates from experienced researchers, who themselves have developed an extensive knowledge of a vast mass of literature together with a generally familiarity with key topics and an array of concepts at their fingertips" (Bryant and Charmaz 20). As someone who is still becoming experienced with this type of research, I strive for a

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balance between relying on literature to frame my research and a reliance on my ability to analyze the data in a way that will yield and populate its own framework.

While maintaining that balance has been challenging at times, especially when I find a new or interesting article and I'm tempted to review my data or codes in that new light, overall the process of applying a grounded methodology has been complex but manageable. More than a few times, the people whose thoughts and works I'm analyzing have surprised me, and keeping an open mind to what I might discover has proved fruitful. Researcher Margaret H. Kearney, a student of Anselm Strauss, observes that Strauss was keenly interested in studying human complexity. She begins her own article on grounded theory with a prefatory quote from Strauss:

> Complexity has fascinated and puzzled me much of my life. How to unravel some of that complexity, to order it, not to be dismayed or defeated by it? How not to avoid the complexity nor distort interpretations of it by oversimplifying it out of existence? … Abstraction (theory) inevitably simplifies, yet to comprehend deeply, to order, some degree of abstraction is necessary. (127)

Strauss's theorizing about human complexity, Kearney notes, "was grounded in systematic comparisons of findings from distant and disparate sources" (127). Although he was confident in his conclusions, he remained interested in other variations that might emerge as well (127). My own interest in complexity has led me to combine technical communication, teaching, writing research, computer science majors, and a host of other variables in the pursuit of an alchemical transformation (in my students) from one state to another. I choose this phrasing deliberately because my course goals and course design

are driven by factors that I haven't always been able to articulate, even to myself. Like the application of grounded theory itself, the dissertation process has been an emergent one—my ability to articulate what I *sensed* should work or could be a boon to these students has improved and sharpened considerably over the past few years.

While I am not far enough along in my research or my understanding of grounded theory's subtler nuances to attempt grounded *formal* theory yet (which is what Kearney writes about), I recognize the value in appreciating complexity. As Kearney says, "[g]rounded theory analysis can portray conclusions as dynamic and interactive, rather than as a single common outcome" (128). Instead of claiming or requiring claims such as A always leads to B, a fully developed grounded theory allows more room for complexity: "the degree to which A leads to B and what that relationship looks like depends on a range of factors that influence A, B, and the relationship between them" (128). Unlike most other research methodologies, grounded theory reverses the relationship with theory as it might inform the research being performed. Grounded theory's function is to allow one or more explanatory theories to emerge organically from the data being analyzed, rather than to mark the data as conforming or failing to conform to an established theoretical framework.

Grounded theory application often calls for much more time to reflect on one's data and coding than my dissertation schedule would allow, so I have accelerated some parts of the coding and memoing phases (described below). Much of my data is in the form of student responses, journals, and self-reflective work; these qualitative and ethnographic data types tend to be well-suited for grounded analysis. Stefan Timmermans and Iddo Tavory observe that grounded theory's origins are rooted in ethnography:

Glaser and Strauss studied death and dying through the interactions of different types of patients and health care providers to produce their first grounded theory book, *Awareness of Dying* (Timmermans and Tavory 493). The growth and diversification of grounded theory as a method has made it into a "versatile method of qualitative analysis" (Timmermans and Tavory 493). I would characterize my data as largely ethnographic, as it consists of student and teacher observations about activities, interactions, communications, and speculative projections which are all of a fundamentally social nature—much like the sociological work of Glaser and Strauss. Timmermans and Tavory note that ethnography "selects for interaction and the interpretation of such interactions in their naturalistic unfolding [and] it aims to learn how and why people behave, think, and make meaning as they do" (497). Grounded theory, they argue, offers both a methodological and theoretical fit and can be used as a means of straddling the sometimes conflicting needs of scholarship. Grounded theory's function is not to verify or falsify any existing theory, but neither is its function to create new theories which have no connection to (or familiarity with) existing works or knowledge (500).

One of the first steps in this type of analysis is coding. Data is examined line by line (word by word if necessary), coding the words, phrases, rhetorical moves, or other events which seem to stand out (Holton 275). This process yields an initial set of codes, although not all codes will necessarily remain in use. More importantly, the codes themselves are not meant to act as markers of fact but as a means of illuminating patterns in the data. The functional role or purpose of coding is to disrupt or "fracture" the data (Holton 266). Judith Holton describes it as a necessary first step before the researcher can "conceptualiz[e] the underlying pattern of a set of empirical indicators within the data….

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Coding gives the researcher a condensed, abstract view with scope and dimension that encompasses otherwise seemingly disparate phenomena" (266). The codes are not treated as absolutes but as possibilities which might arise, merge together, split apart, or even submerge again over the course of the analysis (Holton 274-275). Theoretical sensitivity, or the ability to generate concepts from data and relate them to one another in a logical and pattern-seeking fashion, is a key skill for this type of work (Holton 274-275). It is also a key skill in relational database design, though it's not called by the same name.

My coding process took place across a span of several months, and one could argue (based on most of the grounded theory texts I've read) that the coding period never really closes. As I noted above, it's necessary to strike a balance between coding to the point of theoretical saturation (when no more codes or categories seem to emerge) and the desire to re-fracture and re-re-fracture the data based on some new article or idea (Holton 281; Bryant and Charmaz). The mechanical process of coding can be done in a variety of valid ways. My dissertation director showed me his collection of hand-written codes and related notes for his own thirty-five-year-old dissertation research. Several companies offer qualitative data analysis (QDA) software to help automate (or at least semi-automate) the coding process or an analogous stage. Because I'm a computer nerd, I was sorely tempted to try one of the QDA software packages, but they were all prohibitively expensive. Instead, I developed a database in Microsoft Access to assist me in this process. I have over 20 years of database design and consulting experience, and initially I believed that this experience would make the coding process go much faster. This turned out to be a trap, and I was not the first to fall into it. Holton titles it "technology entrapment," and Barney Glaser dedicated two chapters of his 2003 book to

the problems with computer-assisted data collection and analysis (Holton 287). The irreducible quality of conceptual ideation (memoing, rolling the ideas around in one's head while coding, and other ruminations) means that this vital component of good grounded theory has yet to be replicated in software (Holton 287). My database was not designed to automate the process but to offset my own weaknesses (including bad handwriting and a messy desk). Organizing and managing data (but not desks) is a skill I have dedicated half my life to, so a good database tool seemed both natural and essential.

As I worked my way through the data, I started to get more and more frustrated that the patterns I'd expected (not specific patterns, but any patterns) were slower to emerge than they should have been. My prior database experience had prepared me well for analyzing quantitative and demographic data, such as inventory changes or customer information, but this was a new and daunting kind of analysis—or so it seemed at first. While discussing the matter with my committee chair, he asked me to describe the work I had done as a database developer. I explained that I had worked with clients in a wide variety of industries, and gathered information on how the client's company worked in order to design software which would support that work. I said that it was very rare to find a client who could look at their business from a data perspective without being guided to that perspective; it was my job to construct, with their help, a model of how data and information were generated and used by their organization. My information-gathering process involved interviewing people, analyzing representative reports and other documents that were currently being produced some other way, and asking pointed questions about office policies or procedures that were sometimes fuzzy even to the people who worked with them every day—all of this constitutes the "findings from

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distant and disparate sources" mentioned by Kearney. I was less articulate in my initial explanation than here, but my chair took in the details and suggested that what I had done for these clients was actually quite similar to the work of grounded theory: I was trying to construct a theory of how the client organization functioned, building it from scratch in order to produce a testable model. "You just blew my mind," I told him, and he had.

The two essential research questions for every client's database were "How does data emerge and flow through this organization?" and "How does this organization use its data to produce information?" I think that, without recognizing it, I had been trying to answer these two questions alongside my other three research questions. Once I realized that my frustration stemmed from trying to apply my skills in a way that simply didn't match the task, I revised my expectations for the coding phase and made better, less frustrated progress. I used the database's tools to aid in searching for some types of phrasing that seemed to be consistent from student to student, which helped me to more quickly find pieces of text that might warrant specific codes. For example, students showed a tendency to preface or supplement many of their assertions with a declaration of their major or future career, usually phrased as "As an IT major" or "Since I'm a student in X department" or similar. I was able to search for variations on this phrasing pattern, review the text, skip false positives, and add codes to the data more quickly and reliably as a result. I also reviewed the data manually and carefully for other, less-obvious patterns or subtleties in my students' thoughts and observations. The database was particularly helpful when I wanted to focus only on one instrument at a time or on responses to one or two questions within an instrument. The dataset for Fall 2014 was over 130,000 words, so the ability to zoom in and focus on smaller, more manageable

slices of that novel's worth of text was critical to both my progress and my sanity.

Trailing slightly behind the coding phase is a process called memoing. Memos are "narrated records of a theorist's analytical conversations with him/herself about the research data; as such, they provide particular ways of knowing" (Lempert 247). Memos are essentially notes about codes, including real-time speculation on how the codes are shaping up and what patterns or categories seem to be emerging. I wrote my memos in a regular word processing document (usually in Google Drive because of its ubiquitous availability). The purpose of the memoing process is not (necessarily) to generate text that will become part of the final document, but to capture the researcher's musings and *in situ* analysis as it occurs. Lora Bex Lempert describes them as "analytical locations where researchers are most fully present, where they find their own voices, and where they give themselves permission to formulate ideas, to play with them…and ultimately to distill them" (247). The memos can then be analyzed and reviewed as well using the same coding process, although I did not code my memos for this project. The text you are presently reading may be considered a part of the grounded theory process as well. As I generated memos, the process helped me clarify the parameters of new codes, to explain to myself the reasoning behind categories or changes to codes or other adjustments, and to make note of possibilities for future research or analysis.

As I coded and generated memos and thought about codes and memos, some groupings or patterns began to surface. Udo Kelle describes the development of categories as one of "emergence," and he (like other researchers above) mentions the difficulties inherent to "researchers freeing themselves from any theoretical knowledge before approaching their empirical field" (211). Kelle actually suggests that "novice

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researchers…may benefit from using a predefined coding paradigm and thus avoid drowning in data" (211). The fact that I approached my research with specific questions and with a passel of readings in my head meant, in essence, that I had a safety net of sorts to aid me in my descriptions and my categorizations, as long as I could avoid becoming too entangled it in to operate freely. If I'm honest, the memoing process did not end when I stopped writing in the memo doc I'd created in Google Drive; my first attempts at drafting Chapter Four were an extension of this process and were definitely beneficial in shaping, paring, and providing support for the finalists in my categories.

Summary

My Fall 2014 Introduction to Technical Writing course yielded a considerable volume of ethnographic and self-reflective material. Students were asked to write about their writing, to think about their thinking, and to reflect on the possibilities that emerged when technical communication was compared with the process of teaching and learning. The research questions for this study are these:

1. How does the metaphor of technical communication as teaching impact students' perception of their work in technical writing?

2. How do students discuss or demonstrate empathy, ethics, and engagement in their reflective writing about the work of the course?

3. How do student perceptions of their role as writers and writing researchers within a larger activity system impact their work in technical writing?

The sources of data include three online surveys, at least four GUS responses per student and four per group, answers to two in-class writing exercises, and roughly 10 journal

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entries per student, spread across the semester. To analyze this data, I employed a modified grounded theory approach and constructed a database to help organize and track the data and to facilitate my coding process. After a period of coding and memo-writing, I began to gather the codes into categories. In Chapter Four, I will describe the results of that categorization process and review what my students had to say using the categories as a lens. Whenever possible, I have reproduced student quotes exactly as they appeared in the original documents. Bracketed edits were used only as needed to reduce ambiguity.

CHAPTER IV

RESEARCH FINDINGS

Introduction

In Chapter Three, I described the Introduction to Technical Writing course and the assignments that produced the data to be examined. In this chapter, I will examine the major themes or categories which emerged from my analysis of the data. This data includes two One-Minute Essay (OME) responses; periodic research journal entries (usually 10 entries per student); long-form responses to three surveys on teaching, learning, and writing; and Genre Understanding Sheet (GUS) responses which accompanied most group and individual assignments.

Chapter Three also provided a basic overview of grounded theory and details of how I used this methodological approach to code my data. The reader will recall that under grounded theory, discrete segments of the data are labeled with one or more customized codes that denote the apparent significance(s) of that segment. I created, applied, and revised codes for my dataset, often at the line-by-line or even word-by-word level. I developed these codes simultaneously with the review of data, informed by this study's three research questions but with allowances for other interesting observations to emerge. I also kept memoranda in a separate document as the coding process moved forward, noting possible patterns or anomalies which could warrant more detailed examination. Once the data was reasonably well-coded, the codes themselves were

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reviewed for commonalities and larger patterns or identifiable categories. These categories, or the most significant of them, will be examined in detail in this chapter. In Chapter Five, I will develop and examine theoretical constructs to ground my observations and put them into conversation with my research questions.

Data Analysis: Activities and Identities

Across all subsets of the data, the two strongest themes or categories to emerge from student texts were activities and identities. *Activities* refers to actions or roles that students described themselves as performing, such as writing, teaching, working, or learning. *Identities* refers to labels, roles, or designations that students applied to themselves, including but not limited to writer, teacher, professional, and student. The distinction between these two might be described as "doing" versus "being." I would like to explore the liminal space between and among these categories as well, with the understanding that some permutations may need to be set aside for future research. Each of these categories covers past (historical), present (contemporary or emerging), and future (projected or expected) events as described by the students. Many, but not all, of the expressions within these categories were either positive or neutral. Negative responses, where the students seemed to explicitly or implicitly avoid or reject some part of the course's work or ideas, will be discussed as resistances. In the earlier stages of my analysis resistance was its own category, but I found that discussing it within the main categories was more orderly and less confusing.

Another category that started out as separate but has been folded into the others is the occurrence of different types of empathy. I'm using the term empathy here to refer to

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cognitive, emotional, or ethical connections made by the student with regard to other people (specific or general) who could or would be impacted by the student's work. Evidence for empathies included direct observations by the student about the needs of others, as well as coding of specific actions the student performed in a response, such as analyzing an outside article and engaging in a discussion (by proxy) about the needs of a particular community or career field. Empathy is usually a type of activity, even if it is sometimes only a mental one. Empathy is also often closely bound up with identity and how a person sees themselves, as that can have some bearing on how well they are able to see others. Some aspects of identity will undoubtedly affect student perception of activities to be performed. Activities will certainly depend in part on connections that are made with other people. Empathies will rest to some degree upon how well one can distinguish between one's own mind and the minds of others, which gets at the Theory of Mind described in Chapter Two. It could be that empathy doesn't fully fit inside of activities or identities, or that it straddles activities and identities in ways that enhance or disrupt those two categories. These possibilities will also be considered along the way.

Activities

On the first day of the semester in Fall 2014, my cohort of 16 students (14 participants in this study) received their initial introduction to technical writing. I had a lot materials to present, such as the syllabus, the course projects, and the learning contract, so we didn't have much time for back-and-forth discussion. I also introduced the concept of genre and writing research (or re-introduced it to those students who had taken English 101 at Illinois State within the past 5 years), but we didn't review it in

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detail at that time. I mentioned the concept of technical writing as an act of teaching and learning only briefly as a theme of the course. Once the other important first-day business was out of the way, and with about 20 minutes remaining, I gave the students a short in-class writing exercise called a One-Minute Essay (OME), a simple but effective device I picked up from some of my colleagues at ISU a few years ago.

For OME1, I presented the question "What role do you think writing will play in your personal and professional life?" and asked the students to email their response to me. I didn't give a specific time limit or countdown other than the looming end of the class session. Every student completed the OME1 exercise. Some typed up and sent their responses quickly, while others continued working up through the end of the class. I told them that this was not a graded exercise and that I did not expect any particular "correct" response. In addition to my introductory lecture, I had also provided most of the course material online through ReggieNet and in the Markel textbook if they had purchased it. Some students' observations may have been modestly influenced by these materials. Student responses to this specific question are valuable to me and to them for several reasons. First, the responses establish a baseline for how students perceive writing going forward, as opposed to what they've done with writing in the past (usually schoolwork). Second, the collection of responses lets me know how much work I'll need to do in order to persuade them that writing in general, and technical writing in particular, will matter in their lives. Third, the exercise gives the students and me something to refer back to as we near the end of the semester. It turns out, however, that their responses were offering me much more information than I realized.

Beginning with OME1 and continuing throughout the semester, every student

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described a variety of different activities that they had previously engaged in, were currently engaged in, or expected to one day engage in. After coding the dataset as described in Chapter Three, I found that activity-related codes exceeded identity-related codes by a ratio of roughly 3:1. In some specific instances, such as writing vs. writer, the ratio was around 7:1. For the most part, "activity" is used here in the activity-theory sense of small literate transactions among humans (and objects) within a particular context such as school or the workplace, often in support of some goal or need on the part of the various participants (refer to Chapter Two for a more detailed review of activity theory). Perhaps because of how the class was organized, the most common activities that students directly described themselves as engaging in were writing, teaching, and researching. These words undoubtedly carried slightly different meanings for each student, and the meanings intended by the student almost certainly moved around or intermingled over time. Similar slipperiness should be anticipated for the identities section as well. In addition to the activities that students described themselves as doing, they also engaged in acts of empathy and community engagement. These are activities that were apparent to me as an observer, but which the students did not generally label or describe as they performed them. This list (writing, teaching, researching, empathy, and community engagement) is not the complete set of student activities, but they are among the most frequently-occurring and interesting for this discussion.

Writing

In comparing the activity of writing to the identity of writer, writing wins by a landslide. Where the identity of writer was invoked 22 times, the activity of writing was

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described over 150 times. Students described writing that they had done, were doing, or would do in a variety of different contexts and situations. The activity of writing met with very little resistance (unlike the identity of writer, as we will see below). It was also mixed liberally with other activities the students performed or described; I will attempt to disentangle some of this in the sections below, but the reader should expect some blurring, blending, or boundary-crossing to occur. Of the 14 responses to OME1, all but two students described writing specifically as it related or would relate to their professional interactions with others (though not all of them indicated a specific profession). Most students invoked current (real) or future (potential) co-workers, customers, clients, managers, and others (sometimes literally "others") for whom they would write. Chad noted that writing "is used on a daily basis to communicate with the people that we support as well as our team members." Harold, a biology major, said that "everything that is done in the field of biology will need [to be] documented for others to read and make their own conclusions." For Arvin, writing would be used for "[k]eeping the customer informed on how we are doing and what we are doing, and also keeping a similar document for ourselves for later reference." Jane described writing (such as emails) as a means of communicating with her "fellow employees as well as with customers."

Otto said that "my professional writing will involve a lot of explanation of any projects that I may be working on," although he didn't indicate who would be on the receiving end. He did, however, add that "correspondence with my co-workers will be a large percentage of the writing that I do." Being able to see writing as an action (or actions) taking place in some context beyond just the mind of the writer or the walls of the classroom is easily connected to the idea of writing *for* others. The texts being

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produced are conveyed to other people in support of some action those other people are taking or attempting to take, or in fulfilling some need those other people have. Arvin described his customers' desire to be kept informed and his peers' desire to have future access to documentation. Brett talked about his daily receipt of "almost 100 emails from clients asking me to debug an issue they have encountered" and writing to "educate peers and management about new technologies." Greg updated part of his employer's website and then "had to write a guide to send out to the users so they would know how to correctly use the webpage and take advantage of the changes that I made." Jane saw writing as useful "to help explain projects I have helped [create] so users or my fellow employees can understand better how to use it as well as what the project is all about."

The exception to these declarations of familiarity emerged when appending the word "technical" to the beginning of "writing." In this class, as in most of my English 249 classes, it was common for students to write initial journal entries describing the fact that they didn't know much about technical writing at the start of the semester (or at least they perceived this to be the case). These observations come from student journal entries made within the first month of the semester. The overall tone is not one of resistance but one of a void ready to be filled. Arvin wrote that "it comes off to me as the writing that no one wants to do but is required to make tasks easier." Chad observed that "one of the things that was brought to my attention that I forgot that there were so many different types of technical writing that in the past, I wouldn't have considered it to be technical writing (ex. the book that Karl brought in that had instructions on how to do many different things.)"

For Felix, technical writing "is not a class or something I have ever thought about

until walking into this classroom. I assumed it was just how I explain my complex task of networking or telecommunications to my boss or CEO of my company or a future company as to why I need more servers." Harold said that "this is my first class focusing on technical communication and writing. During the first few classes we have already started learning a substantial amount about this subject as well as started our first projects. So far, it seems a very important part of technical writing is the genre." Jane seemed happy to update her definition of technical writing:

> Until this class I saw it to be just some long and boring writing that I did not want to do. I didn't realize that even the tiniest most colorful looking junk mail is considered to be technical writing. I definitely couldn't say I was upset when I found out I was wrong, especially after hearing you claim almost every job I will get will require me to produce some type of technical writing.

Keith found Markel's textbook definition to be helpful: "While reading chapter one of our text-book I gained a better understanding of what technical communication is, and what it entails. I always thought of technical communication as writing memos, and other business related documents. However, after reading the text I realize my prior knowledge on the subject was very off base." Otto reflected that "going into this class, my view about technical writing was that it included things like instruction manuals, business memos, and other technical tutorials such as software APIs. After the first couple of class sessions it now seems that the definition of technical writing is far more encompassing than I originally thought." Percy said "I'm currently in this ENG 249 course and I have to admit I have no clue what I'm in for.… Technical writing seems like

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a different type of language to me at this point. It seems much more in depth with the past couple of lectures our teacher has presented to us."

What's interesting to me is how invisible "technical writing" as a thing had been in these students' lives, but this invisibility does not appear to be the result of deliberate denial or ignoring on their part. Once technical writing's parameters, utility, and impact were explained, students nearly always accepted the definition and set to work performing technical writing and (with my encouragement) making mental associations between our work and their lives or the lives of others. As with their ability to situate themselves within a proposed writing context, these students' ability to conceive of an array of other people whose work would be somehow impacted by their writing was also a favorable sign. We did not spend much time discussing activity systems or networks (at least by name) in the early stages of the course, but the students were still able to extrapolate or otherwise predict that such interactions would be tied tightly to their writing. I would describe this as promising because it seems to indicate a decent, if modest, foundation of basic understanding to build on as we worked to broaden their understanding of the activity systems they will participate in.

Teaching

Like writing, teaching was a popular activity among all students and across most instrument types. The total number of codes for teaching activities and writing activities were about the same (in the mid-150s). Every student reported at least some benefit from thinking of our work as an act of teaching, and each of them also said that they expected to teach at some point in their career. A third of them went further and expressed a desire

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to teach in some capacity. Jane responded that "I hope I will be expected to teach others. I enjoy teaching, and feel like I learn from the people I teach as well." Keith wrote "I hope to become enough of an expert in my field that I can help teach others what I will learn over the course of my career." One noteworthy distinction here is that students began the semester with a much stronger sense of what "teaching" was than they had for technical writing. The first survey of the semester, administered at the end of Project 1 but before we discussed teaching at any length, asked students to identify factors of teaching success and failure. Nearly every student across five semesters responded with observations and examples of both failures and successes. Although many of the whys and terminology of teaching received further illumination during our mid-semester discussions, students began the semester as I expected they would, with more than a little insight into the teaching and learning process from their long years spent inside it.

On their own teaching successes:

Jane:

> I was successful in teaching my sister how to do a reverse leap (a dance move). It took weeks until she finally learned it but with practice and patience it was a success. Before I taught her, I had to come up with how I first learned this dance move and interpret it to her. This helped me and remind me of how hard it was for me when I had to learn it.

Harold:

> When I worked at Subway, it was sometimes up to me to teach the new workers how to make the sandwiches properly. I decided it would be best to wait until the store died down before starting to teach how to make the

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sandwich. This made it much easier because we could both focus on what we needed to do. Making sure not to go too fast is important when teaching new skills as well.

Keith:

When I was taking C++ at Rock Valley Community College I helped tutor my friend on C++ coding. It was successful because I made it as simple as possible for him to understand. If he did not understand the example I provided him with I would approach it from a different angle. Most of my teaching with him was informal, because I was also still just learning the language as well. However, my teaching would mainly reflect what was going to be in our next programming assignment.

On successful teaching they had observed or experienced:

Greg:

I believe that it is fairly hard to be generally successful in teaching. A few factors that make them successful include going over material thoroughly, introducing and review material at each lecture, making sure to answer all question in and out of the classroom, and trying to talk on the same level as the students.

Harold:

My physics teacher from a year ago was a great teacher. He would first explain the materials and the equations, showing you how to derive the equation. He would then do problems for the class that directly related to what he just taught us. Having things organized in a clear fashion was an

extremely effective way of teaching.

Lance:

In a geology class I took, we had a checklist to go through to determine what type of mineral we were observing. This proved to be a very useful tool in the course. The idea of a checklist to determine an answer to a problem would be a good method of teaching others how to figure things out for themselves.

On their own unsuccessful teaching:

Otto:

When I've failed to teach someone, it's usually because I move too fast and just assume that whoever I am teaching fully understands the things I've already talked about. It is important to make sure that your student understands what they need to know before moving on to more advanced concepts.

Ned:

I constantly got frustrated when the person was not understanding what I was trying to teach them, and I feel like my frustration rubbed off onto them. As my frustration continued to grow my interest in teaching this individual decreased. I felt that the individual was not listening to me and I did not respond to that very well.

Greg:

I have had to train a few employees on the job before. One example where I was unsuccessful in teaching someone how to do the job was the first

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time I had to train someone. It was very unexpected, which caught me off guard and made me a bit flustered. Had I known that I was training someone prior to my shift, I would have probably been able to prepare a schedule or list of things that I had to go over. I was also somewhat new to the job myself, so I still was testing new routines and finding out more duties that needed to be done day by day.

Keith:

I was teaching my friend how to pitch a baseball, with proper form and placement. I only taught him a few times and I noticed improvement in his form, and overall ball placement. However, it was not the type of improvement I was hoping for. I planned out exactly what I wanted to teach him and I think the key contributing factor was him not really having the drive to improve.

On the unsuccessful teaching they had observed or experienced:

Jane:

One teacher was not successful in teaching me accounting, for he had assumed we (his class) knew the fundamentals, which we did not. We tried asking questions and would only mock us about our intelligence instead of answering our question. I feel he used the 'scare tactic' which demotivated students, as well as me, so that our learning was unsuccessful.

Ned:

Speed of lectures. Little to no interest in subject being taught. Inconsistent teaching methods. Inconsistent assessment methods. Lack of collaboration

amongst students. Lack of feedback from students. Limited methods of assessment/teaching.

Greg:

One teacher that I thought was unsuccessful in teaching has made me skeptical of all teachers on the first day of classes. This teacher was always unprepared, always looking back in the book or notes and based lectures off that, stuttered and was nervous, and generally didn't care about his students.

On the changes in their understanding of teaching at the end of the semester:

Ned:

I now have an understating of how teaching plays an important role in technical writing and communication in total. I know that you need to look at items from the perspective of a teacher as well as a student.

Harold:

I never really thought about how much actually goes into teaching before this class started. I understand the aspects of teaching a lot better now and the level of knowledge have helped me realize that there are many ways to teach. Thinking about tasks in a teaching manner can be both beneficial to yourself and others, I am glad I was able to learn more about that.

Otto:

Similar to the previous question, I realized that I am in the role of the teacher more often than I thought. Since I've been a student for all of my life, I've been able to take my personal critiques and experience with

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other's teaching and apply them to my own. Now that I recognize how often I am teaching others, I can borrow processes from teachers I've had that I think work well.

Jane:

I remember the first time I had to submit a GUS I was very confused and I found it quite hard to answer all of the questions. As the course continued and I had to turn in more GUS's they became almost like a second nature to me because I found myself thinking about each and every question throughout the development stages of my assignments. I believe because of the GUS I can say I think more while I write which helps me teach others complicated tasks more simply. I now constantly make sure everything I write has a purpose and is helping the user understand what I am "teaching" them.

Arvin:

I tend to look at what would the audience I am trying to reach think. I try to thing about if I was them what would I want to know. Looking at my project one tutorial, and the project three instructions I feel like my teaching improvement shows.

Brett:

I always knew that teaching can be a very difficult task depending on the topic and what your teaching goals are. What I didn't know however was the level of difficulty that different teach[ing] goals have. Example, creating is, at cognitive level, much more difficult than simply

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remembering information. I do realize that recalling vast of information can be very difficult but conception creating something from scratch is much more difficult.

During an in-class exercise, Ned provided a particularly thoughtful written response on the role of teaching in our work:

One item that I took from the mini lesson [on teaching] is trying to view written material from the perspective of the student. I feel that is a big theme of technical writing in general, trying to see things from the reader's perspective. Their prior knowledge and experiences actually play a huge role helping them to learn how to perform new tasks and learn new pieces of information and I feel that often times writers overlook an individual's past experiences and knowledge. Another important piece of information that I took from the how learning works article is that students need to be self-sufficient and be able to perform complex tasks on their own. I feel that most of the time procedural documents are followed blindly without much question as to why they are performing a task in a certain way. In this next project I want to help students understand why they are doing this task this way and hopefully they will find an even better way to do it.

Brett responded to Survey 2's question about effective teaching styles with some analysis and application:

For programming classes I always found it meaningful when the teacher would solve a homework related problem with the class. The teachers ask

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the class how to solve the issue and point us in the right direction when we were stuck on the issue. This concept is difficult to adapt to technical writing. I guess I could think about questions the reader would have as I am writing the instructions. Perhaps answer these questions in a logical manner that flows with the rest of the writing.

Chad reflected on the role of teaching in his first individual assignment's GUS:

When writing this type of documents, teaching is very important to make sure that you can explain it to the audience that you are writing for. As an IT person, if you cannot explain and teach your users how to do things or why you want to use certain things, you will not be a successful person in the IT field.

In these last three cases, the student writes toward the future. They aren't simply reflecting on how things went; they are anticipating how things *will* go or *might* go using this new approach. This seems to suggest that some students are not simply looking at teaching as a tool I made them use, but as something they can see themselves using again. The long series of student observations above presents a great deal of material to unpack, although in many cases I think the students explain themselves rather well. I will come back to the subject of teaching (and teachers) in the Identities section.

Researching

Researching is a problematic activity. For reasons I can't fully explain (though I'll try), students in most of my writing classes seem to react viscerally to the word *research*, despite the facts that (a) they've been researching matters of interest to them in at least a

casual way for years, and (b) the powerful and ubiquitous research tools available to them now would make every prior generation of researchers green with envy. These reactions range from sotto voce complaints to outright (written) refusal to perform, usually indicated by leaving that portion of the GUS blank or justifying their lack of research by citing past experiences or common sense. This form of resistance usually stops once they receive their first Fix or No Credit for not having any research. Maybe that's a normal learning curve in other teachers' writing classes too, but it still puzzles me. I introduce the concept of research to my students as something they can do and have done competently, doing my best to encourage them and warm them up to it. I remind them that they're not being asked to show me what they already know about a genre, though if they have experience with a genre they can expand and build on that good and worthwhile knowledge by practicing their research skills. I tell them that performing writing research for new or different situations is a main part of the class's purpose.

My Fall 2014 cohort was less resistant than some others when it came to researching their assignments, but not frictionless. When the Fall 2014 students described their performance of research, 90 percent of the time it happened in response to GUS question 5. Responses in which the student explicitly described themselves as performing research occurred roughly 85 times over the course of the semester, typically phrased as "When I researched" or "During my research" or "While researching," prefatory phrases in a narrative of the research process. They rarely discussed research activities outside of the GUS. Harold was the only student to mention research in his OME1 response: "I am a biology major and there is no other way to get your research and data looked at other than writing the down to hopefully be published." He also mentioned research again several

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more times in his journal entries. In some cases he reflected on the work he'd recently done on our assignments, but in a few entries he wrote about the importance of research to his biology coursework. He also made one reference to his possible future as either a teacher or a biology researcher. I'm mentioning this here, rather than in the Identities section below, because Harold didn't actually use the word "researcher" but implied it: "There may also be the chance that I go into some sort of research for a corporation…." In fact, throughout the body of text I gathered from Spring 2013 and Fall 2014, plus the survey data gathered in Fall 2013 and Spring 2014, the word "researcher" only occurs four times, and *it is never used by a student to refer to themselves*. I will explore the connections between research (and resistances to it) and student identities in Chapter Five.

Empathy

As I described in Chapter Two, the word *empathy* has a variety of meanings—not just in general usage but in a psychological or sociological sense as well. Cognitive empathy refers to the ability to see things from another person's or group's point of view. It requires some emotional awareness, but it is not as emotionally-laden as its counterpart, affective or emotional empathy, which refers to a more intimate sharing of another person's feelings or emotional state. Affective empathy it is distinct from, though sometimes conflated with, sympathy. It also opens up territories of emotional labor and emotional contagion which are well beyond the scope of this project. For our purposes, cognitive empathy is the more relevant of the two. When I ask my students to consider the needs of their audience, or to think about ethical issues in the work they do, these types of mental labor generally fall under cognitive empathy. I am not asking my students

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to make themselves feel what others feel, although I can certainly imagine other writing classes where this might be the case.

Instances of cognitive empathy were fairly plentiful throughout the dataset, though they were not distributed uniformly among all students or instruments. The two most common places for students to try peeking inside the minds of other people were in the GUS and the journal, although sometimes it happened in other instruments as well. In an in-class exercise on teaching and learning, Greg wrote that

> Finding out what the students know or what they are expecting to learn is crucial before you begin teaching. You may have to put yourself in the students, or the final reader of the instructions for our project 3 assignment, shoes to make an educated guess of what they know and base your writing off of that.

Greg also responded to Survey 2 with a positive report on how our approach to technical communication had helped him:

> I think that this concept has helped improve my writing over the past 2 assignments. I always kept the reader in mind and how they would take in and comprehend the information presented to them. For example, I imagined how a person might read an infographic when I was deciding how to organize the information. I also try to think about what a person might know and how much more I need to explain something when writing emails or texts, or even in face to face conversation.

In his GUS for Project 4, Greg wrote a list of productive steps he had followed in response to our Big Question ("How do we successfully explain complex things to

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others?"), and at the end of the list he said that he "thought of the final reader while writing my assignment. I tried to explain in a way that anyone who hasn't played fantasy football before could understand." In Survey 3, which asked about the efficacy of having a Big Question, Greg explained that "This question mostly put me in the shoes of others while thinking about my audience while writing. I felt that I was actually writing to a real audience rather than a teacher or [professor]." I don't take offense at being dismissed as an unreal audience, since this problem (the artificiality of writing for a teacher) has been a regular part of pedagogical discussions throughout my studies at ISU. What Greg's observation tells me is that—for him, at least—the Big Question and related tools and discussions have had the desired impact and helped him construct a more realistic (though admittedly still artificial) audience to write for.

In his response to Survey 2, Earl said that he had "learned to look at things in other people's perspectives to understand how they learn and then change my own way of thinking to explain something in a different manner." In the GUS for Project 3, he offered a similar observation:

> The teaching skills I used in this genre was how to explain things to
> people that I am assuming have zero knowledge in the subject. It was
> tough to sort of put myself in that situation but thinking about it from a
> different persons' perspective made it easier.

Earl continued applying this strategy in Project 4 as well:

> The biggest teaching strategy that I used while creating this document was
> putting myself in my reader's shoes and stripping myself of my prior
> knowledge. I had to assume that not everyone has the same knowledge on

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the topic that I do. I found this to be harder than I thought because it is hard to talk about a topic as a novice when you have spent years learning about a certain topic.

Elsewhere in his Project 3 GUS response, Earl described an ethical issue he had dealt with:

> Some issues that I considered while creating this document was to not assume that this was just going to male hockey players. I was unbiased with gender and age because ethically it would be wrong to assume. That is why there is a gender equal document written and it is intended for everyone who wants to learn.

While he didn't actually say "women" or "females," it seems apparent that he's trying to expand one of his default assumptions—sort of a pre-boarding phase for the assembly of his audience. This type of move happens fairly often, with the student recognizing or realizing that their audience is not only people like them. It may seem like a basic move, but it's an important one.

In one of his early journal entries, Felix reflected on the fact that he hadn't always been very empathetic to his audience's needs:

> When I have written documents for school I didn't stop to think often enough how my writing will impact the audience I am writing for unless I am reminded. This is going to play a big part in future projects and documents.

Later, while working on a video game guide, Felix said he found it helpful to

> put myself in the game and [think about] what I would do if I were this

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new person trying to figure out what to do. If these hints [in his guide to playing the game] were not clear it would deter the new player or a potential new tactic player to be turned off on the game.

In essence, Felix envisioned his game guide as an invitation to another person or people to join the community of players; his projection into the mind of a new player was aimed toward inclusiveness. We will see other variations on this practice in the Community Engagement section further down.

Jane described herself as "a very social person" in her Project 1 GUS as a preface to explaining her teaching style:

> Reading people's signals as to if they are understanding the material as well as if they are bored of the material can definitely sway what/how I explain things. If I see that my audience is not understanding something I will take more time on the subject.

Later in the semester, Jane relayed a story in her journal from another concurrent class:

> Even though I'm majoring in IT, programming is not my strong suit, so when highly skilled group members were complaining about all of the written documents we need to turn in for the final project, I gladly accepted the responsibility. When I saw one of the documents that need to be turned in was a User Manual, I smiled so big and immediately thought of this class. In this journal I will briefly discuss a few things I learned from this class that made me extremely confident in the User Manual from my IT 391 class of which I had to present to a real client. Explaining Complex Tasks: My group created a website for a private Chicago

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suburban tattoo parlor who has little to none computer skills. Because of the client's lack of computer knowledge, I knew that the information, experience, and tips I learned from creating assignment 3 and explaining complex tasks throughout the semester, were key. I simplified or defined technical terminology, gave many examples, used many pictures, and explained even the simplest steps in great detail to ensure my client feels confident using/updating the website without our help. Analyzing Your Audience: If I were to allowed to take only a sliver of the course knowledge with me after the semester, it'd definitely have to include Chapter 5 in the textbook on analyzing your audience. It's because I got to practice analyzing all different kinds of users while working on my assignments, that when I analyzed my client in terms for writing the User Manual, it came to me like second nature. This proves practice makes perfect.

At the end of the semester, she applied her empathetic skills to another real-life audience when she made wiki contributions for Project 4. From her GUS:

I also considered the members and/or creators of the wiki when I wrote my entries. I didn't want to hurt anyone' feelings and at the same time I wanted them to keep my posting on the site, so I chose to incorporate what the wiki originally had posted in my entry. I like to believe this made the owner of the wiki happy.

In her final journal entry for the semester, Jane expressed how happy she had been to see her writing published on a site for people who shared some of her interests, and that she

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could see herself making more and different online contributions in the future.

In addition to encouraging my students to think explicitly and empathically about their audiences, I've asked students in many classes to think and write about ethical issues in the GUS, starting with the first iteration of that instrument several years ago. What I have found over and over again is that ethical issues are nearly invisible unless they are glaringly obvious, Sunday-school-primer violations such as "Don't steal" or "Don't lie." These are the two most common actions that come up when students in any of my classes write about possible ethical matters in their assignments. I have yet to devise a universally successful method of explaining ethics as a broader social construct in a one-day lecture or short handout, but I keep trying. What works better than a single comprehensive (and perhaps overbearing) lecture is repetition: bringing up the subject regularly, so that it doesn't seem like something from last week's or last month's lecture that doesn't apply now. Not coincidentally, this is one of the reasons I picked Markel's textbook for my classes: he includes a full chapter on ethics and liberally sprinkles "Ethics Notes" throughout all other chapters.

As I've mentioned in previous chapters, I do my best to avoid putting my students in a situation where they feel like they have to mirror my own ethics back to me – that would be ethically problematic. I don't want to say "You must value the things that I value," though in some cases I reserve the right to assert my authority on ethical matters. For instance, when students select a local or national non-profit organization for their project 4 group assignments, I ask them to steer clear of organizations whose primary purpose is to restrict or harm the rights of others, such as groups opposed to marriage equality. I make it clear that I'm not attacking anyone's individual beliefs or their right to

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hold such beliefs, but for my class I would prefer to set a more positive tone. To date I have not received any pushback on this point, though I couldn't say for sure whether it's that students agree with me about keeping a positive tone, or that they aren't interested in supporting socially-conservative issues, or that they are easily able to find organizations that meet my criteria. I also maintain a shared list of organizations that past groups have used or that I think do good work, which may provide a better example of the type of non-profits they should be looking for without being overly constraining.

During the second week of the semester, Arvin wrote a journal entry about his evolving perception of technical writing. "[Technical writing] comes off to me as the writing that no one wants to do but is required to make tasks easier." He pointed out that user manuals and similar documents are "not something that someone wants to read from beginning to end." He then proceeded to make a case for the importance of such documents, both for the company and for its customers. "Businesses need this type of writing to help their customers and make it seem like they took the time to make some task easier for them. It helps build customer relationships that can in turn help create returning customers." A poorly-written document, on the other hand, can "do the opposite and destroy customer relationships. If…[customers] cannot complete what they need to do it can cause frustration." Here he sets up both the business and its customers as stakeholders, each of whom need something from the other (repeat business; a functioning product and the knowledge to use it). The rapid pace of technological growth has made technical writing "more important now than ever" and more readily available to readers than ever before. As a result, he concludes, technical writers are pressured "to do a good job."

After an in-class discussion on ethics, Arvin wrote another journal entry on the subject, noting that issues of ethics have come up in other classes he's taken and that it is a subject of interest for him. He makes a direct connection between the technical writer's performance and the needs of the reader: "Something as simple as how [you] phrase a sentence can change the ethical meaning the writer is trying to accomplish. Making a reader or user feel stupid can be as simple as changing a word in the sentence." Arvin pushes further on this point. "As a technical writer we have to assume that our audience will not know everything that we do. Using a sentence like 'obviously you wouldn't want to do this or this' can come off as rude. We also don't want to lead readers astray and tell them to do something that is unnecessary to lengthen how long it takes to complete a task. You also could tell users to do something that could potential[ly] harm them without giving them information on safety precautions." Note also that Arvin has incorporated himself into the "we" of technical writers. He also indirectly references the larger community with regard to how ethical concerns are often not foremost in people's thoughts: "Ethics in my mind are generally overlooked by many people, including myself, when we go through our daily activities. When making a daily decision we don't normally associate it with being an ethical decision even though we make multiple ethical choices everyday." Arvin concludes his entry by observing that his identity and his interest in making ethical choices are closely aligned. "Something I would like to take away from this class is to keep the mindset of considering ethics when I make decisions during my life. I feel this will help me make the smarter, and morally right decision."

Brett also wrote in his journal about the invisible nature of ethical choices: "[Ethics in writing] is an interesting concept because we often forget about the reader as a

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person we have responsibility for." He noted that what's considered ethically problematic in one field may not be so in another, citing copyright laws that are meant "to protect the intellectual property that other authors spent time and effort to create." In information technology, he said, "if you borrow someone else's work you are to comment somewhere in the code where that borrowed piece of code comes from." He continued:

> In technical writing we often grant the author trust without thinking much about it. I don't know at what point in my life I started assuming that technical documents are true, but it's something I've been doing for a while. As a writer I think we often forget how much power we have with our words and it is our responsibility to ensure what we write is true and accurate. The last thing you want is the reputation of writing material that is exaggerated or full of euphemisms, imagine what that could do to your employer?

In this wide-ranging journal entry, Brett has brought in the reader, the writer, and the employer as stakeholders. His point of view generally stays close to "the author" as he plays with both activities of writing and the identity he associates with them ("as a writer.") He concludes with an ethical assessment of the dangers to one's reputation and to one's employer for "writing material that is exaggerated or full of euphemisms."

Community Engagement

In my coding process, I marked events or descriptions which appeared to indicate that the student was thinking about the needs of others. These fell into two broad classes: first was the students' self-reporting of their writing, thinking, or research process which

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indicated that they were aware (or trying to be aware) of the needs of some person or group other than themselves for the purposes of fulfilling their assignment. We saw examples of these events in the preceding section. The second type of event occurred mostly in journal entries, as the students read and responded to their chosen outside readings or tackled ideas from their field of study. When students went beyond simply summarizing an outside article or concept and engaged with it as an issue of contemporary concern for their profession, I marked these occurrences as "Needs of Field," meaning that they were demonstrating—without direct prompting from me—a willingness to analyze and discuss matters that affected a group they were preparing to join. In other cases, a similar type of occurrence was focused at some other group (such as hobby or game enthusiasts). I marked these as "Needs of Community." I would argue that these two codes are more interconnected than distinct from one another, and both of them indicate a willingness or desire to work productively with some larger community or communities.

As we made our way through the semester, students continued to describe activities they had carried out during the process of their writing and activities they expected to engage in once they were in the workplace. They also performed some activities in their texts that warranted their own subset of activity codes, such as engaging with outside sources in more than just a harvesting-information sort of way. Several students wrote journal entries in which they responded to articles from trade publications in their field. In a number of these cases, I was pleased to see that their responses did more work than merely summarizing or curtly agreeing or disagreeing with the article's premise. Brett, for example, discussed an article on mainframe computers and the

dwindling pool of experts who can work with and service these large machines. "As a mainframe analyst I can vouch for the main points in the article," he said, identifying himself as an authority and reiterating the urgency of the matter to his field: "Everyday someone in the mainframe world is retiring and companies all around the world are struggling with finding replacement talent." Here Brett asserted an active role as someone who thinks about and is concerned with the wellbeing of his field.

In another journal entry a few weeks later, Brett engaged another article in a similar fashion. This article (from *Time* magazine) was about Comcast and its control over internet infrastructure. Brett looked at the article through the lens of Bloom's Taxonomy, examining the variety of cognitive complexities that are involved in explaining technologically sophisticated subject matter to a lay audience: "The reader here is being asked to evaluate data and statistics while being provided a history and current snapshot of the broadband market. The telecommunication industry is very complex and in order to comprehend what is going on one must have a good understanding of all the different pieces involved." This pattern, a willingness to engage the merits of an article or an industry trend as if the student were a full-voiced member of the field is an important hallmark of citizenship, digital or otherwise.

Felix responded enthusiastically to an article on telecommunications industry changes in one of his journal entries. "The article talks about how all the governments across the globe are coming together to help the developing countries out there get access to internet and telephones. This may seem simple to a first world country but for a third world country this is huge." Improvements to telecommunication infrastructure "can give the people of the world better access to new jobs, healthcare, and information," he said,

adding that helping with projects like these are "my field and [a] dream of mine." Felix's choices of emphasis indicate that he's thinking about both needs and opportunities for communities far removed from his own.

Harold is a gamer (someone who plays video games on a regular basis), and he took the opportunity in Project 4 to analyze some of his favorite video game wikis. He wrote about the experience in a late-semester journal entry. "This [opportunity to engage more actively with these sites] is awesome because I have seen many wiki posts that are poorly put together and could be fixed to be much more clear and organized." In the assignment's GUS, he analyzed the audience he'd be writing for (users of a wiki for the video game *Call of Duty: Zombies*). He observed that the site's community of users included younger gamers; as a result, "this mean[s] I need to make sure my document is easily understood by younger kids most likely around the age of 10." Harold's attention to the needs of different members of this community (one he considered himself a member of) was not a unique event. In his next entry, Harold discussed the utility of the informational poster in disseminating biology research and other gathered information. He observed that the technical writing skills he had been practicing in our class (such as good formatting, organization, and researching one's audience and content) were important parts of designing a good poster.

> Like many of our projects it is essential to perform extensive research for
> the purpose of remaining credible to your audience. In biology there is
> little margin for error in facts and if you make one too many mistakes you
> could lose all your credibility rendering your technical writing useless.
> The information I have gained in this class will definitely benefit my

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future in biology.

Harold's attitude toward his field remained fairly consistent throughout the semester, in that he regarded it as a collaborative enterprise to which he could and would contribute.

Like Harold, Irving is a gamer. Some of his journal entries address articles on multiplayer games such as League of Legends or on video game design for beginners. Irving analyzes both the content and the execution of these articles, taking into account how well they appear to be reaching their target audience (members of his community) and where the articles could have served their readers more effectively. Irving also had a lot to say about the needs of his professional community. In one journal entry, he discussed an article from the website TechRepublic.com about the software development process and its pitfalls. He acknowledged that problems in development processes are relevant both to his industry and to the larger community of software users. The article's style (a top-10 list) made it easy to read and allowed Irving to invite "my tech-unsavvy friends to participate in the discussion and learn more about the development process and why these issues occur in some of the applications that they use." Although he wasn't particularly keen on the list style of the article ("I can see this article being ignored by people that are adept with the IT process due to its simplicity and lack of topical reinforcement"), he engaged with a topic of concern to his field and brought in ancillary stakeholders to the conversation as well. Irving's other journal entries offer similar analyses, dissecting articles on software or related design principles and examining how well or whether those articles serve their topic and their readers.

In each of the sub-categories above, students generally engaged willingly (sometimes grudgingly, sometimes eagerly) in a host of different activities and seemed

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comfortable describing that engagement. In some cases they struggled, and in some cases they surprised me (and themselves) with their creativity or their thoughtfulness or their reach. We also saw them (and will see them again) refer to themselves with many different titles or identifiers, such as writer, teacher, or student. Sometimes the activities they performed seemed to be overshadowed by their declared identity; at other times the activities seemed to be accumulating toward an identity which they weren't always able to articulate clearly or consistently. When I was younger, and in relatively the same stage of maturation that these students are in, I sought out a wide variety of activities as I grappled with the challenge of finding and declaring an identity—and I labored under the mistaken but socially-reinforced impression that I *had* to choose (and choose wisely). "Who are you?" and "What do you do?" are each reductive and deceptive questions (as they imply that a succinct, correct answer is possible). They are also pervasive, particularly in college where academia and marketing conspire to promise answers to those questions. As we will see in the next section, the distinctions between "who I am" and "what I do" are not always clear or fixed either.

Identities

Identities as a general category emerged quickly from the data, starting with the first One Minute Essay ("What role do you think writing will play in your personal and professional life?"). Nearly all of the students took up the first day's question as an opportunity to identify themselves in relation to their major and/or their current or future work. Six of them described themselves specifically in terms of their emerging career identity.

Arvin: "Going into information systems security and assurance…"

Chad: "Currently I am an IT Support Associate within EMAS here at ISU…"

Earl: "With my aspiring dream to become a lawyer…"

Keith: "As an aspiring programmer…"

Lance: "As an [E]nglish major, I plan on being a writer for many years to come…", "My ideal career would have something to do with writing for or about cinema, as I am also a Cinema studies minor."

Percy: "I am working on a career in journalism…"

Three respondents (including an overlap with Lance) described themselves by their academic major.

Harold: "I am a biology major…"

Otto: "Being an IT major…"

Other respondents also addressed who they were at that moment (or prior), or who they expected to become. Ned described himself as "a college coop student at State Farm," and described the usefulness of writing in his future as a parent: "[writing] will play a major role in my life by how I communicate with people concerning my children." Jane described tasks to be accomplished through writing, but she clearly identified herself as the performer of these tasks: "I will use writing to stay connected and up to date on people's lives.… I see myself writing a lot of emails back and forth with my fellow employees as well as customers…. I also see myself using technical writing skills learned from this class to write documents to help explain projects I have helped [create] so users or my fellow employees can understand better how to use it as well as what the project is all about."

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I had read all of these responses on the day they were sent, but I was still a little surprised to see this pattern appear. In hindsight, it makes sense that this kind of self-identity talk might emerge from a question ostensibly aimed at "the role of writing" instead of "who are you?" The "who are you" type of responses could be viewed as a form of background material for the respondent to include, in order to provide some reasonable context for their response. None of the students addressed their responses to me directly, and only one (Jane) mentioned the class at all ("technical writing skills learned from this class"). I would assert with some confidence that the respondents were not just writing to me or to "the teacher" in their responses; they were addressing themselves as well. Most importantly for this study's purposes, these comments suggest that the participants consider their identities to be a valid topic for discussion (and thus potentially valid topics for their own future analysis and updating).

I'm a firm believer in giving my students the opportunity to analyze their own inner workings, particularly as they attempt to integrate new ideas or practices. The essential nature of a liberal arts education is that it "broadens the mind," but often this process (which is by no means linear or smooth) is simply *assumed* to occur without giving the student any meaningful opportunity to work through the changes. Throughout the semester I ask my students to reflect on their progress, on their research, and on the outside work they do in relation to our class. The research journal is one of these instruments; the GUS is another, though its aims are different. In my business writing course, the final assignment is called the "Major Review." Students are invited to reflect on their choice of major or career now that they have a better idea how much writing they'll actually be doing in the working world. These assignments aren't designed for the

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student to prove anything to me, except for an ability and willingness to write reflectively. It would be too limiting to say that they're writing about who they are in these assignments; that may be how they start out, but quite often their self-analysis turns toward who they are *becoming*.

I don't offer a Major Review assignment in Intro to Technical Writing (though it would be interesting to compare the results between sophomore business majors and senior computer science majors). However, as student responses on each instrument or assignment are date stamped, the codes and categories that accumulated around their writing can also be reviewed as a sort of historical transcript of the student's changes over time. The process of *becoming* did not begin or end in this classroom; we will not see a complete larva-to-butterfly transformation in these students or their texts. What we will see might be most accurately characterized as experimentation, as students try on different personae or identities in their writing and in their thought processes. Arvin, for example, began his first OME by identifying his future career: "Going into information systems security and assurance, I feel…." In a journal entry a few weeks later, he takes on another identity: "As a technical writer we have to assume that our audience will not know everything that we do." This identity seems more tenuous; the "we" rather than "I" lets him lose himself in the crowd of technical writers a bit, but he is at least a part of the crowd.

In a response to Survey 1, Arvin took on another group identity, this time as a spokesperson for students in another class who had been confused by a teacher's rushed explanations, lamenting that the hurried lectures didn't "help us to better understand the content." Starting with the first GUS, Arvin took on the identity of a teacher in five

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separate instances. In each of these instances, he was responding to GUS question 9: "What teaching skills or activities did you use while working in this genre? Does thinking about it from a teacher's perspective help you produce better work? Why or why not?" Most of his self-identification in these instances could be seen as temporary or transitory rather than as a definite attempt to establish an identity. Arvin's responses were typically phrased in a way that mirrored the question being asked: "Thinking about it from a teacher's perspective…." Some were more indirect: "Teachers use examples in everything they teach so I think looking at the instructions from that point of view did help create a better document."

The teacher's identity did not show up outside of GUS responses in Arvin's case, but he did invoke other identities. In his journal entries, Arvin spoke of himself in terms of his career once more and in terms of his major twice more, as shown below. Throughout his body of work, Arvin repeats a common rhetorical move. In most cases, the identity he gives or describes is connected with some other component, usually in the form of an explanatory preface:

> "[G]oing into the security field I want to be able to adapt to changes,"
>
> "Being a security major I found this article interesting,"
>
> "Being a security major I feel as though the security of the cloud should be
>
> discussed in some detail in [some other unspecified] class."

The identity often gets linked to a desired action or to an area of interest as if the identity causes the interest or drives the action. The invisible thread that revealed itself here by what was *not* said is the identity of a writer. Arvin described himself (somewhat obliquely) as a technical writer only once, in a journal entry on 9/3/14. In his next journal

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entry two weeks later, technical writers were now *they*. "This assignment [Project 1] has opened up my eyes to what technical writers do. They have a wide variety of genres they are able to write in…." While one could argue that I nudged my students to think of and describe themselves as *teachers*, certainly there was not much less mention in our readings or our discussions of *writers* or at least *technical writers* (a seemingly significant distinction for some of the students). Despite the regular presence of "technical writers" as main actors in our class conversations and in our textbook, Arvin was much less likely to call himself a writer than he was to call himself a teacher. He was not the only one whose writing followed this pattern. This absence of a specific identification as a writer is not just as an omission but a resistance. As we saw in the Activities section, however, it's a resistance with a twist.

Brett's first identity move, in a journal entry on 8/25/14, was one of partial resistance: "I don't consider myself to be a strong writer…." The qualifier "strong" leaves some room for ambiguity: is he a writer but not a strong one? Is a strong writer the default and he is below that threshold? Like Arvin, Brett also referred to his experiences in another classroom as though speaking on behalf of a group. "In the end [this professor] turned every student against [him] and in return we all had a very miserable learning experience." Again we see an ambiguous identification marker: is the professor one of the "we all" who had a miserable learning experience? If so, is that a generous move on Brett's part or a punitive one, placing the professor on par with the students? It's difficult to know for sure.

In spite of his earlier shyness about the label, Brett eventually warms up to the identity of himself as a writer and invokes it three more times over the next few weeks,

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twice in a journal entry and once in a GUS response. "As a writer, I think we often forget how much power we have with our words…." Brett, like Arvin, tries to blend into the crowd a bit here. Later he speaks of himself as having been a writer (within the context of the Project 1 assignment): "One of the responsibilities I had as a writer was to inform the designer…." The significance of this tense shift in an exercise that was still ongoing at the time (this quote comes from the GUS that he turned in with the assignment) is unclear. Brett also identified himself by his future career ("As a mainframe analyst, I…") and his current major ("That's probably why I am an information technology major").

Brett identified himself as a teacher once ("due to my past experience as [an] instructor in military tactics"), but he also resisted the label in other instances. "Looking at this [assignment] from a teacher's perspective did not help much for this project due to my lack of experience," he said in one GUS (Project 2). However, instead of just resisting the identity of a teacher, Brett offered a workable substitute: the identity of himself as a student. In another GUS (Project 3 Advanced), he said that he had "avoided the teacher perspective for this assignment" and "mostly looked at this [assignment] from a student's perspective." In another instance, he argued in favor of approaching the assignment as both a student and a teacher: "I looked at this from both perspectives.... This…assignment involves both perspectives, a student and a teacher's, it's a delicate balance." We had discussed the processes involved in teaching and learning in class (as described in Chapter Three), including some limited discussion of how the teacher and the student play off of one another, but we did not spend much time talking specifically about writing or observing from the student's perspective. I assumed for this iteration of the course that students would bring to bear their own prior knowledge of *being* students

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without much prompting.

I had hoped that examining the common practices and the mindset of being a teacher would encourage my students to take a different look at their student-ness as well (including seeing others as not just students-who-are-peers but as students-who-are-my-responsibility). I've worked in a variety of fields over the years, and I recognize the value of being able to shift one's perspective as needed. It's a vital skill for technical writers, certainly, but it's also quite important for computer programmers, software consultants, IT support specialists, and other technology-intensive professions. It's sometimes easy to forget that the people one works with don't operate with the same logic and speed as the machines one works with. I chose the tech-comm-as-teaching metaphor in part as a means of helping my students to practice their perspective-shifting skills in order to better serve the diverse audiences they'll encounter over the span of their careers. Although the shifts in identity we're observing in this dataset are somewhat chaotic, they are directly relevant to the work of my research.

Chad introduced himself in a very specific manner on the first day of class: "Currently I am an IT Support Associate within EMAS here at ISU" (OME1). Throughout the semester, Chad's self-identifications leaned more toward his career than toward his major, particularly in his journal entries: "my current position in the IT field," "my perspective as an IT person," and "in my career…." This last one was repeated several times in two consecutive journal entries, in which Chad discussed his dissatisfaction with a Fix grade that his group had received on an assignment (a netiquette guide for a small company). In my grading notes to the group, I had asked them to resolve numerous grammar and mechanical errors (which Chad did not discuss at all in

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his journal entry), but I also encouraged them to strike a less punitive and authoritarian tone in their netiquette guide. Chad's journal entries described the sample sources that his group had used (from Mitsubishi Motors and Illinois State University), pairing those sources with his career identity—not as a means to shape his career identity but to reinforce or rationalize that identity and the choices he and his group had made in producing their assignment. "I have worked for many corporate companies in my career and the language in these policies are typically neutral or negative in tone" (10/20/14). "Even though there may be companies out there that try to have more positive language in their policies, I am still hesitant to stray away from all of the examples that I have experienced in my career" (10/20/14). "I am used to the tone of the corporate policies that I have encountered in my career" (11/1/14).

What's occurring here with Chad and his group appears to line up with Reiff and Bawarshi's observations in "Tracing Discursive Resources." The resources these students brought with them came from multiple domains, including school and the workplace. Their first attempt at producing a netiquette guide for a small company showed more evidence of low-road transfer of writing knowledge than high-road transfer. The reader may recall that educational theorists Perkins and Salomon (who are cited in Reiff and Bawarshi) described low-road transfer as "automatic triggering of well-practiced routines in circumstances where there is considerable perceptual similarity to the original learning context," while high-road transfer "depends on deliberate, mindful abstraction of skill or knowledge from one context for application to another" (315). The group GUS for this assignment indicated that most of the group members drew upon similar career identities. In their revised version of the GUS, the group wrote that their "tech background also

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worked against us" by making it "easy for us to overlook small details that a non-technological person could potentially struggle with." In another part of the revised GUS, the group observed that "the regular corporate way of writing and samples we saw online" got in the way of their production of a "friendly" document. This more reflective turn seems like a solid example of the metacognitive work that Perkins and Salomon (and Reiff and Bawarshi) were advocating as a means of evoking high-road knowledge transfer. It is also, not coincidentally, the type of work that the GUS is designed to elicit—though sometimes it takes students a few tries.

In his journal entries, Chad tended to refer to himself by, or associate himself and his point of view with, his career. In his GUS answers, however, he returned to the roles of "student" or "major" (or both) in most cases where an identity was mentioned. "Since I am a student in this major…" he said in one instance, drawing on that experience to explain his writing research. Later in that same GUS, he straddled a teacher and student position like Brett had done: "I looked at this [assignment] from a teaching and student perspective." Chad also referred to himself as a writer, but only twice and only in the early part of the semester. "Sometimes we as writers forget or do not focus enough on the ethical issues of writing," he observed in one journal entry, assuming a group identity as Arvin and Brett had done. His second writer reference was more oblique: "When being a technical writer, you need to think of every aspect of the writing…." By the latter half of the semester, the identity of "writer" had vanished. Similarly, the identity of "teacher" appeared only once, and in the usual place (GUS question 9): "The teacher's perspective was very helpful…." Chad's identity as a working professional was dominant in unstructured responses such as the journal, but his identity as a student or an IT major

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reasserted itself when writing in more structured contexts such as the GUS. This may be due to the assignment-like nature of the GUS, which requires direct responses to specific questions about a class assignment. The journal entries are a freeform type of writing that a student could do entirely independently of any class. This apparent difference in identities or roles taken up by the writer in different genres seems to comport with Bawarshi and Reiff's explanation in *Genre* that genre can mediate identity:

> Genres are also socially derived, typified ways of knowing and acting; they embody and help us enact social motives, which we negotiate in relation to our individual motives; they are dynamically tied to the situations of their use; and they help coordinate the performance of social realities, interactions and identities. (77)

Part of the slipperiness of identity here is that the student's self-reported identity (if any) may not always match up with the identity they appear to be performing in their writing.

Identity work was not carried out uniformly by all students. Earl identified himself as an aspiring lawyer in his OME1 response and as a teacher in his GUS for Project 2, but otherwise he had very little to say about his identity. Greg also had few instances of self-identification; he did not identify himself by career, by major, or as a writer at all. He identified himself provisionally as a student ("If I were a student [on the receiving end of the document he was producing], I would want…." His uses of a teacher identity were likewise hedged or indirect, though they did demonstrate his use of a persona in his reasoning: "A teacher may not know how much prior knowledge a student may have…" and "A teacher would not want to confuse a student…." Minimalistic though they are, these two incidents are in keeping with my intent for the tech-comm-as-

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teaching metaphor, that my students would be able to shift their perspective and write with the needs of others more clearly in mind.

Felix mentioned his career identity only indirectly. In one instance he described himself as currently "working in fast food"; in another he described himself interacting with his future hypothetical boss or CEO. These two incidents blur the line between identities and activities (which is not an uncommon move) without illuminating either one very well. Felix identified himself as an author in one journal entry (indirectly, and as a part of a group): "We have a lot of power as an author so I need to keep this in mind while creating my documents." Felix did take to the identity of "teacher" fairly well, describing himself as a teacher in several GUS responses, a journal entry, and a survey answer. When asked in Survey 1 if he expected to teach others in his career, he responded enthusiastically: "Of course! If I were to teach someone it would be hands on and I would probably have to put them up to speed on our projects we are currently working on." However, he also showed some resistance in two GUS responses: "There was little teaching I had to do with this genre. I thought a little about how this could be displayed as a teacher…." and "I did little teaching in this document. King WinRAR [a narrator persona from his assignment] did all the teaching…. a teacher can best explain the reasoning behind those steps." In these two cases, it could be argued that Felix's resistance was aimed at the activity of teaching as well as at the identity of a teacher. In my coding, I sometimes found it challenging to say specifically whether a student's references fell on one side or the other side of the line between identity and activity; it would be most accurate, I think, to say that identity and activity are often blurred together or otherwise resistant to tidy delineation.

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On the source of Felix's resistance, his response to Survey 3 might shed some light. In describing how his understanding of the relationship between teaching and technical communication had changed, he wrote that he'd shifted from thinking "every teacher does their own wacky thing and…what the school tells them to do" to "the viewpoint of the teacher can be different from my own, but we both work to achieve a middle ground." The idea of a teacher had shifted from being someone who was (or could be) erratic and unaccountable to students to someone who was working toward the same general goals as the students. This is a fairly significant shift in both perception and degree of trust, though obviously both parts were written in the abstract. In asking my students to adopt a teacher persona, I had not fully considered the baggage or the occluded perceptions of the role that might come along. Felix was not the only one to express complex sentiments about teachers, teaching, and the role the two things played in his life.

Keith described himself as "an aspiring programmer" and was sure that "writing will be a big part of what I do because most programming is done with a team" (OME1). In the very first sentence of his OME1 response, Keith made an interesting move by assigning a separate anthropomorphized (and vaguely ominous) identity to writing itself: "Writing is one of those things you simply cannot get away from." In the next sentence, however, he relaxed his apparent stance on the "thing" of writing: "I would hope it plays a big role in my personal and professional life going forward." It wasn't until a month later that he identified himself as "a technical writer" in the context of a GUS response: "My audience needs direction from me as a technical writer to assist them in creating a high quality game manual." Keith, like some of his fellow students, identifies himself

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both as an individual and as a member of one or more peer or co-worker groups. He also links his individual identity to his group identity in some instances, as with the "aspiring programmer" who would be writing as part of his work with "a team."

Keith made a fairly strong connection with the teacher identity, referring to himself as a teacher or invoking the teacher's perspective on several occasions. In one of his GUS responses, he wrote that "[l]ooking at this document from a teacher's perspective makes you notice things you normally wouldn't if you were just a user. However, when you are called upon to teach someone to do something it is important to understand why something is done a specific way." Like his initial description of writing as "one of those things you simply can't get away from," here the teacher (whether an identity or a role) is vaguely othered, distinct and separate from the user and possessed of arcane knowledge or heightened observational powers. This sort of apparent internal conflict over one's relationship with teachers is not uncommon or particularly unexpected, given the fact that most college seniors have had dozens of teachers of different temperaments and skill levels just in the preceding few years of high school and college. I would not expect any student to fully unpack their long and complex relationship with education and educators in a few journal or GUS entries. For many if not most of these students, this may be the first occasion they've had to deliberately self-identify as a teacher. As they take the time to examine that identity from the inside looking out, some venting, frustration, or conflicted emotions are only natural.

Lance embraced a pair of identities right at the start of his OME1 response: "As an english major, I plan on being a writer for many years to come." In the same document, he also specified how he does not want to be identified: "I plan on having a professional

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format and style to make sure I do not come across as a random person who was pulled off the street and hired to do writing." Over the course of the semester, Lance continued to move back and forth between writer, teacher, and student identities. "I intend to be a writer for film in some fashion," he said on Survey 1. In the teaching section of his project 2 GUS, he said that "[t]his assignment worked better from a student perspective [as opposed to a teacher's perspective] due to the fact that this ad was targeting students as its audience." On his final individual assignment, he wrote that "[t]his [assignment] was a unique circumstance, because in many ways this seemed to simulate a student giving a teacher recommendations on how to teach their class." Like some of Keith's responses, Lance seemed to imply that teachers (in his view) operate as one-directional conduits whose inner workings are out of sight of the student. He continued:

> From a student standpoint, I had to learn and research the system of the creator's website over time. Along the way, I had to come up with my own thoughts and ideas to contribute and build upon the site already there. To communicate this, I had to take on the role as teacher to explain my ideas and convey them clearly to the site creator.

To emphasize, this came at the end of the semester. Even after a few months of experimentation with this perspective, Lance still appeared to be making a clear and fairly rigid distinction between a teacher identity and a student identity, where the student takes in and processes new information and the teacher exports processed information to a recipient, and *not* vice versa. For the technical writer, both of these sets of activities (with or without their respective identities) are vital. We must constantly be learning, processing, and exporting information. Drawing a seemingly arbitrary dividing line

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between them would be challenging and, I would suppose, counterproductive. Hopefully, this boundary may be a vestigial one.

Percy was an English Studies major who was "working on a career in journalism." He asserted his identity as a writer numerous times, though in nearly all cases these assertions appeared in his journal entries rather than in any regular assignment or GUS. The reader may recall that the majority of students enrolled in English 249 are computer science majors. While they sometimes made note of each others' major identity or future career identity, it was usually phrased neutrally as "We're all CS majors in this group" or similar. In Percy's case, being in an English class where his English major identity is not representative of the majority was something that stood out to him. In an early September journal entry, he wrote that "[i]t seems like a good chunk of my classmates are Computer Science majors and work well with computers. I have to admit I'm an in between type of computer user." He mentioned some of the programs he knew (Word, PowerPoint, Excel) and some of the programs he didn't know that he thought would be relevant to the class (Photoshop, "all of the more complex computer software we might have to use in this class"). He did not specify how he thought those programs would be used.

Percy's concern is a mild example of another interesting phenomenon that sometimes occurs, despite my attempts to explain it away in class: students occasionally conflate the "technical" in technical writing with "technological." These are usually non-tech-savvy students who either believe that technology will play an overbearing role in our production of documents, or that technical communication's primary purpose is to write about technology. In the first cohort that comprised my internship class, I had one

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of each of these. One student, Laura, was highly computer-phobic, to the point that she complained about using computers in nearly every journal entry and GUS; fortunately, her group was quite patient in working with her. The other student, Alice, concluded the semester by writing that she hadn't gotten much out of the class because she had been expecting a professional writing course and she didn't think technical writing applied to her major (Geography). These two examples could be taken as extreme incidents of identity rigidity, another variant of the boundary-guarding behavior that genre theorists such as Bawarshi and Reiff have observed among writing students. In my long-ago computer classes for working adults, it was fairly common to find older students who were resolutely committed to their identity as "not a computer person." Since those classes were usually only a few days in length, I rarely had the time to work on softening up those students' boundaries, though more time does not always guarantee better outcomes, as my two prior-cohort students indicate.

To Percy's considerable credit, he took his hesitations about the nature of the course as a source of inspiration rather than inhibition. In the same journal entry, he described the research he did on the topic of technical writing, which led him to a number of different places around the web. Perhaps one of his most serendipitous findings (from my point of view) came from Seton Hall professor Dennis Jerz: "Good technical writers are also good teachers, who have an excellent eye for detail." Jerz's description was a tipping point for Percy: "I have heard this mentioned once or twice in lecture already so it makes my whole thought process stop focusing so much on being a computer savvy student and rather a precise and detail oriented student in this course." Over the past eight years of my formal training as an educator, my teaching style and philosophy have

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evolved as I've come to understand that telling a student something does not always result in the student comprehending or integrating that thing—and more importantly, that it's often *not* a failing of eloquence or the power of metaphor that causes the blockage. Sometimes a person simply needs (and wants) to put the pieces together for themselves in order to make sense of it; that has certainly been true for me often enough. I can't command a student to "get it," but I can leverage their *desire* to get it by providing or pointing them toward a variety of sources, methods, illustrations, and other materials that they can use to connect the dots for themselves.

Otto did some fancy footwork in his OME1 response. "Although I do not plan on doing writing as a profession," he said, "it is still going to be a part of almost any career." Which professions "do" writing to a sufficient degree weren't specified; however, he added that "[b]eing an IT major, my professional writing will involve a lot of explanation of any projects that I may be working on." Otto's response to the identity of the writer, at least on the first day, was to play hard to get. He didn't plan to be a writer, but "technical writing in particular is going to be a large part of my life because of my chosen field." This back-and-forth dance between what he will do and who he will (or won't) be may seem contradictory, but it's not unusual. In the Activities section earlier in this chapter, students frequently embraced the activities of writing and technical communication while avoiding or simply not being interested in picking up the identity.

As he progressed through the semester, Otto occasionally pointed to his major and his career as self-identifying referents, but he also started to expand beyond them. In a journal entry from the second week of class, Otto noted that "my definition of technical writing is beginning to broaden as the example we chose [to analyze] is something that I

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would not have thought of as technical writing before this class." The example document, a plastic bag of almonds, convinced him that "technical writing is prevalent in many fields." He described his understanding that the package could have been designed in part by the company's marketing or advertising departments, but "there is still some technical writing incorporated into designing this packaging." From here, he made the move to connect with his own identity: "This is also true in the information technology field, which is my area of study. Programmers have to create documentation for the programs they write which would also be considered technical writing." Otto observed that "many of the examples of technical writing that other students brought in were probably not written by a dedicated technical writer." At the very least, he said, "a technical writer will likely have to collaborate with workers in other departments in order to have the knowledge required to create the document."

A month later, in another journal entry, Otto reflected on the visual aspect of documents that we had been discussing in class as compared with the writing he had done in previous classes. "Generally, the writing I have done has been the 5 paragraph essay format which does not offer a lot of room for visual or graphic improvement to the document. My teachers usually have a preferred font size and spacing which I am required to write these documents in." The new (to him) dimensions of document design "forced me to think more visually with my writing which has definitely helped me overall as a writer." This was the first time Otto had identified himself as a writer. It emerged in a low-stakes, self-reflective passage in which he had apparently pivoted away from an older, stodgier portrait of "writer" and toward an updated and more appealing one which "offered me more freedom in terms of how the information is presented." This is not a

new phenomenon; many times in past technical writing and business writing classes, students have expressed surprise and even happiness when they discovered that "writing" was much more diverse and dynamic than the traumatic five-paragraph essay had led them to believe. I will return to this subject in Chapter Five.

Like most of the other students, Otto was comfortable identifying himself as a teacher, at least provisionally. In his Project 1 GUS, he said that "[i]n this case, thinking from a teacher's perspective gave me a better understanding of the found item's genre." Indirectly, Otto takes on the identity of his audience in his thought-exercise as well: "I'm getting better at organizing my content and presenting it in a way which highlights the important facts. This is very important for how technical writing is received by the readers. If they are confronted with a massive wall of text, the readers are going to tune out and be frustrated by the text regardless of how well written the actual content is." In an early November journal entry, he discusses his Project 3 assignment: "My job as a teacher in this case is to give the reader relevant background information so they can better evaluate which classes they want to take." In this journal entry, Otto actually digs quite deeply into the cognitive work that a teacher must do, using a contemporary version of Bloom's Taxonomy (which we had discussed in class) to dissect and categorize the different ways he would be asking his readers—his students—to take up and use information.

This is the type of work that I had hoped would come forth from the tech-comm-as-teaching metaphor. Obviously it isn't universal or consistent, and I wouldn't expect it to be. However, students generally seem quite willing to identify themselves as teachers—much more so than they were willing to identify themselves as writers. I knew

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that resistance (to thinking of themselves as writers) existed, although I hadn't measured it quite so specifically before now. In Otto's final journal entry, he revisited the OME1 question: "Although I'm not planning on becoming a career technical writer, it will still be heavily involved in my work life, especially in the IT industry." At the start of the semester, Otto said, his definition of writing had been "more narrow so I didn't see myself being much of a producer of writing in my personal time…. I also neglected to think of myself as a consumer of technical writing." Despite his caveats, Otto made some progress in how his identity related to or overlapped with the writer's identity—and he was able to articulate this progress, which I regard as a very positive sign. In Survey 3, he went even further with another identity:

> I realized that I am in the role of the teacher more often than I thought.
> Since I've been a student fro all of my life, I've been able to take my
> personal critiques and experiences with other's teaching and apply them to
> my own. Now that I recognize how often I am teaching others, I can
> borrow processes from other teachers I've had that I think work well.

On the first day of class, most English 249 students do not self-identify as writers. Some of them go out of their way to distance themselves from that identity, even while they acknowledge writing's utility. The Fall 2014 cohort began the semester with a generally positive perception of *writing*, but most of them resisted, avoided, or simply preferred not to describe themselves as *writers*. The move from "writing is a thing I do" to "I am a writer" may be taken as a marker of maturation or acceptance of the responsibilities (ethical, cultural, legal, or other) that come with authorship. The alternative explanation when that move takes place is the "when in Rome" effect, where

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peer or cultural pressure encourages conformity. I would expect that the effects of peer pressure within a group would be more common (or less difficult to achieve) than a mass-maturing event, but I wouldn't expect either of them to happen on the first day of class.

In this early set of data, only a few participants explicitly or even implicitly identify themselves as writers or writers-to-be. Lance "plan[s] on being a writer for many years to come." Percy was "working on a career in journalism." Most other participants, however, speak about writing as a separate event or entity from themselves. Keith described writing as "one of those things you simply can not get away from." Otto observed that "although I do not plan on doing writing as a profession, it is still going to be a part of almost any career." Part of my coding involved watching for movement in this category over the course of the semester, to see whether the participants' self-identities as writers or as not-writers change over time. That movement appears to have been limited at best. My course focuse much more on the activity of writing than the identity of writer, and participants appear to have integrated course information and practices within that framework—expanding their concept of writing and its utility, but not necessarily making substantial alterations to their self-identity.

For the most part, students tended to describe themselves as performing activities much more frequently than they identified themselves as the kind of person who would perform those activities. This was most obvious when comparing writing to writer (150 to 22) and researching to researcher (85 to 0). Instances of activity description and identity assertions remained generally steady from beginning to end of the semester. Students invoked the identity of teacher with increasing frequency from the beginning of the semester to the end, month over month (6 in September, 8 in October, 11 in November,

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and 16 in December). However, the identity of writer peaked in September and dropped off sharply thereafter (3 in August, 11 in September, 1 in October, 4 in November, and 3 in December). The apparent lack of identity movement among my students (or at least the movement I had hoped for) may reveal some limitations to my pedagogical approach. Because I am a writer, it seems natural to think of "writer" as a good and desirable identity and one worth imparting to others. However, as a longtime student myself, I have my own resistances to research to contend with; it may be that I've been giving my students mixed messages without intending to. As I noted above, a cause-and-effect pattern repeats itself in many student texts: "Because I am an X, I do Y" or "Because I am a Y, I think Z." This suggests that, while students may be willing to try on different personas or approach concepts using different identities, some identities are more fully rendered and less conditional than others: "If I were X, I might do (or think, or want) Y." To the extent that we can read this short, fragmentary history of their lives as a process of becoming, it appears that most students were willing to at least try on a variety of identities once or twice. I applied codes for identities of major 23 times, for career 18 times, for student 13 times, and for teacher 48 times. Coding for writer was applied 22 times, and over the course of the semester it decreased fairly steadily. In a class about writing, it might seem like a very discouraging sign if students have such a strong and increasing resistance to identifying themselves as writers. In Chapter Five, I will try to formulate a theory to explain these results.

CHAPTER V

THEORIES AND IMPLICATIONS

Back to the Beginning

In Chapters One and Two, I described my reasoning and motivations in designing my Introduction to Technical Writing course (English 249). Illinois State University has a substantial population of computer science majors, many of whom are required to take English 249 as part of their degree program. I have a strong background in computer programming and consulting, and I have had many friends and colleagues with similar backgrounds. I understand the culture and mindset of this group quite well; as I said in Chapter One, these people are "problem solvers, collaborative with their professional in-group or discourse community, and capable of intently focusing on a task or puzzle when given the necessary tools." However, "they often lack the ability to communicate well with out-groups and sometimes tend to jealously guard their specialized knowledge from outsiders." I am also a teacher, a writer, and the product of a diverse and sometimes challenging upbringing that has shown me the world from numerous points of view. While working as a consultant/teacher/writer, I have often been in the position of straddling or integrating multiple perspectives. Technical writers have been described as a "liminal subject," occupying a space in between our various stakeholders or clients or audiences in order to be an effective intermediary ("Tricksters" 266).

Teachers, I would argue, are similarly liminal. To be most effective, we can't rely

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on a single point of view or method of explanation, and we have to be agile enough to adapt to our students' changing needs. The ability to focus intently on a task or field of study is a fine quality, but it can contribute to a variety of communication problems. For my English 249 class, in addition to providing a solid introduction to the field and the work of technical communication, I had two other goals: I wanted to encourage my students to get outside of their own heads when thinking about their reader's or audience's needs, and I wanted to invite them to see themselves as capable of making contributions to the digital world. By "contributions" I don't only mean their production as workers carrying out assigned tasks but also as citizens and active, self-motivated participants in their chosen communities of practice. A crucial component of both of these is the ability to engage in cognitive empathy, or the ability to see things from another person's or group's point of view. In pursuit of these two goals and the empathy that empowers them, I developed an extended metaphor (including support materials) in which technical communication was described as an act of teaching.

Ongoing research into effective teaching methods has shown that cognitive empathy plays an important role in teaching, learning, and communication, not just on a psychological level but on a physical, neurological level as well (Allen and Brown 1976; Wiemann and Backlund 1980; Redmond 1985 and 1989; Graham 2004; Cozolino and Sprokay 2006; Wolfe 2006; Zull 2006; Ambrose et al. 2010; Bourelle 2012; Cleary and Flammia 2012). Effective teaching often requires understanding students' needs and perspective. It was my expectation that asking students to think of themselves as teachers would help them to access the wealth of observational experience they had from years of working with teachers, and that it would also naturally (or with minimal prodding) lead

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students to make a deliberate effort to consider the needs of their audience. In addition to this metaphor-tool and its related materials, I also employed a genre and writing research approach to the class: instead of lecturing about a few "standard" technical communication forms and then asking students to replicate those forms, I asked them to research each different type of assigned document to figure out how it worked and why it worked that way. The purpose of this approach, which is also used by Illinois State's Writing Program, is to give students the tools and practice that will help them to analyze and reproduce (or improvise around) any type of document they encounter in the future.

In Chapter Three, I described my course materials and data-gathering instruments for English 249. I used a grading contract for the class, which gave students some flexibility to experiment without worrying that a single failure would cause serious damage to their grade. Assignments were performed in small groups and individually, and students were asked to give regular feedback on their own writing and research process in journal entries and in a post-assignment document called the Genre Understanding Sheet (GUS). This is a class that I've taught eight times as of the end of Spring 2015; even though it was experimental in some ways, the Fall 2014 cohort received a seasoned and polished course overall. The journal entries, GUS answers, responses to three surveys, and in-class One-Minute Essay writing exercises were all imported into a Microsoft Access database that I designed to help me with sorting, searching, coding, and reporting. My research methodology is based on Glaser and Strauss's grounded theory with some modifications, such as not hand-picking my participants and speeding up the coding and memoing processes to meet the needs of my dissertation timeframe. Apart from those changes, I generally followed their guidelines

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and the guidance of other scholars who have studied and written about the grounded approach to analyzing qualitative data.

In Chapter Four, I examined the dataset gathered during my Fall 2014 Intro to Technical Writing course. I applied my modified grounded theory approach and developed a set of codes which could describe the data. In doing so, I discovered some interesting patterns which I've separated into two broad categories: activities and identities. As noted in the previous chapter, a*ctivities* refer to actions or roles that students described themselves as performing. It also refers to actions that I observed students taking but which they didn't directly describe. *Identities* refer to labels, roles, or designations that students applied to themselves. The distinction between these two might be described as "doing" versus "being." The subcategories for activities that I'm investigating here are writing, teaching, researching, empathy, and community engagement. Under identities, the relevant subcategories are writer, teacher, student or discipline-major, and profession or discipline-professional. In some cases, identities and activities pair together neatly. Identities sometimes come with the expectation of certain activities embedded within them, and activities are often entangled with the identities of those who perform them. Writers should engage in activities of writing, for example, or it would be difficult to claim that they are writers. People who engage in activities of writing might call themselves writers, or they may choose not to.

In this chapter, I will examine the patterns I've observed so far and work toward a theory with which to explain them. I had some successes and some failures (at least in terms of my expectations) during my Fall 2014 course, and while my tech-comm-as-teaching metaphor tended to perform well, my other plans for the students and their

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uptake of the materials did not work as intended. My theory argues that teachers tend to undervalue and underutilize the two strongest areas of experience and observationally-derived identity knowledge that students possess (the teacher and the student), while asking them to take on roles or identities such as writer or researcher that we have only described to them but not shown them through direct example. We also ask them to perform activities which we may not have not fully contextualized, or which may not be fully contextualizable given the location of that context outside of the students' areas of experience. The result is an imbalance between identity, performance, and expectations.

Who We Are, What We Do, Why We Care

In this section I will discuss the results and the conclusions I've drawn from those results, and put those conclusions into conversation with my previously-stated research questions. I began this study with the following research questions:

1. How does the metaphor of technical communication as teaching impact students' perception of their work in technical writing?

2. How do students discuss or demonstrate empathy, ethics, or engagement in their reflective writing about the work of the course?

3. How do student perceptions of their role as writers and writing researchers within a larger activity system impact their work in technical writing?

The two largest categories that emerged from the coding process were activities and identities, with several sub-categories in each. In some cases, specific activities and identities can be paired together easily (as with teaching and teacher or writing and writer); in other cases, some activities and identities drift apart from one another (as with

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researching or student). The categories and sub-categories don't map neatly onto my research questions, but they do reveal some interesting possibilities as well as some contradictions and areas of overlap.

My analysis of the reflective documents written in my 249 class reveals that students were willing to play with different identities with varying degrees of fidelity, and that they were willing to engage in activities of many different kinds without much resistance (though there were some exceptions). I will take a closer look at some of the identity work that students were willing to do and how they went about it, as well as the identity work that they shied away from or did not (apparently) perform at all. I will consider the activities they performed, including the activities which might logically spring from an identity (e.g. a writer writes, a teacher teaches, a researcher researches) and the activities which did not seem to be well-represented by corresponding identities. I will also examine my own beliefs, particularly with regard to the identities of the writer, the researcher, and the teacher; it is entirely possible that my expectations or assumptions may need to be updated. If I ask my students to do this kind of self-diagnostic work, it's only reasonable that I should do it as well.

Research Question 1: Teachers and Teaching

The short answer to my first research question is that thinking about technical communication as an act of teaching had a net positive effect on students' self-reported awareness of their audience's needs, and applying the metaphor to their work was helpful in producing more thoughtfully-developed materials. The students' consensus was that thinking about and writing about their assignments from the point of view of a teacher led

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them to spot potential problems such as areas of confusion or ambiguity, terminology they were familiar with but which needed to be explained, and at least in some cases they researched the relevant topic more thoroughly than they otherwise might have.

The teacher/teaching (identity/activity) pair were generally well-received by the class. Students identified themselves as teachers and did so with increasing frequency from month to month between August and December. They also described themselves as engaging in the act of teaching, both in the past and on our present assignments; many of them also answered in the affirmative when asked on a survey whether they would be likely to teach as part of their future career. In part, this particular identity/activity awareness was in response to the persistent tech-comm-as-teaching metaphor I employed throughout the course. As noted above, my intent was to draw upon students' extensive prior experience observing teachers and teaching, in order to gently encourage them to think of their writing audiences with as much care as the best teachers in their lives had done. However, since we discussed other identities and activities with roughly the same frequency but without the same degree of response, it seems unlikely that the teacher identity caught on solely because of its role in our class discussions.

Overall, the metaphor of tech-comm-as-teaching appears to have been successful as a means of helping students to draw on their own lived experiences in constructing audiences and figuring out those audiences' needs. By thinking of themselves as teachers, students reported again and again that they had greater success in seeing things from other people's perspective. This was one of my major objectives for the course, and while there are always areas for improvement, I can say with confidence that the metaphor and approach are generally working as intended. Every student reported at least one positive

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outcome either from thinking of themselves as a teacher or from thinking of technical communication as an act of teaching.

Arvin: "Thinking about it from a teacher's perspective helped me produce better work because I caught myself multiple times writing more as a research paper than a teaching tool." The fuzzy distinction between a research paper and a teaching tool (as well as similar callbacks to what students might call "school writing") will be addressed in the theory section below.

Brett: "It definitely helps looking at this from a teacher's perspective but I would be willing to argue that a student's perspective is more important. As a student there are certain things I would like to know in a non-complicated manner, that being said one must incorporate the teacher's learning goals as well." Brett's point is well-taken, and I will be considering ways to revise my tech-comm-as-teaching metaphor for future semesters to include both teaching and learning.

Chad: "The teaching skills that I used while working in this genre was to come up with a way that would teach and benefit users with different prior knowledge of these types of devices. The teacher's perspective was very helpful in helping me produce better work." Here Chad brought in some of the terminology from our class discussion ("prior knowledge") to explain how he was working. This GUS entry showed evidence of a significant breakthrough, as Chad's early descriptions of (and his attitude toward) his workplace audiences tended to be less flexible or attentive to varying levels of understanding.

In some cases, thinking like a teacher was more than just helpful; it was necessary.

Felix: "I had to think like a teacher because I had to give precise instructions on

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this complicated task. If I wavered in any way I could mess up someone's entire [computer] setup. This helped me go about thinking what the new people needed."

Ned: "To complete this assignment I HAD to think like a teacher because that is what this particular assignment is. I thought about what I as a teacher am looking for when completing this assignment. I feel that when you are creating a homework assignment as a teacher you are looking at it from a totally different perspective."

Otto: "This document was all about teaching since I was creating a guide to help someone else learn to create a user manual."

In response to Research Question 1, I would argue that the tech-comm-as-teaching metaphor successfully informed student performance and perceptions of the work at hand. This class willingly and enthusiastically engaged with both the identity of teacher and the activity of teaching, as other classes before and since have done. Moreover, students overwhelmingly described teaching as an activity they expected to engage in as a part of their future work. When they described the benefits of thinking of themselves as teachers, or of thinking of technical communication as an act of teaching, they often (though not always) explained how it helped them to think about the needs of another person or group. GUS question 9 drew out many of these responses, but it was worded to avoid leading students to this specific conclusion or result: "What teaching skills or activities did you use while working in this genre? Does thinking about it from a teacher's perspective help you produce better work? Why or why not?" Both the identity and the activity are invoked in this question, and although students were not required to respond using my phrasing, they often did so. It may be reasonable to consider this a weakness or even a cheat, as students were pointed in the general direction of a

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conclusion; however, in my grading feedback on their GUS instruments I took care to avoid penalizing them for responses that showed resistance or disinterest (except that I might ask them to explain their reasoning in greater detail, or to plan on doing so for future GUS responses). For some projects or activities, students occasionally remarked that either the identity of teacher or the activity of teaching wasn't suitable or necessary. In some cases, as with Brett above (and in more than one of his responses), the student substituted or supplemented the teacher identity with a student identity.

Chad: "I looked at this from a teaching and student perspective. I pictured how I would like to have this information explained to me and what information was necessary for me to know and how this would affect my college experience."

Lance: "This assignment worked better from a student perspective due to the fact that this ad was targeting students as its audience."

Group 2 (Earl, Greg, and Irving): "While giving out an assignment, it is important to fully explain the directions for the assignment as well as any background information. This helped us produce better work coming from a student perspective."

Group 3 (Harold, Jane, Keith, and Lance): "This genre was a bit easier to work with, because we are students and thinking from the student perspective comes naturally."

Student interest in the teacher identity and teaching activity preceded our formal discussions on what it is to teach, which took place partway through the semester. When students described a specific awareness of the needs of their audience in a project, it was often—thought not always—coupled with either the teacher identity or the act of teaching.

Certainly the metaphor of tech-comm-as-teaching is not without its problems.

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One of the more fascinating breakdowns in the metaphor was the distinction that students made between teacher and student, where the teacher identity was used as an outgoing conduit for information (from the teacher to the student or audience or reader), and the student identity was used as an incoming conduit (to the student from the teacher or from the research being performed). In several cases, students stepped outside what they perceived as the boundaries of the teacher identity in order to perform additional work that they saw as necessary, and the identity they chose for that work was the student. It was (in some cases) not the teacher but the student who could think like a student, who could gather information that would be relevant to other students, and who could present information to the other students in their assignment's audience. Instead of being a subset of the teacher identity, the student identity appears to have been conceived as existing outside of the teacher identity. The student identity was (at least by some of the accounts below) capable of performing actions that the teacher identity could not or would not.

In his Project 3 Advanced assignment (improving upon the instructions in a found item), Brett wrote that

> I mostly looked at this from a student's perspective. As a user of the
> instructions there were points in the instructions set that left me confused.
> I used these confusion points in various steps to improve the instructions.
> In this case the teacher failed to properly provide instructions. Therefore I
> avoided the teacher perspective for this assignment and focused more on
> what was lacking [from] the student/user perspective.

Here Brett pushes the teacher to the side in favor of a student who brings insight or needs that the teacher hasn't been able to match; perhaps this is a way of saying that the *student*

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is liminally situated, moving back and forth between the teacher and some external body of knowledge. Lance wrote in his Project 2 GUS that "[t]his assignment worked better from a student perspective due to the fact that this ad was targeting students as its audience." In his Project 4 GUS, Lance said that

> this [proposal to contribute to a website] was a unique circumstance, because [in] many ways this seemed to simulate a student giving a teacher recommendations on how to teach their class. Both perspectives were used in part because from a student standpoint, I had to learn and research the system of the creator's website over time.

The student had to learn and research and report back to the teacher. One of the group assignment options for Project 2 was drawn from a case in the Markel textbook. The assignment asked the reader to create a flyer that would invite international students to come to the US to study. Groups 2 and 3 each said (in nearly the same words) that thinking about the task from a student's perspective helped them produce better work.

Logically, this division of labor makes sense, as does the idea that the student might view themselves as liminally situated but not view the teacher that way. The social and political (power-based) barrier between student and teacher has undoubtedly been reinforced at every level of these students' education so far, and from the student's perspective, they are the ones who must move or mediate between teacher and body-of-knowledge or work product (as with a paper or other assignment). Paulo Freire addressed the power imbalance in *Pedagogy of the Oppressed*, when he wrote about the "Banking" system of education. In that model, Freire says, the teacher deposits information into the student's mind, and the student withdraws the information at an appropriate time (such as

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a test) and then discards the information when it is no longer seen as useful. Minimal cognitive work is done by the student apart from memorization, and the teacher is not an agent of growth so much as an indoctrinator; neither is the teacher an individual with room for personal development and change, but a fixed object imposing its will upon the student. The student, however, makes at least two regular moves: receiving/storing deposits of information and withdrawing/retrieving those deposits later.

My interpretation of my students' responses suggests that their perception of the teacher-student relationship is still being colored by this banking dynamic. Students can aspire to be teachers, but teachers have no need to be or aspire to be students or to engage in student-like work—or so it may appear to the students. If it's reasonable to say that students might view themselves as liminal subjects, and if students don't (yet) perceive the teacher as also being a liminal subject, it could be that two differently-situated liminal subjects may not always be able to perceive one another. It's possible that the power differential is a limiting factor here as well: students often have incomplete information about the teacher as a person or as an identity. It could be argued that this limited information (including, sometimes, the important and relevant matter of *why* teachers do what they do) reinforces the imbalanced power dynamic.

Discussion and reflection on the teacher identity also dredged up some hard feelings on the part of students as they mulled over past experiences with teachers that had not gone well, leaving them feeling hurt or ashamed or shortchanged. It's difficult to know whether, in writing about some of their experiences with teachers, these students were being circumspect or adding embellishments. Jane said of an accounting teacher that "he had assumed we (his class) knew the fundamentals, which we did not. We tried

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asking questions and [he] would only mock us about our intelligence instead of answering our question." Ned had a list of teachers' faults: "Little to no interest in subject being taught. Inconsistent teaching methods. Inconsistent assessment methods. Lack of collaboration amongst students. Lack of feedback from students. Limited methods of assessment/teaching." Greg wrote that one of his teachers, who seemed to be unprepared and uninterested in teaching the class, "made me skeptical of all teachers." It does not appear that these hard feelings or their after-effects were transferred to me. However, lingering frustrations or resentments, hardened mental or emotional barriers between student and teacher, and power dynamics all point to potential drawbacks with the tech-comm-as-teaching metaphor. When I first developed the metaphor, I hadn't considered the possibility that students' negative experiences with teachers could overshadow or diminish their positive experiences with teachers and undermine their ability to draw on those positive experiences for audience-analysis purposes.

Research Question 2: Empathy, Ethics, and Engagement

As I said in Chapter One, I don't believe that my students (or computer science majors, or STEM majors more broadly) lack the capacity for empathy or the ability to engage empathetically with other people who are not like them. What they may lack is suitable models or incentives, and that is what the tech-comm-as-teaching metaphor is intended to provide. The discussion of teachers and teaching above and the extended discussion on the matter in Chapter Four suggest that students generally had little trouble switching their perspective to take in the needs and views of their audience. More importantly, their own observations revealed that they found the process helpful to them

in producing better or more thorough work.

Arvin:

> I tend to look at what would the audience I am trying to reach think. I try
> to thing about if I was them what would I want to know.

Otto:

> Now that I recognize how often I am teaching others, I can borrow
> processes from teachers I've had that I think work well.

Jane:

> I believe because of the GUS I can say I think more while I write which
> helps me teach others complicated tasks more simply. I now constantly
> make sure everything I write has a purpose and is helping the user
> understand what I am "teaching them.

Harold:

> I understand the aspects of teaching a lot better now and the level of
> knowledge have helped me realize that there are many ways to teach.
> Thinking about tasks in a teaching manner can be both beneficial to
> yourself and others, I am glad I was able to learn more about that.

Ned:

> One item that I took from the mini lesson [on teaching] is trying to view
> written material from the perspective of the student. I feel that is a big
> theme of technical writing in general, trying to see things from the
> reader's perspective.

Greg:

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I think that this concept has helped improve my writing over the past 2 assignments. I always kept the reader in mind and how they would take in and comprehend the information presented to them. For example, I imagined how a person might read an infographic when I was deciding how to organize the information. I also try to think about what a person might know and how much more I need to explain something when writing emails or texts, or even in face to face conversation.

These students are evoking the sorts of cognitive empathy that I was hoping to find in my research. I would not argue that encouraging cognitive empathy in this way is a unique or new thing, or even that it falls much outside the parameters of how I have taught since I came to Illinois State University. The genre and writing research approach to teaching composition encourages the student (and the teacher) to make connections in and among their various texts, experiences, research findings, and activities. I am simply encouraging students to make more robust connections in how they think about and interact with other people in their working lives.

Closely linked to the idea of empathetic behavior with an individual person is the emergence of ethical behavior when interacting with a group of people, a culture, or society. The ability to see things from another person's point of view does not guarantee ethical behavior, but it can make recognizing the full scope of an ethical matter easier. One of the seismic shifts in technical communication in the past 30 years was the expansion of our understanding of the impact of our work on the lives and livelihood of others—our employees, co-workers, customers, vendors, families, and many more in addition to our employers. This in turn gave us a sense of obligation to these stakeholders.

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Considering other people's perspectives on and stakes in an issue can make ethical performance happen much more smoothly and consistently; the one consensus of every text on ethics that I have ever read is that ethics cannot be automated. It always comes down to individual decisions and actions informed by the context of a specific situation.

In *Technical Communication* 10th Ed. (my English 249 textbook), author Mike Markel offers some perspective and guidelines for the ethical and legal issues technical writers might face. In the chapter titled "Understanding Ethical and Legal Considerations," he notes that the complex variety of possible situations means that the guidelines "cannot provide a systematic method of resolving ethical conflicts" (19). Later, he prefaces a list of basic ethical principles with the reminder that "it is impossible to state principles for ethical communication that will guide you through all of the challenges you will face communicating in the workplace" (34). At first the students struggled to look beyond the most obvious ethical tropes when analyzing their assignment, sometimes getting stuck on student-ethic matters such as "don't plagiarize" and "don't cheat." Reliance on more familiar (and perhaps simpler) ethical guidelines could be described as a context problem: if students are working on an assignment *as an assignment* (thinking of me as their audience and a grade as their goal), then they've failed to make the leap to the workplace context described by the project. The result is that they also fail to engage in the broader ethical, legal, or cultural considerations that apply to the workplace but not to school (or not in the same way). Eventually, however, most students were able to make that leap in context.

Arvin, writing in his Project 1 GUS about a video game manual, noted that

if an epileptic person were to play this video game and have a seizure from

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the flashing lights in the game not only would there be a legal suite on Nintendo's hands, but the ethical issues of not looking out for their customers would arise as well.

He continued, "Nintendo needs to look out for their customers not just for long term relationships but for the well being of the general public."

In Project 2, Felix wrote that "another ethical dilemma I could have is if I gave the wrong website information for the consumer to find more about online. I could have sent them to an untrustworthy website and harmed their computers in some way." In Project 3, Felix added a socioeconomic dimension to his thinking:

> If I made this [guide to water-cooling a computer] specifically for a richer person only, due to its expensive association, this will segregate the population. This would be unethical and could be offensive. I made it clear in the document that it is expensive, but I did not segregate any of the population.

Irving's Project 4 assignment involved updating a wiki site, and he demonstrated a solid grasp of relevant ethical issues there:

> Ethical and legal considerations I had taken was using information supplied by other websites to expand those articles. Some websites earn revenue by means of website traffic, or "user views." By taking information from those websites and posting them to the wiki, those websites can lose both traffic and money. Another ethical consideration was fighting the urge to delete information I disagreed with. An article can become biased if it only presents information from the opinion of one

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person. An important feature of wikis is the ability to alter information and remove bias, but it is just as easy to inject bias into the descriptions at the same time. I did my best to ensure I was fair with my descriptions.

As with empathy, my expectation when stirring up discussions of ethical matters has been that the students had the capacity to comprehend such matters but may have needed a nudge or some encouragement to get them to engage. The ethics question in the GUS typically sees a lot of wheel-spinning at first, as students don't always have the practical experience necessary to know what kinds of things could come up in a work environment; as Markel said previously, just giving out a list of principles isn't enough. Perhaps it would be more accurate to say that students didn't immediately see how they could extrapolate from the experiences they did have (in school, at home, in sports or clubs, or elsewhere) to a new—and sort of imaginary—workplace environment. To assist them, I added notes to their GUS responses, brought up ethical matters in class for discussion, and otherwise encouraged them to make their own connections. I also reinforced the idea that ethical issues were mostly going to be modestly-sized things that they *could handle* and not massive Erin Brockovich-type calamities. Once they saw that it was okay to think outside the "I'm a student" box—to move around in a differently liminal way—the variety of observations they offered on ethical matters tended to bloom.

I was pleased to see that engagement often extended to discussing and analyzing the needs of a community or group that the student belonged to or planned to join, such as fellow hobbyists or members of the student's planned profession. This occurred most often in the journal entries, where students had been asked to read and discuss articles of their choosing from trade or scholarly publications for their field. Harold thought about

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his community of gamers and considered the needs of its younger members: "For instance, there are many young gamers out there that may just be getting into Call of Duty Zombies. This mean I need to make sure my document is easily understood by younger kids most likely around the age of 10." Irving analyzes and critiques an article on video game development tools:

> The article appears to be more of a fun exercise in learning rather than mastery of the process. The guide mentions three different software programs that are used to create video games. It does a fair job of stating the strengths of each application and why they are great tools to learn the development process. When explaining Twine, they state the strengths of the program while letting the reader know of its limitations. This is a good way to appear unbiased and show that there are many options to explore when developing video games.

Here he demonstrated his awareness of what other members of his community might need or benefit from in an article on a topic of interest. Jane also analyzed and critiqued an article, noting at the end of her analysis that "this article's subject matter of advocating for information systems relates directly to my specific industry of study. This means I may find myself creating a document just like this in my future and the analysis can be helpful to me." Jane projected forward to a time when she may be able to make such contributions to her field, concluding that her analysis here would be relevant to work she may do in the future.

Scholars like Jean Lave and Etienne Wenger would describe these students' excursions as interactions with their communities of practice. The term "community of

practice" was popularized in Lave and Wenger's 1991 book, *Situated Learning: Legitimate Peripheral Participation*. Wenger, later writing as Etienne Wenger-Trayner, offers this description:

> Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor: a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope. ("Introduction")

I introduce my English 249 students to the terms "community of practice" and "discourse community" in my Learning Goals document (see Appendix C), which is given out on the first day of class. I don't require them to use these terms in their own writing, but I do ask them to think about and write about the people and groups that they interact with.

As we saw above, my students' interactions take place on both practical and abstract levels: students write about their interactions with their fellow students and group mates, but also about their future colleagues and professional peers—people or groups they haven't met directly and are theorizing about based on clues from articles or class discussions or other experiences. The students' written responses indicate that they are willing to both teach and learn from the communities they participate in (as Lave and Wenger suggest they should). Wenger's definition above glosses over what I think are some equally important communities of practice, those which are centered around a shared game, hobby, collaborative project, or some other mutual endeavor that can't quite be classified as "work." The internet has allowed such communities to flourish, and I am

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as interested in seeing my students contribute to those as I am in pointing them toward workplace communities.

<u>Research Question 3: Writers and Writing, Researchers and Researching</u>

My third research question asked how student perceptions of their role as writers and writing researchers within a larger activity system impact their work in technical writing. For this question, student behaviors and responses presented some unexpected complications. They also revealed an assumption on my part that I had not previously thought about very much. I had assumed, partly because of my own identity as a writer, that being a "writer" was not just a good and worthy identity but the target identity of my class. As a result of this assumption, although I asked them what writing they thought they would do, I didn't ask them how they conceived of the identity of "writer." The idea that I'm expected to convert my students into writers has been regularly reinforced by the texts I've read in my own schooling over the past eight years. I recently returned to the books and articles in my bibliography and searched through them to see how "writer" was used. It's a difficult word to omit, especially when talking about writing, but its ubiquitous use by many of the theorists and scholars that I and other teachers of English at ISU have read and relied on tells me that I'm not the only one who makes this assumption about the identity of (and the significance of) "writer." Bawarshi and Reiff, Artemeva and Fox, Spinuzzi and Jakobs, Boiarsky and Dobberstein, Thralls and Blyler, Jack Bushnell, and many of the other scholars in my reading list (including articles by each of my three dissertation committee members) seem to carry this identity as a talisman or totem. These are all people whose work I respect and am trying to build on,

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so it's not surprising that I should find myself mimicking their use of the writer identity.

The frequency of use for the term "writer" increased when I looked at technical writing articles, where "technical writer" or "professional writer" was often the goal, the identity, and/or the audience of the text. Slack, Miller, and Doak, in their hugely influential article "The Technical Communicator as Author: Meaning, Power, Authority," elevate the technical writer to the status of Author, a figure whose complex significance and ethical or moral role in society were the subjects of many of my undergraduate and graduate course discussions. That heightened status doesn't always manifest as a practical workplace role: technical writers are often anonymous, and they still do mundane copy-and-paste work or transcription of the employer's words onto the page. The articulation model of communication that Slack, Miller, and Doak describe is both a theoretical construct and an aspirational goal, one worth pursuing (in my view) even if it is never fully realized. Jennifer Slack's follow-up article cautioning against too much emphasis on the identity of the writer (quoted in Johnson-Eilola and Selber in Chapter Two) certainly makes a valid point that the technical writer does not always have the agency they might want in performing the activities of their profession. The writer or the capital-A Author may not be perfectly interchangeable, but as identities go they are as difficult for a writing teacher to escape as one's own shadow. I had been content to leave that identity and its related assumptions comfortably hidden in the dark, until the data lit things up.

In my overall analysis, the revelation that intrigued me the most was the fact that students were not interested in identifying themselves as writers, either in documents that were directly connected to assignments (such as the GUS) or in freeform documents such as the surveys or the journal. I make this distinction between locations of student

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responses because it's been my experience that the journals (and the surveys to some degree) tend to draw out the student's honest opinions a bit more, most likely because they're not being handed in or reviewed regularly and therefore don't seem as regulated as the project-bound assignments. It seems that there's less "writing what the teacher wants to hear" in the journals than in the GUSes. My guess is that it's a similar phenomenon to reality show participants eventually forgetting that the cameras are on them and letting their guard down. Even in the GUS, though, where students might be more likely to write what they think will please me, the identity of writer generally never catches on. Lance identifies himself as a writer early on, and Percy identifies himself as "working on a career in journalism" (arguably this is an activity as much as an identity, but it's as close as he gets at the start of the semester). In many of the other cases where students identify themselves as writers, they do so provisionally, or by claiming the semi-anonymity of a group, or with other caveats or hedges that blur the identity.

In an early journal entry, Brett said that he didn't consider himself to be a "strong writer," although he added that he was "confident enough to write proposals and reports at work." The weak identity doesn't prohibit him from confidently taking on the actions that follow from that identity, at least in his place of employment ("at work"). Later, Brett writes in another journal entry that "in class we talked about ethics in writing and what duties we have as writer to our reader." In the same journal entry, Brett uses a similar device: "As a writer I think we often forget how much power we have with our words." The writer's identity, though singular, is spread out across the class (or some other unspecified group) so that everyone and no one owns it. Brett is not alone in invoking the writer identity in a distant way like this. Chad wrote in his journal that "When being a

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technical writer, you need to think of every aspect of the writing…" and "sometimes we as writers forget or do not focus enough on the ethical issues of writing." Arvin wrote that "As a technical writer we have to assume that our audience will not know everything that we do." The phrases "as a technical writer" or "as technical writers" occurred slightly more often than the phrases "as a writer" or "as writers" (8 times vs. 6 times), but close enough that it would be difficult to say that students were strongly favoring one over the other in their responses. In general, students were not interested in—and were even resistant to—identifying themselves as either writers or technical writers in their reflective or analytical texts, and the frequency with which they did so decreased rather than increased over time. As I relayed at the end of Chapter Three, the identity of writer peaked in September and dropped off sharply thereafter (3 in August, 11 in September, 1 in October, 4 in November, and 3 in December).

When describing the work they performed for the class, the students regularly used the term "writing." This isn't necessarily noteworthy, since it's a common and direct way of describing the work they did. It was also an unavoidable component of the course, as instruments like the GUS asked them explicitly to discuss and dissect their writing. Students performed writing (where I am applying that activity label to the materials they turned in) on a regular basis and at a substantial volume. Although I sometimes encouraged students to go into more detail in their responses, in general they had plenty to say and were willing to say it in the GUS, in the journals, in the surveys, and in the in-class essays. Across all instruments, getting students to write *about* their writing was not difficult. In the early part of the semester, students did express hesitation about how to fill out the GUS or what they should write about in their journals. I didn't code this hesitation

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as resistance, because the students were not trying to get out of the assignment, or to make excuses for not performing, or to plead for less work. In the case of the GUS, a new and unfamiliar instrument for all of them, I explained at the start of the first project that they would probably run into some uncertainty the first time they filled it out. I told them that, based on my past experiences with other students working with that document, their answers would get longer and more complex over time. I let them know that I was okay with that progression, and that I would factor it into my grading. This seemed to put them at ease and helped soften their hesitation somewhat. The same was true of the journal: more than anything else, I would say that the questions I received about it were the students' way of asking me to reassure them that things would be okay, that writing in freeform and with minimal guidance would not come back to bite them at grading time.

Like writing, researching was often used as a descriptor of activity. This was not surprising; most of our graded assignments required students to conduct and provide a detailed list of outside research. Students did this work and described their results as "research" and the process as "researching," though they sometimes resisted either the description or the performance by citing their own prior knowledge or experiences as substitutes rather than as supplements. They also did not identify themselves as researchers at any point, despite the fact that they regularly conducted research in class and showed me (and each other) the results of their research. This is a stumbling block that I've run into repeatedly. Students are perfectly capable of performing research *as long as it isn't called that*. They look things up, find things out, Google topics of interest to them, but "research" as something required in a class seems to sap their strength or otherwise taint the process. This resistance to or distaste for research has happened in

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both Business English and Intro to Technical Writing, so it is a trait shared at least by sophomore business majors and senior computer science majors.

Overall, students were willing to perform research activities and writing activities, but they were unwilling to take up a researcher identity and hesitant to take up a writer identity. As I think more deeply about what my students were willing (or unwilling) to do and what I really want them to be capable of for the sake of their own future success and happiness, I see a rift between writer and writing, and between researcher and researching. Any job that requires a college degree is quite likely to involve at least a modest amount of writing and research in some form. Those are activities, and my students generally did well in performing those activities. Will the same jobs require a person to *be* a writer or to be a researcher? Do either of these identities impact the workplace or the person's performance in it? What about in the rest of a person's life? As someone who enjoys creative writing enough to have gotten an MFA in it, I'm obviously sold on the idea that writing can enrich one's enjoyment of life and one's connections with the larger world. I write a lot, and I have done so ever since high school. I have called myself a writer on many occasions, though it's not the only or primary way I identify myself. When I'm in a writing class, or when I'm trying to get something published, I'm more likely to use that identity—probably because it lends some legitimacy to what I've written and sets me apart from the hobbyists who don't respect the craft like I do. It also rationalizes my long-term investment of time, energy, money, and sweat.

Being a writer, like being a cook or being a programmer or being an artist, is an earned (if sometimes informal) title, except that anyone can use it. Anyone can take up the identity, but in doing so one is also making a claim about their abilities that they will

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eventually get called on. In a recent conversation with a colleague of mine, he observed that we mostly interact with our students' writing by pointing out all of the things that are wrong with it, and that's been the case for most of a student's life. To the extent that they see *us* as being writers, it's in the aftermath of a red-pen editing storm. That's not the basis for a trusting relationship, and it's not a good way to build a person's confidence such that they'd *want* to call themselves a writer. The identities of researcher or writing researcher are similarly problematic; I research information all the time, and many different kinds of it too; I'm quite good at it by now, but my students rarely if ever see me conducting research. In the case of the Fall 2014 cohort, I considered and rejected the possibility of occasionally pointing out the fact that they were all participating with me in a long research project because I didn't want to make them self-conscious or alter their performance. "Writing researcher" seems like a more specific take on the term "researcher," but this too was rejected by students. It could be that the students saw it as a substitute for "writer," possibly a less appealing substitute but almost certainly an identity with very few real-life examples they could draw upon to inform the identity for themselves. This in turn may have contributed to their resistance or sense of frustration when asked to perform research.

I've used a variety of techniques to get around this blockage. In Business English, the whole course is a long role-playing scenario in which students create and operate a fictional company with products or services of their choosing. Much of their research is about the business itself and how to run it successfully; genre and writing research are slipped into the mix as students are asked to write business plans, proposals, marketing materials, and other documents that are directly relevant to their company, and future

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business classes, and their future business life. In English 249, it seems more effective to appeal to students' analytical skills and tendencies. The tech-comm-as-teaching metaphor also gives a more solid form to the audience (the students' students), stakeholders that they are now responsible for. Did this more tangible sense of responsibility incentivize them to put more effort into their research? The quality of resistance to conducting research seems to be different between the two groups (sophomore business majors and senior computer science majors). My sense of the computer science majors' resistance is that it tends more toward "I can figure it out myself" rather than "I just don't want to."

Even if the students' response to research is "I just don't want to," it would be a mistake to attribute that response to laziness or stubbornness. As my students have demonstrated many times in this chapter and in Chapter Four, they are willing to follow the teacher's instructions or accede to their requests much more often than not. This is an under-valued attribute of the "student" identity. When I started teaching computer classes, I marveled at the fact that I would ask my students to do something…and they *did it*. No rationalizing was needed, no persuasion was required beyond the bare assertion of my authority as Person Who Gets to Stand at the Front of the Room. These were working adults, most of whom had likely been out of school for some time. I asked them to try something on their computers, and they would try it. It's been my experience that the default position for students (even those who are long out of practice) is one of engagement. Years later, when I taught my first English composition classes, I experienced the same sense of muted amazement when I told my students to write an essay and they *did it*. Whether either group *did it* competently is a separate question, and should not distract us from the significance of their willingness to engage. Nor should the

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fact that I'm presenting a blindingly obvious observation here; of course students do what we tell them. We're the teacher, they're the student. But it's one of those things easy to forget about because it's so obvious, so much a part of the baseline set of assumptions. My point in bringing up students' general willingness to engage or comply (depending on one's level of optimism) is that when students resist engaging en masse, something is going on. Something has disrupted their trust in the teacher or the material or the outcome, and I will examine this *something* in more detail in the next section.

Crafting a Theory: Role Models and Role Play

In this section I will lay out the pieces of my theory which explains these observations and conclusions. My dataset represents only a fragment of who these students are, and the students represent only a fragment of the larger student body, so it is to be expected that any theory put forth here will necessarily have some margin for error. Overall my findings indicate far more instances of willingness than of resistance; this is one of the strengths of the student position that I mentioned previously, and which we sometimes take for granted. Willingness to engage in learning activities is part of a set of strengths that I propose we could leverage more effectively than we currently are, not just in the introductory technical writing classroom but potentially in all technical communication courses. First, we should consider some of our other available strengths.

Putting Patterns to Work

Humans excel at pattern recognition, nearly from birth and throughout our lives (Zull 2006 and 2011; Wolfe 2006). Humans also routinely share information with one

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another through written, oral, gestural, and paraverbal languages. We are, in a very real and biological sense, information gathering and transmitting machines. We can't, however, recognize patterns without input or data, which is what makes the teacher a natural ally. Hold these attributes in mind as we consider the following details. By the time he or she enters college, the average Illinois student has spent over 11,000 hours in the classroom. This assumes 185 school days per year and a minimum of 5 hours of class time per day, in accordance with the Illinois School Code (105 ILCS 5). Add to that approximately 15 hours per semester per credit hour, and by the start of senior year most full-time students are over 12,000 hours. This time has been spent with dozens of different teachers, each with their own teaching styles and methods and temperaments.

By the time they entered my classroom, most of the students in the Fall 2014 cohort had had the opportunity to observe and interact with teachers of all different kinds for more total time than they would spend with just about anyone else except their own family members. They have talked with and listened to teachers, they have chatted and gossiped and complained to each other about teachers, and they have done their best to interpret what their teachers wanted (and sometimes why) when even the teachers themselves may not have been able to articulate it. They have watched teachers performing not just the act of teaching but the role of "teacher" over and over again—and all of this is only focusing on the paid members of the educational system. Their parents, siblings, extended family members, clergy, coaches, and friends have all taken on the role of teacher at some point in their lives, and they have done so too. The identity of "the teacher," then, is both intimately familiar to them and usually connected with at least some positive emotions, experiences, and outcomes. It is an identity for which the

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average student has many role models to draw upon, and thousands of hours of time spent directly witnessing the identity being performed. The identity of teacher is also part of a binary pair: teacher and student. This relationship has plenty of power-related issues, as Freire and many other educational theorists have observed, but it also has or can have a powerful synergy.

On the Need for Connections

In every one of my professional and technical writing classes, students typically begin the semester with an impoverished understanding of what workplace writing involves and produces. While every student can name a few genres, such as memos, resumes, and emails, very few of them understand the scope of written communication in the workplace and its essential role in the "people getting things done" of activity systems. Usually, only those students who have been in the workplace have a realistic sense of writing as a workplace activity. I don't mean to mock or shame the students, but to remind the reader that for all the time and energy we (teachers) have spent teaching students how to write in the preceding 15 years of their education, they are still blind to the practice of writing in some important ways. One of the most common genres that students encounter in high school writing classes is the five-paragraph essay (Kiuhara, Graham, and Hawken 140-141). That genre has been quite important in their prior schooling, but it has no direct relevance to the working world or to their performance within workplace activity systems. Arvin, Greg, Otto, Harold, and Lance all mentioned the school essay or five-paragraph essay as a genre that they were familiar with, often on the way to observing how new and different our class work was.

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The main premise of American education from Kindergarten through 12th grade, especially under No Child Left Behind and its successor programs, has been that students are being prepared for some *specific* upcoming test, event, activity, or (increasingly in colleges) career. Writing (along with other school activities) is difficult to see as something with a purpose beyond the expediency of passing the class. Standardized testing of K-12 students has increased dramatically in the past 15 years, and controversy and backlash against the tests have increased as well. Aside from the anxiety, the frustrations, and the wasted time that students endure under such an educational system, the most damaging aspect of a heavy reliance on standardized tests is the way in which the tests and the preparation for them decontextualize knowledge. A good, thoughtful teacher can help students to draw connections between many different subjects—and should do so, since making mental connections like that has long been shown to be the brain's preferred way of learning and developing. In "The Role of Meaning and Emotion in Learning," Pat Wolfe writes that

> [a]lthough we are able to examine and understand the parts that make up a whole, our brains work better if they first "get" the context the parts belong to. When curricula and assessment practices focus on discrete parts of the learning challenge, as they all too often do, adults have difficulty remembering—let alone understanding—because they do not see how everything fits together. (39)

Wolfe adds that just supplying context through explanation doesn't always help. "The brain does not take meaning; it must make meaning" (39). The all-important *why* (or another interrogative of your choice) is what allows us to make meaning; without it, the

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brain's work is incomplete. Tests and their associated administrative reward/penalty system force teachers to teach to the test, which means rote memorization and little to no opportunity to talk about *why* in any subject.

The disconnect between the writing they do in class and any tangible results beyond a grade makes it easy for the student to keep their composition coursework in a box, separate from what they want to do in the "real world" after school is done. Writing a biology paper may help the student understand cell division or DNA a little better, but it rarely helps them write better—if it did, the years of practice we give them would produce stellar writers every time. The disconnection between "school work" and "real life" is hardly a new observation; it can be traced as far back as educational reformer John Dewey, if not further. Unfortunately, education (like other large institutions) usually keeps lumbering along familiar paths regardless of the evidence that such paths are not working, or even when better ways might be available. In Chapter Two, I discussed a number of researchers who have argued that the traditional essay-oriented approach to teaching writing does not facilitate the transfer of skills that we once thought it did. Repeatedly teaching a student how to write an essay has far less impact on their ability to perform in the more densely complex writing environments of the workplace than we cared to admit. We can't reasonably expect or require too much prior knowledge of workplace writing or genres, but that fact does suggest a fairly substantial weakness in a process that's nearly two decades in length and which is supposed to be preparing its members for adult work and life. If, at or near the end stage of that lengthy process, students are not just unaware of the full catalog of adult work-and-life genres but unaware that such a (conceptual) catalog even exists, that's a problem. This is not meant

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as an attack on teachers or curricula from earlier in the students' lives, but we must be willing to review and revise how we teach if the desired outcomes keep eluding us.

<u>Incomplete Knowledge and Experience</u>

It would be unfair and unreasonable to expect students to accept and embrace every identity I might bring up in the class, or every identity they might put on provisionally to experiment with. Writer, however, is a special case, both for them and for me. English composition classes ask students—sometimes literally, sometimes by implication—to become or behave as writers. In the case of ISU's Writing Program and others that follow a genre theory or CHAT approach to composition pedagogy, that identity has been modified to "writing researcher" (as on the home page of isuwriting.com, which says "Our program cultivates students' Writing Researcher identities to meet the challenge of any new writing situation"). For either identity, writer or researcher, I would argue that students are at a significant disadvantage when compared with the identity of teacher. Obviously it is possible to learn how to do something without watching someone else do it (though it helps), but I would argue that it's challenging at best to learn how to *be someone* without watching someone else do it—or, even better, communicating with others who share that identity.

Instructional activity is a common activity within the communities of practice described by Jean Lave and Etienne Wenger, and later by Etienne Wenger-Trayner: "Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor," Wenger-Trayner explains; "[these communities have] an identity defined by a shared domain of interest" ("Introduction").

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Watching a teacher write on the blackboard is not the same as watching a person *be* a writer, with all of the attendant labor and frustrations and solutions that a working writer performs or produces. As a nearly-finished doctoral student, I have now worked with dozens of professors who are also published authors; I have never (hardly ever) seen them perform the role of writer. I have interacted with them as members of our shared community of practice, however, and in that space at least some transfer of writer-identity often occurs.

Given students' incomplete knowledge of what it is to be a writer, the next question is whether to try to rehabilitate the identity of writer, to fill it up with good things like an overstuffed piñata so that students will find it pleasing, or to accept that "writer" and "researcher" are too fraught or too elusive as identities to carry the meaning we want them to carry. It's the meaning that's the point, after all, and that meaning is pretty simple: Writing is an important activity in school, in the workplace, and in a satisfying life. When a teacher builds a successful case for this argument, it has a direct and measurable impact on the students' performance. Building an additional case for the argument "You are (or should be) a writer" adds a layer of complexity on top of the first argument, and it's a case that is far too easy to poke holes in; all it takes is one question: "Why do I have to be a writer in order to write?"

To put it simply, students shy away from or avoid the identity of writer because they have few good role models or any substantial lived experience they can draw on when constructing that identity for themselves. They know how to write (at least the basics); they do not know how to be a "writer." They know how to find answers to their questions; do they know how to be a "researcher"? They have experiences and

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observations to draw upon for these activities, but perhaps not for the identity. I would posit that students think of the activities of writing and researching as components of a student identity, since their experience tells them that they are only asked to engage in those activities while they are performing their student role. Therefore, the identities of writer or researcher are also incomplete subsets of a student identity. When we invoke the writer or researcher identity in class, we are asking them to perform a role that they cannot link to any experiences outside those of being a student, so the potential for growth is limited. If we invoke the teacher as an identity, we invite students to draw upon a vast reservoir of earned experience and to engage in activities they are already very familiar with: sharing information. The piece that's been changed is the perspective, opening the student up to seeing the people they interact with as people they can serve, people they can teach, and people they can help.

If we take Wenger-Traynor's assertion of the shared domain *of interest* as being a necessary precursor to communities of practice, our students who don't consider themselves writers or who don't have much enthusiasm for writing or who feel excluded or marginalized from the domain in some way will logically have difficulties drawing upon the shared identity formation that might take place within the domain. Based on Wenger-Traynor's description, communities of practice don't seem to have a whole lot of grey area at the perimeter where liminally-inclined folks can lurk or watch. His description, as I suggested above, may need to be stretched a bit to accommodate new realities as the web and other communication tools make new ways of understanding "communities" possible. Operating within a community of practice comes with plenty of benefits, such as shared "experiences, stories, tools, ways of addressing recurring

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problems" and more (Wenger-Traynor "Introduction"). Technical communicators and teachers and students all have their communities of practice too, with some overlap and some unique traits. These same three groups also routinely work in the spaces between domains, straddling boundaries and accepting identities for themselves that may be blurred or in transition.

Students write and research and engage in other activities because teachers ask them to. That is part of their identity as students, and even in working adults that behavior does not disappear and can be easily revived. Students play with identities as a part of their learning and maturation process, but their ability to take up any given identity will be limited by their access to reliable data about what that identity is like. This data is gathered from a variety of sources, but one of the more important sources is direct observation. Students have very few opportunities to directly observe writers or researchers actively performing those roles, while they have many opportunities to observe teachers and students actively performing their respective roles. When writing teachers ask students to take up the identity of a writer or a researcher, students are placed in a conflict position: they are willing to engage in the activity, but they lack sufficient data to perform the identity. As Pat Wolfe reminded us above, telling the students what a writer is like *is not enough*. "The brain does not take meaning," she notes, "it must make meaning" (39). We can shift our approach to writing by de-emphasizing the writer identity and emphasizing the activity and results. Part of this shift should include opportunities for the students to reflect on their own writing or other work in a low-stakes context (such as a journal that isn't graded for grammar or mechanics). This self-reflection is a crucial ingredient in the meaning-making process, and it is also a way

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for students to perform writing of direct personal importance rather than the abstract or loosely-connected significance of a letter grade.

In our role as teachers, as we supply our students with data and information, we can also offer another vital resource: perspective. This can take the form of case studies, workplace examples, articles or experiences from practitioners in the field, and many other tools that could illustrate the relevant contexts. More specifically for this theory, we can invite students to take up our identity and the perspective that it carries in order to help them see the topic, the work, or the audience from a new vantage. Students have many years of direct observational experience to draw upon in performing this role, and we can supplement that experience with additional information about the practice of teaching. It's much easier to round out an identity students are very familiar with than it is to try to create an identity like the writer without the right experientially-derived materials. For technical communication in particular, this approach has the added bonus of fitting in very well with our work and our ethic: we gather, sift, and make sense of information in order to share it with others. When we offer a model for our work or identity to our students, "teaching" and "the teacher" are far more visible than the paltry few examples of technical or professional writing that students might be aware of.

The teacher identity is not an end point here, but a bridge between the familiar and the unfamiliar-but-necessary (similar to the bridges technical communicators specialize in building). This can be a way to help computer science majors and others to understand and serve their audiences better. It's not an uncommon shortcut to conceive of one's audience as a mirror image of oneself; inviting the student to *teach* their audience necessarily de-centers the student's perception of the audience—in other words, it sets up

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a potentially productive imbalance in knowledge which the student must then examine more closely, thereby *making meaning* that can inform cognitive empathy. Instead of "I know X and they-I also know X, so I will give a cursory rehashing of X" we get "I know X and they-not-I don't know all of X, but since I don't know what they lack, I need to figure out which gaps to fill in and how to connect with what they do know." This second iteration of audience-construction is also easily extensible to one's colleagues, peers, and other community members. If it doesn't actively encourage community engagement, it at least removes some of the communicative barriers to that engagement, allowing the student to exchange knowledge with others more flexibly, whether the others have a similar or different base of knowledge and experience.

Implications for My Pedagogy and for the Field(s)

When I first started teaching English classes at Wichita State University in 2007, I thought it would be possible to develop a course plan for English 101 that wouldn't need changing and that I could deliver to class after class with increasing ease. I suspect that my heavy workload as a Masters student had something to do with that desire to streamline things. Fortunately, it didn't stick; in fact, I've progressed in rather the opposite direction. Every semester I keep notes about what's working and what's not working, and every following semester I roll out some modest improvements. My pedagogy is a complex mixture because I've been fortunate to work with a variety of excellent teachers with different styles and passions over the years, both before and after I decided to become a teacher myself. I've studied composition pedagogies in graduate school as well, and found many that I liked but none that did everything I wanted. It's

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fairly common for me, when I'm faced with a choice among several good-but-not-great things (and if it's a reasonable option to do so), that I will craft my own thing instead. In the fall of 2010, when I started as a doctoral student at Illinois State, Dr. Joyce Walker introduced me and my cohort to a writing research and activity-theory approach to teaching composition. It changed my world. Even though English 249 doesn't fall under the auspices of ISU's Writing Program, the course I described in Chapter Three could not have been developed without the critical pieces supplied by this approach. What I don't want to do is to slip into complacency and begin to think of my course designs or learning goals as "good enough." In the process of writing and researching for this dissertation, I've learned some valuable information about student behavior and about my own behavior and assumptions. When I speak of implications beyond myself (as with "implications for the field"), part of my meaning is that I will share whatever I find with my communities of practice. The other part of my meaning, and my deeper motivation in being a teacher of technical writing and in wanting to work with computer science majors in particular, is about the future of human knowledge.

The first 100 years of science fiction writing combined could scarcely dream of our World Wide Web, and yet here it is. More importantly, it continues to grow and embed itself ever deeper into our lives. Most importantly of all, it is not being constructed in a far-away land or a walled-off worksite, accessible only to a chosen few; it is being constructed daily by millions of people worldwide. It is a massively collaborative project, the largest one humanity has undertaken, with experts and non-experts working side by side. As the edges between offline and online get blurrier, even those programmers who don't work on some aspect of the web directly will still play a role in shaping our digital

society. What civil and mechanical and electrical engineers were to the 19th and 20th centuries, computer software and hardware engineers are to the 21st century. Technical communication has been, and continues to be, a close ally to each of these fields.

Communication within any given discourse community tends to be easier than communication between different discourse communities, with the difficulty level often increasing as the common frame of reference decreases. Computer experts, for example, often find it challenging to communicate effectively *about their field of expertise* with computer novices. The same can be said of astrophysicists, structural engineers, biochemists, art historians, literary theorists, and of course technical communicators. It's not uncommon for experts to rely on intermediaries such as technical writers to bridge the divide. Many times this works well; technical communication as a field has cultivated symbiotic and mutually beneficial relationships with disciplines across the spectrum. We can also support them as advocates for their own individual or collective needs or for the promotion of their work and their discipline.

Science advocacy and computer literacy advocacy are real and ongoing phenomena, and they will work best when the experts are directly involved in communicating with the public rather than (or in addition to) relying on third parties to do it for them. Oceanographer and film-maker Randy Olson, author of *Don't Be Such A Scientist: Talking Substance in an Age of Style*, makes a strong and passionate case for his peers to be their own advocates:

> Effective communication is an essential part of science, for at least two
> reasons. First, if nobody hears about your work, you might as well have
> never done it. And second, especially in today's world, if you don't

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communicate your research effectively, there are many people around who will communicate it for you, and when they do, it will probably be skewed in order to support whatever agenda they have. (30)

Olson is also making a case about identity and activities. He acknowledges that working in the lab has a strong appeal to many scientists specifically because it's so rational and free from the mishegoss of humanity: "A scientist can sit in his or her laboratory all day long, talking to the microscopes and centrifuges, and they will never talk back" (31). However, communication is a vital part of *being* a scientist—and, we can extrapolate, of *being* a software engineer or a web designer or a digital security expert or any other title that computer science majors may end up with. Scientists might hope that their work's importance would be self-evident to everyone else, but that has yet to happen. Scientists, researchers, engineers, and programmers must all be willing *and able* to communicate effectively and persuasively about their work, including its potential benefits and risks. If we are to truly call ours an Information Society, we must have access to this information as well in order to make informed decisions on purchases, proposals, and policies.

The question for computer science majors like the ones in my Fall 2014 class is not *whether* they will contribute to the digital domain (or whatever its next iterations might be) but *how much* and *how well* they will contribute. Asking or expecting them to contribute as experts only (through code or security measures or system design) is both unrealistic and a little dehumanizing; their passions, interests, and ethical motivators are as valid as anyone else's, even if they are not an expert in every area that interests them. If they don't know how to be (or that they can be) effective advocates or communicators then their contributions will most likely be limited to technical matters; on an individual

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level, their workplace interactions and even their careers may be unnecessarily constricted or malnourished if they can't effectively advocate for their point of view or for their own advancement. Real-world problems such as global climate change or the threats to net neutrality give ample evidence of what Olson means when he talks about others with agendas skewing our research; it is not enough for scientists to point to their work and say "The facts speak for themselves." Frustrating as it may be, the facts do not speak for themselves—we must speak for them, and we must do so persuasively, because others are already speaking on behalf of *or in opposition to* the facts.

Olson's *Don't Be Such a Scientist* is aimed at working scientists (though his message could easily be applied to most if not all STEM majors). He describes the traps that scientists routinely fall into when discussing—or not discussing—their work. He takes scientists to task for failing to explain to the general public why their work is useful, relevant, or necessary, yielding that duty to the media and political figures or groups who often have radically different agendas than simply "informing the public." In fact, he argues, it's not just a matter of failure to explain but an overall failure to engage the public as fellow travelers or worthy participants in the discussion. Olson calls this an "error of boredom," where a speaker or presenter has the facts right but fails to capture and hold anyone's interest (8). Another way to describe it might be that these failures stem from an unwillingness or inability to leave one's comfortable and familiar community of practice and live (however briefly) in the liminal space between the domains. When communities have built up walls for protection, as they sometimes do, it can be challenging to engage with other people who are perceived as being outside the wall—and those people are probably not too happy to be yelled at from over the wall.

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In a media-rich world where untold thousands of ideas aggressively vie for our attention, "the powerful and effective communication of science has to be a much higher priority than ever or the scientific community will lose its voice, drowned out by the new anti-science movement or just the cacophony of society's noise" (Olson 8). In Olson's observations of the people he's engaged to help him get his messages out over the years, he discerned a pattern: "Good communicators believe in the power of communication. Poor communicators don't" (158). Those who believed that communicating with others was an effective way to solve problems tended to be better at doing exactly that; those who had failed to make it work out that way tended to look for other means to accomplish what they wanted or avoid what they didn't want—a withdrawal of sorts, not unlike the withdrawal Graham describes in young nerds.

This tendency is not just limited to the classroom; it frequently manifests in the workplace as well. During my own early years as a computer consultant and trainer, I observed communication problems between my peers and our employees or clients many times. Although it was rarely if ever motivated by malice, people whose workplace identity was bound up in their subject matter expertise tended to guard their knowledge domain rather than invite people in. Jargon, naturally, was rampant, as specialized language is one of the first bulwarks of defense against outsiders. Esoterica from the depths of the instructor's well of knowledge was common too, regardless of its relevance to the more mundane workplace tasks the students were trying to accomplish. Certainly one could ascribe some egoism here, a touch of "look how much I know" that could just as easily be found even among seasoned professionals today. In the late 1980s and early 1990s, however, computer science was just emerging from the priesthood model of

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knowledge transfer, in which the mysteries were passed along only to the worthy and the dedicated. The idea that computers (and by extension all of the things they could do) were for everyone had really only taken root in marketing departments; for many others, being "good with computers" was a sigil of arcane and possibly untransferrable knowledge. Eric Raymond, author of *The Cathedral & the Bazaar*, points out that the restrained, isolated, and reverent approach to software development (the cathedral model) has an unlikely competitor: open-source, collaborative software projects seemingly styled after "a great babbling bazaar of differing agendas and approaches" (21). Despite the apparent chaos—or perhaps, in part, because of it—open-source projects have become both prevalent and powerful. Such projects represent a substantial subset of the digital domain, and their existence and proliferation depends upon communication—not just with other like-minded experts within the same community, but with people in many different communities of practice and with the wider world as well. These communities and people and in-betweens are what the *web* connects together.

Whether a computer science major plans to work with public open-source projects, commercial software products, hardware design, web development, user support, or managing any of these, the work and the worker will be socially situated. They will be expected to interact with and between a wide variety of communities, groups, domains, or interests, sometimes acting as the "integrated writers" that Spinuzzi and Jakobs described in Chapter One. This is the nature of the immensely complex network of social activity systems within which all human beings operate; the web has added complexity, not removed it. As the line between personal computer, tablet, phone, camera, television, and other devices grows weaker, the need for adaptability in designing, programming,

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supporting, and documenting these life-enhancing tools will surely increase. Despite the need for effective communication among a diverse set of stakeholders, computer science as an academic and a professional discipline still carries with it much of the baggage of hierarchy and rigidity, and its practitioners are still vulnerable to the same in-group tendencies that any other field or discipline might experience. The socially-situated nature of their work and the importance of effective communication is not a prominent topic of classroom discussion (likewise with many other STEM disciplines), and historically it has not been regular part of the average college program's curriculum despite periodic calls for its inclusion (Taffe 1989; Pesante 1991; Kay 1998; Margolis "Caring" 1999; Michael 2000; Reimann 2001; Anewalt 2002; Barker "Defensive" 2002; Klawe 2002; Barker "Making" 2004; Hoffman, Dansdill, and Herscovici 2006; Pomykalski 2006; Beyer 2008; Levy 2010; Jones 2011; Falkner and Falkner 2012). The formal, official discipline plays a role in socializing its undergraduates, including the passing along of rigidity and wariness of out-groups. The inclination for any community of practice to protect its knowledge and screen its membership has been researched often enough to be treated as a given at this point; what happens when members of that community are *explicitly* tasked with sharing their knowledge with an outside audience? In the tech writing classroom, we ask them to do exactly that. Though they don't fully realize it yet, their workplace and their career ask the same. Being socially situated isn't a lifestyle choice; it is an immutable but too often ignored element of the human condition.

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APPENDIX A

GENRE UNDERSTANDING SHEET (GUS)

The GUS is a tool to help you actively think about what you're learning while you work on the assignment (not just at the end). Be specific and detailed in your explanations below, and describe how you arrived at each answer. In other words, answer the follow-up question "How do you know this?" for each item. Avoid vague, over-used terms such as "professional" or "formal." Save your answers in a separate document with your name and the assignment name.

1. Genre Name or Description. Remember that many genres are hybrids without a formal name.

2. Writing Purpose. What is the business task you're trying to accomplish with this document?

3. Audience Needs: How will this document get used by your audiences? What do your audiences want or need from this document? Who are your primary audiences?

4. Content. What is your content (the facts, figures, images, and details)? Discuss how (or if) this genre is suitable for the task you're working on, the content you're trying to deliver, and the audience you're trying to reach. If you're deliberately breaking a genre's conventions or expectations, explain why and describe the results you wanted to achieve.

5. Research. Describe and document (list sources for) the research and other knowledge-work you performed for the assignment. "I Googled it" is not sufficient – be more thorough.
a. Your genre research and list of sources:
b. Your content research and list of sources (including images):
c. Your audience research and list of sources:

6. Trajectories: When producing this type of document, what tools, knowledge, and other genres are usually involved? Where will it go (and how will it travel) once it leaves your hands?

7. Ethics. What ethical, legal, or cultural considerations did you take into account when working on this assignment? "None" is the wrong answer. Ethical issues are often subtle

and easy to overlook (our assumptions can blind us here), but that doesn't make the issues less important.

8. Web Text. If you used text copied from the web for part of your assignment, where did you find the text/item, what did you change, and what does your copied text mean?

9. Teaching. What teaching skills or activities did you use while working in this genre? Does thinking about it from a teacher's perspective help you produce better work? Why or why not?

10. The Big Question. How did you successfully explain complex things to others? Break this question down as it relates to this particular assignment and address it as best as you can.

11. Self-Analysis: What made this genre easy or challenging for you to work with? What would you do differently next time? What new discoveries did you make? How could you connect this work to writing or other activities you've done before, in school or elsewhere?

12. Group Contributions. If this was a group assignment, describe the <u>content</u> and the <u>research</u> provided by each group member.

APPENDIX B

SURVEY QUESTIONS

<u>Survey 1</u>
1. Respondent Name
2. Think about a time that you were successful in teaching something new to someone(s). What factors or actions on your part (or the other person's) made it a successful event? In other words, how did you prepare for and perform your teaching, even if these actions happened informally or on the fly?
3. From your answer to Question 2 above, how did you know that you were successful in teaching the person? In other words, how did you assess the results of your teaching?
4. Think about a classroom teacher (or more than one) who you think was generally successful in teaching you their material. What factors helped make them successful?
5. Think about a time that you were not fully successful in teaching something new to someone(s). What factors or actions on your part (or the other person's) made it an unsuccessful event? In other words, how did you prepare for and perform your teaching, even if these actions happened informally or on the fly?
6. From your answer to Question 5 above, how did you know that you were not fully successful in teaching the person? In other words, how did you assess the results of your teaching?
7. Think about a classroom teacher (or more than one) who you think was generally not successful in teaching you their material. What factors prevented them from being successful?
8. In your current or future career, do you expect that you'll be asked to teach others in any way? If so, describe what that teaching might be like (who you'll teach, how it will take place, and so on).
9. What teaching tools or resources would you like to use or have access to in this class and/or in your career?

<u>Survey 2</u>
1. Respondent Name
2. In other college-level classes you've taken, what teaching methods, styles, or tools (such as handouts, exercises, games, or study aids) did you observe that you thought were effective? How could you adapt any of these to your own technical writing?
3. In other college-level classes you've taken, what teaching methods, styles, or tools (such as handouts, exercises, games, or study aids) did you observe that you thought were not very effective? How could you avoid having the same ineffective results in your own technical writing?
4. Metacognition, which can be partially defined as "thinking about thinking," is an important part of both the learning process and the teaching process. By treating technical communication as an act of teaching, I'm asking you to think about how you think and how the people in your audiences think. Now that you've tried it in at least one assignment, please share your thoughts on how this approach has (or has not) changed

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the way you approach your own writing or any other aspect of your school, working, or personal life. Give specific examples if you can.

Survey 3
1. Respondent Name
2. In what ways has your understanding of technical communication changed or evolved over the course of the semester?
3. In what ways has your understanding of teaching changed or evolved over the course of the semester?
4. How has your understanding of the relationship between technical communication and teaching changed or evolved over the course of the semester?
5. How did our use of a Big Question ("How do we successfully explain complex things to others?") affect your understanding of the course concepts or assignments?

APPENDIX C

LEARNING GOALS

Learning Goals and Our Big Question
This is the Big Question that drives what we do:
"How do we successfully explain complex things to others?"
Technical communicators must address this question on a regular basis. What makes it a Big Question is the number of variables involved. We will take this question apart in class and analyze the variables, including audiences, subject matter, tools and methods of communication, research, self-evaluation, and more. Our learning goals below will add flavor and focus to our discussions and projects, but they should be treated as guidelines rather than limitations.

1. Genres, Audiences, and Persuasion
Summary
By the end of the semester, students should be able to do the following:
- Analyze any given type or genre of writing to determine its rules or attributes.
- Recognize that many types of writing are hybrids, blending attributes from multiple genres, which makes careful analysis even more important.
- Select an appropriate genre or hybrid genre for the task they've been given.
- Write in a genre that they have analyzed, following or breaking the genre's rules as needed by the task they're trying to accomplish.
- Communicate effectively in a variety of written, spoken, and visual genres.
- Recognize and understand the differences between professional or business genres and academic genres, and also understand why those differences exist.
- Analyze the item's most likely audiences in order to determine their needs, expectations, and any conflicts in needs or expectations between different audiences.
- Use a variety of rhetorical methods to persuade our audiences to (a) accept what we've written as reliable and/or (b) follow our instructions or recommendations.

Details
For discussion purposes, each type of writing we can do will be considered a separate genre. Items such as memos, emails, speeches, text messages, TV commercials, balance sheets, policy manuals, legal contracts, or websites are all designed to communicate information, but they each follow their own sets of rules or guidelines. Some genres use mostly written material, some are mostly spoken or oral, some are mostly visual, and many genres are a combination of these. You will be asked to work in many different genres for this course (and in your career), and one of our objectives is to learn how to learn what a genre requires, so we can work competently in that genre when needed. We are not trying to master any specific genre; instead, we want to improve our flexibility and resourcefulness overall.

In the workplace, we have at least three general audiences most of the time: our employers, our business peers (inside and outside of our company), and the public (especially our customers or potential customers). We can subdivide each of those three into smaller and more precise groups, but the most important thing to remember is that the three audiences will often have different and sometimes conflicting requirements and expectations. It's up to us to navigate carefully and ethically between them.

We don't just write to inform; we also write to persuade. We can't give commands to our readers as though they were robots, so we have to take a different approach. The choices we make in informing and persuading our audiences are known as *rhetoric*. Rhetoric can be broadly divided into three types: logos (an appeal to logic), pathos (an appeal to emotion), and ethos (an appeal to ethics or morals). We often see these three used in combination.

Reflection Questions
These are some of the questions we'll deal with in our discussions and our work during the semester. Note that many of these questions have more than one good answer.
- What style of language (such as formal, informal, slang, technical or industry-specific terms) does the genre call for? This may vary by context (and many other factors): for example, let's say my company wants to create two brochures for our product or services. One will be aimed at technical professionals and decision-makers, and one will be aimed at the general public. How will/should the language in the two documents differ?
- What kind of audience is this genre usually written for? Does it have multiple audiences? What does each audience expect or require from the genre? Text messages between two friends will probably look different than text messages between an engineer and her boss. A computer magazine for non-technical people will probably look different than a computer magazine for programmers or network administrators.
- What kind of resources will I need for this genre? What does it take to produce (or receive) an email? What about a TV commercial? A trade-show booth display? A sales contract?
- How/why should I analyze an audience?
- What kind of cultural, ethical, or legal issues should I be concerned about with this genre? How are these issues affected by changes in the audience? Can I say the same things in a company policy manual for my Tokyo branch that I can say in a policy manual for the Seattle branch or the Paris branch? What, if anything, should I explicitly avoid with this genre?
- What are this genre's other attributes? Attributes can include any or all of the following: Media used, Audiences, Sentence-level features, Limitations, Aesthetics (visual or other), Mechanics, Research requirements, Content, Logistics, Costs, Technology, Culture, Context, Spin, Politics, Voice, or Purpose. We will explore these in some detail during the class.

2. Ethics and Civic Engagement

Summary
- Identify ethical, cultural, or legal issues that will affect how we approach our work (writing, speaking, illustrating, programming, and other interactions), no matter where it takes place.
- Find and use strategies to effectively handle ethical, cultural, or legal issues in our work.
- Recognize that technical communicators have an inherent obligation to the safety of their readers and to the integrity of the information they are communicating.
- Discover ways to use our skills and interests to make positive contributions to local or global communities, and to encourage or support others who want to do the same.

Details

Technical, professional, or business writing carries a substantial social obligation: your words are intended to provide necessary information and sometimes even to tell the reader to take specific actions. This gives you power which must be used carefully and well. Understanding the different and often competing sets of ethics that guide our behavior in the working world is vital. Ethical matters and choices are rarely huge, such as blowing the whistle on your company for dumping toxic waste in a nearby river. They are most often small choices we make every day, usually without giving them much thought. Is it ethical to withhold information about your product from customers? Is it ethical to create ads or product labels that make your product seem better than it is? Is it ethical to give someone else's ideas or work to your boss and claim it as your own? Each of the other Learning Goals below, as well as each of our projects and assignments, will have an ethical dimension to them. Part of our work for the semester will be to improve your ability to identify and deal with issues of ethics in business communication.

Multiple studies have shown that—aside from being paid fairly—one of the biggest motivators for most people in the workplace is purpose. We like to know that the work we do contributes to the world around us in some way. The skills we master, both at work and at play, can help us satisfy our desire to make meaningful contributions. Many smart, skilled people volunteer with non-profit organizations or contribute to open-source projects of all kinds for this reason.

Reflection Questions
- What's the difference between ethics and morals?
- What's the difference between corporate and personal ethics?
- How can we balance truth and trust with the need for tact and discretion?
- How can we produce ethically responsible work in an environment which may not always reward or value our idea of ethical behavior?
- How do the ethics held by the different cultures who might receive our work intersect and/or conflict with one another?
- How can we use our knowledge and skills to make a satisfying contribution to the world around us? Can open-source or volunteer projects be a part of this?

3. Research

Summary

- Understand that different fields and professions may have different standards or preferred sources for what they consider valid, reliable, and appropriate research or sources.
- Determine whether a source of information is reliable and suitable for the task at hand.
- Work with a wide variety of sources of information and data, including (but not limited to) scholarly and trade journals, library and other digital databases, archives, and case studies.
- Collect data using a variety of methods, including (but not limited to) observations, experimentation, interviews, surveys, and focus groups.
- Recognize that research is a necessary part of most professional writing—even if we think we know a subject or genre well.
- Cite or give credit to our sources in a way that's appropriate for the genre being used, including (but not limited to) academic citation styles such as MLA, APA, and others.
- Research genres, content, and audiences as a group or team.

Details

Research doesn't always take place in the library, and it doesn't always have to be formal (although both of these can be true). Research will be necessary in our class for just about every assignment. Our research will involve exploring genres, gathering the information or content we're going to put into the genre, understanding our audiences and their needs, and determining the most effective way(s) to share information with them. You never know when research from one assignment or task will come in handy for another task down the road, so don't be too quick to toss out your research right when the job is done. A good professional writer values efficiency, and it's more efficient in the long run to keep a personal library or list of research you've done than to re-do that research over and over again.

In some cases, I will give you a specific number of sources to use. These sources should be non-trivial and peer-reviewed or otherwise respected in the relevant field. Dig deep; use the library. Don't simply take the first item Google offers. Just because it's in print doesn't mean it's legit.

Bad: sources like dictionary.com (trivial), Billy's Blog (probably not peer-reviewed or respected by the industry), articles on Ask.com (probably trivial, probably not a respected source for your industry), a small-town paper's letter to the editor from a random crazy person (random, crazy).

Good: sites/sources such as *New York Times*, *Chronicle of Higher Education*, *Advertising Age*, *Washington Post*, *Journal of Business Education*, or a noted economist's, scientist's, or industrialist's blog (e.g. Paul Krugman, Michio Kaku, or Bruce Wayne).

Reflection Questions

- How can I research a genre so I can do it well? How can I tell if I'm using a good example of that genre as my model? How do I reconcile conflicting examples or advice?

- What scholarly, trade, or general-public resources are available online, either for genre research or for general research? What scholarly, trade, or general-public resources are available in print (at bookstores or the library)?
- What other kinds of research can I do? How can I determine if my research is reliable or appropriate for the type of work I'm doing? Will the people who will read my work (my boss, managers, co-workers, customers, stockholders, or others) also consider my sources reliable?
- Will I need to find or conduct a survey or a study to get the information I require?
- What can I do to make sure I get the most out of an interview with a client?
- What resources have I learned about in other classes or jobs that I can use again for this task?
- Have I given credit to my sources of information in the expected format (as determined by the genre I'm using)? Do I need to cite my sources formally, as with a paper for a scholarly journal? If so, what format does that publication prefer?
- How can I responsibly test the materials I produce to see whether they are consistent, effective, understandable, thorough, and otherwise usable by my audiences?

4. Trajectories
<u>Summary</u>
- Anticipate where a document is likely to go once it leaves the writer's hands, and take the document's journey into account during its creation.
- Understand that many of our writing tasks involve repackaging or recomposing information we receive from a variety of sources, and that other people may recompose what we write.

<u>Details</u>
Although some things we write will be read by only one recipient (such as a teacher, relative, co-worker, or employer), many of these items can travel much further than that. The complete arc of travel for a document (including its ancestry) is called its trajectory. It is not always easy to know or anticipate the trajectory of a document, but it is definitely worth thinking about as you create the item. For example, a Facebook post badmouthing a local company may get read by the hiring staff after you apply for a job at that company. Your drawings from age 5 may get hauled out of storage by your mom and shown to your significant other in your 20s. Emails to a co-worker about how your boss is a jerk may get read by the boss.

Many of the things we read include material from multiple sources that has been recomposed (taken apart and displayed in a new context): newspaper articles use quotes from sources, technical manuals use facts and figures from engineers or designers, reports use statistics and data from other researchers, and so on. What *we* write can also be recomposed by others. In other words, we are rarely the origin point for our document's trajectory—we're somewhere in the middle of that arc.

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- How am I recomposing someone else's work as I write?
- How will someone else recompose my work after I've published it somewhere?
- As I write, how can I plan for the likelihood of my work being cited, copied, or recomposed?
- How does the medium I'm using change the trajectory of this item? Who will/won't be likely to read it as a result?
- If I'm passing something along (via research, hitting the Forward button, or something else), what's the history of the material I'm sending along? We are not always the starting <u>or</u> ending point on an item's trajectory.

5. Knowledge Management and Communities of Practice
Summary
- Recognize that the technical writer's job includes a great deal of knowledge management—organizing, gathering, preserving, reformatting, and sharing information.
- Understand that technical communication shares many common traits with teaching, and that the tools and resources of teaching can be useful in the technical writer's work.
- Work effectively with common tools of knowledge management, including word processing software, graphic design software, internet and library search engines, and databases.
- Connect our work as knowledge management experts to a solid foundation of ethical behavior and respect for the integrity of information.
- Understand how our work helps to shape and grow our professional and social communities.

Details

The act of technical communication often uses many of the strategies and resources employed by teachers. Likewise, the act of teaching can be seen as a strong and diverse form of technical communication. For both the technical writer and the teacher, a large part of their work can be described as guiding new members into a larger community of knowledge. The terms "Community of Practice" and "Discourse Community" are often used to describe groups whose members share some specific understanding of the world. A Community of Practice often refers to people who share the same general type of job (such as electrical engineers or architects), and a Discourse Community usually refers to people who share a similar body of knowledge and terminology but use that knowledge in diverse ways (such as English majors or Computer Science majors). Naturally, these two concepts overlap.

The teacher and the technical writer both help people to learn how the new community thinks, what it values, what its general goals are, and (most importantly for us) how to participate in that community's discussions or activities. It's in this last act that we advance from discourse community member to community of practice member. We can study and become an English major without joining the community of practice, but we

can't join a community of practice without being a part of its (or a larger) discourse community.

To put this another way, when we work as technical writers, we will often be asked to act as a mediator between two or more groups with different levels of knowledge. Some examples:

We may be asked to work with design engineers who are experts in how a product works, and to create a user guide for customers who may never have seen the product (or anything like it) before. In this case, part of our job includes teaching on multiple levels: teaching our customers not only the process for using the product but also the how and why of integrating it into their local culture. We must invite them into both the product's discourse community and the community of practice of people who use such a product.

We could be asked to write a policy manual for our office which will mostly be read by new employees; in this case, the subject matter experts (sometimes abbreviated as SME) will most likely be scattered around our company. Different people will have different pieces of their own experience and knowledge to contribute, and we will need to gather that knowledge from them. It's possible that we may need to help some of these people (who may be unintentional subject matter experts) to articulate their thoughts clearly--to help them figure out what it is that they know, so they can help us explain it to others.

We might create some documentation or articles for an open-source project, such as an open-source software program, a knowledge base or wiki for a computer game, or to help a non-profit organization that we're familiar with. We could be both the subject matter expert and the technical writer here (and in the above examples too,).

In each of the above cases, we are being asked to gather, organize, and pass along knowledge from one group to another. Often this is a two-way street; we could be asked to gather different knowledge from users (such as how they actually use the product vs. how the engineers meant for them to use it) and pass it back to the subject matter experts.

The teacher's work can be divided into three broad activities (each of which has its own subset of activities and research):
• Creating and following a set of learning goals (like this document)
• Assessing how well the student is taking up the new information and adding it to their own body of knowledge
• Giving lessons or other instructional activities
Throughout the semester, we will examine the ways these activities translate to the technical writer's work. We will also look for other common traits or trends that let us outline where teaching and technical writing overlap—and where they don't.

Reflection Questions
• In what way(s) do we act as teachers while we're also acting as technical communicators?
• What are some of the tools used by teachers that could also be useful in technical writing?

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- How can we manage ethical conflicts when the groups we're mediating between have different expectations, motivations, or understandings?

6. Globalization
Summary
- Evaluate the needs of people in different cultures than our own, and address those needs in the work we produce for them.
- Recognize the value in re-examining our basic assumptions about how the world works, in order to avoid blind spots that could prevent us from effectively communicating with people who don't share our same set of assumptions.
- Understand that most of us already navigate among different cultures in our daily lives, and that we have more experience in doing so than we might be giving ourselves credit for.

Details

We live in a connected world. Your future employer may ask you to interact with people from many different states, cultures, or countries. Our class projects will ask this of you as well. Remember that "culture" does not just refer to popular American consumer culture, but to the combination of ethical, faith-based, political, economic, and tribal self-identity held by any group of people. A single person can be a member of many cultures simultaneously. People from different cultures will have different assumptions about how the world works, as well as different ways of composing, transmitting, receiving, and understanding various genres.

Reflection Questions
- How do far-away audiences or cultures receive a given genre differently than our local culture does? How can I adjust for this when I write in that genre?
- How can I effectively communicate with people whose culture or ideology might lead them to see and respond to the world differently than I do?
- What genres might exist that my local culture uses/doesn't use but other cultures don't/do use?

More on Audiences

Every genre has at least one audience; many genres have many audiences (and we could argue that each genre-audience combo is a genre itself). Every document you create for this class should take your audience(s) into account. Here is a partial list of people or groups you might communicate with in the course of your career (it's an even bigger list outside of that). You should refer to it often. Feel free to add others as needed. Note that each group here could be divided into many smaller groups as well.
- Employees (past/present/future, workers/management/other)
- Stockholders
- Vendors and suppliers (those who sell goods or services to your company)
- Contractors (billable or non-billable)
- Salespeople (yours or others)
- Prospects

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- Clients and customers
- Consultants (accountants, lawyers, computer hardware or software specialists, management or efficiency experts, architects, engineers, and many others)
- Financial institutions (banks, lenders, credit card companies or processors, debt collectors)
- Competitors
- Industry or trade groups
- Unions or labor groups
- The public (local, regional, national, international)
- Government agencies (local, state, federal, international)
- Advertising agencies, marketing agencies, or related specialists
- Insurance agencies

Impact of Language Choices
When you work for a company, you are no longer representing only yourself through your communication, and the potential consequences of the language you use will increase substantially. Your language choices (good or bad) can and often will
- represent you to your company (your bosses and your peers) and to the world
- represent your company to the world
- commit you to terms or conditions with your company or the world
- commit your company to terms or conditions with the world

Keep this in mind as you work, both in this class and in your career. Promising something to your employer that you can't deliver can get you fired. Promising a customer something that your company can't or won't deliver can get you or the company sued.

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Projects

The position of technical writer carries significant responsibility: what we write or produce can *literally* affect another person's productivity, success, safety, and even their life. We will discuss the ethical, legal, and cultural considerations that our work carries. We will also practice using the rhetorical tools that are best suited to our job. Some of our work will take place in small groups, which will give you the opportunity to practice your collaboration and delegation skills.

We cannot possibly cover all of the types of documents or types of audiences a technical communicator might produce; instead, we will practice with several combinations of these as part of a larger exercise in writing research, or **gathering knowledge on how to work with different genres (types of documents)**. You may be familiar with this genre-based approach if you took English 101 at ISU within the past few years.

Instructor's Research

This section of Intro to Technical Writing will cover all of the material that a regular 249 course would. It will also include some material related to my technical communication research. Specifically, we will examine the ways in which technical writing can be seen as an act of teaching, and we will look at the tools and methods used by teachers to see how they can help us to work more effectively as technical writers. Students do not need any special knowledge in order to take or benefit from this class or this approach to the class. As part of this course, you will periodically be asked to take brief surveys so I can document your thoughts and understanding of the materials. I may adjust the assignments to better serve the purposes of this research. I will always make sure that my adjustments do not unfairly impact your grade.

Groups

During the second week of class, I will assign you to groups. This is usually done alphabetically by last name. Each group of 3-4 will sit and work together for the rest of the semester. Each group should select one person to be your Tech Leader, who will handle technology-related issues for your group, such as helping to set up Google Drive accounts for group members. If no one in your group is able to fill this role, I may switch group memberships for some people. Your group will also be asked to provide occasional feedback on other groups' assignments.

Class Projects

In general, we will divide our time in class between discussions, in-class learning activities, and group/individual work. Project-specific written items will be due on the last day of that project (listed below), but drafts of your work will be due earlier for peer

review sessions. You <u>will</u> need to work with your group outside of class to finish your group projects.

Document Management
We will use Google Drive (formerly known as Google Docs) for our document management. You can sign up for a Google Drive account for free. If you have a Gmail account, a Google Drive account is already included. All of your written assignments are to be handed in electronically in the proper folder and with the proper naming method. All group and individual items are to be saved in your group's folder. The only exceptions are (a) physical items such as a model or mock-up, and (b) your Progress Journal if you prefer to keep it private.

<u>**Following this naming method is mandatory. This is how I tell who you are and which assignment you're turning in. Files that aren't named properly will not be graded!**</u>

Naming method for assignment files: Last Name and First Initial, Underscore, Project Number (F for Floating), Underscore, Brief Assignment Name. For group assignments, use the word "Group" and the group's number instead of Last Name and First Initial. Don't use spaces or special characters in the file name. Don't put your group's number on individual assignments – I know which group you're in. Each group will have dozens of files by the end of the semester, and this naming style makes sorting and finding documents much easier for you <u>and</u> me. You can make subfolders within your group folder to organize your files; just make sure I can find your assignment docs when it's time to grade them.

Examples:
RowanR_2_Brochure
RowanR_2_BrochureGUS
RowanR_2_Brochure-Fix
Group2_4_DocAnalysis-1
Group2_4_DocAnalysis-1GUS
SmithJ_3_Instructions
SmithJ_3_InstructionsGUS
SmithJ_3_Instructions-Rewrite

Reading List
This is a partial list of the items we'll read or watch during the semester. As I discover new items that I think are relevant and helpful, I will add them to the list. <u>You can do the same</u>. If you find an interesting article, video, or other item you'd like to share with us, let me know.
<u>Textbook</u>: *Technical Communication* 10th Ed., by Mike Markel (Various chapters)
<u>Video</u>: "Drive: The surprising truth about what motivates us" by Dan Pink (Youtube)
<u>Handout</u>: "Problem Words and Phrases" by Rob Rowan (Word doc)
<u>Handout</u>: "How Learning Works" (summary) by Rebecca Brent and Richard M. Felder (PDF)

Assignments

Our course will be broken into four projects, each with a general theme or type of work. For each project, you must complete one group assignment and one individual assignment. In addition, you must complete a Genre Understanding Sheet (see below) for every assignment you turn in. For group work, the Genre Understanding Sheet can be a group effort.

Using Web Text

Some of the documents we will work on have full examples available on the web for cheap or free. In the real world, it can be perfectly legitimate to copy and modify these texts (with some exceptions) for your own use – often the author has made them available for that very purpose. I recognize this reality, so I'm offering you a compromise. You can copy & paste web text for your assignment (twice max per semester), but you must do two things: (a) modify it in some substantial way to make it more directly applicable to our projects, and (b) on your Genre Understanding Sheet (below), tell me where you got it from, what it means, and what you changed. You can use web text to fulfill your assignment twice max during the semester.

Important: **You are fully responsible for every word on every assignment**. If you use web text that you don't understand (such as a copied legal document), it's your job to figure out what it means before using it. Creating or signing a contract or other document that you don't fully understand could be disastrous for your business and for you personally!

Graphic Sources

For each graphic (image, picture, photo) you use in this class, you must give credit to the graphic's creator if possible. This is often challenging for graphics you find on the web, but you must do it anyway. Just because a graphic is available on the web for anyone to see, that doesn't automatically mean anyone can use it in their own projects or documents. When a real-world company wants to use a graphic that someone else created, it has to contact the person or company who owns the rights to that graphic and get their permission or risk being sued for copyright infringement. Getting permission often involves buying or leasing the rights to the graphic, and there are companies which specialize in doing this (such as Corbis or IStock Photo).

For class purposes, we will be slightly less strict: you do not have to get permission from the rights holder, but your GUS must list the specific source for each image you're using (which website it came from, and the name of the creator/designer if at all possible). **DO NOT** list a Google search string as your source – this will result in either a Fix or a lawsuit.

Research Sources
We will use the web for a lot of our research in this class. Not all sources of information on the web are the same, and I expect you to make smart choices about whether your source is reliable, thorough, and relevant to whatever you're trying to do. When listing your sources in the GUS, include the <u>name of the publication or website</u>, the <u>name of the article or specific page</u>, the <u>name of the author</u> (if one is listed), a <u>link to the site</u>, and a <u>1 to 2 sentence description of what you got out of that source</u>.

Genre Understanding Sheets
Except where specifically noted, **<u>EACH</u>** written project-specific assignment (whether group or individual) must include a separate Genre Understanding Sheet (GUS). The Research Journal, Project I group assignment, and surveys do not require a GUS.

<u>Process for handling a Fix</u>:
- It's your responsibility to check your assignment docs for my notes, including a Fix due date (if any). If you ignore a Fix, it turns into a No Credit once the due date has passed.
- You can always come to me for help, whether in class, in my office, or by email.
- Your Fix needs to do more than just edit the problems I pointed out, because I will never point out all of the problems in a document. You need to do a serious analysis of your own doc and look for ways it can/should be improved. This is especially true if you received a Fix due to excessive mechanical or grammatical problems (typos, punctuation, spelling or sentence errors, that sort of thing).
- Unless I specifically say that your GUS doesn't need updating, you should revise your GUS as well to reflect the improvements or changes you made to the assignment doc.
- Keep your original document and GUS, so I can see my comments and compare your improvements in the new version. **Make a new copy of the fixed assignment and the fixed GUS. Give your new documents the same name but with "-Fix" at the end.**

<u>Process for handling a Rewrite</u>:
- You can rewrite <u>one</u> individual OR advanced assignment that received a No Credit, as long as you submitted the original assignment by its due date. Note that this only applies to Projects 1-3, not Project 4 or the floating assignments.
- If your entire group agrees, you can rewrite one group assignment that received a No Credit <u>instead of</u> any individual group members turning in a rewrite. Follow the same process described below.
- Like the Fix, your rewrite needs to do more than just edit the problems I pointed out, because I will never point out all of the problems in a document. You need to do a serious analysis of your own doc and look for ways it can/should be improved.
- Any rewrite MUST include a rewrite of the GUS as well, in which you address the research, content, and other elements of the new and improved assignment.

- Keep your original document and GUS, so I can see my comments and compare your improvements in the new version. **Make a new copy of the rewritten assignment and rewritten GUS. Give your new documents the same name but with "-Rewrite" at the end.**
- If you don't want to rewrite the same assignment, you can pick a different assignment option from any project (not just the project the No Credit item came from). You can replace an individual assignment with any other individual or advanced option that you haven't done. You can replace an advanced assignment with any other advanced option that you haven't done. Be sure to let me know that you're doing this!
- To make sure your rewrite is on track, I want you to send me a draft by Monday of the last week of class. Include a draft of your GUS too.

Project One: Technical Writing and Genre Analysis
Date range: August 18 to September 15 (written items due on this day).
Readings: *Technical Communication*, Chapters 1, 2, 3, and 4
               "Genre and Writing Research Guide"
               "Problem Words and Phrases"
               "Very Short Ethics Guide"
- Introductory discussions and group setup
- Ongoing conversations: the role of ethics in our lives and our work; types of business tasks that technical writing deals with; teaching-based approach to technical writing.
Assignment options:
In-Class: Found Items
Each person will bring three real examples of technical writing to class on Monday, August 25. At least two of each person's examples should be physical items, not a website. We will discuss the items in class, so be sure you've carefully looked over the items you're bringing in. Pick one item you think is well done, one you think is poorly done, and a third of any type. Your group's set of Found Items will be used for both assignments below.
Group: Analysis of Found Items
Select one of the Found Items from the above exercise and do each of the following:
(1) Write up a detailed analysis of the document **and its genre**. What are the general parameters of this genre? (See Genre and Writing Research Guide for help.) What do the authors' goals or purpose appear to be? How does the item appear to serve its purpose/genre/audience? How did the authors use persuasion to achieve their goals?
(2) Write up a detailed critique of the document, explaining what you would change and why. How successful does the item seem to be in reaching its apparent goals? Include some discussion on the roles of teaching and learning in the document or your proposed changes (above). The analysis and critique can be handed in as a single document, though they should be in separate sections. This assignment does not require a GUS.
Individual: Recomposing
For this assignment, you should first select one of the Found Items from the above exercise (not the one used in your group assignment).
Scenario: You work as a technical writer for the company that produced your Found Item. One of your duties is to produce training materials for your co-workers, especially for use

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by newly-hired employees. Create a two-page or four-page tutorial or guide to writing a high-quality document of the type represented by your Found Item. For example, if your Found Item is a product brochure, you will create a tutorial on how to make a good brochure. Assume that your finished document will be printed on both sides of 8.5" x 11" paper (filling up both sides—no sloppy gaps). Use excerpts, descriptions, or text from the Found Item as illustrations of what to do (or what not to do). When you fill out your GUS, you should discuss both the Found Item and the item you created. You will need to research at least two genres for this assignment: the genre of the Found Item, and the genre of a tutorial or guide.

Project Two: Document and Graphic Design
Date range: September 15 to October 8 (written items due on this day).
Readings: *Technical Communication*, Chapters 8, 11, and 12

- Project discussion: Technical communication is about more than just language. Humans are strongly influenced by visual elements, including colors, spacing, and images. A photo, a chart, or other illustrations can convey concepts and meaning in ways that text alone often can't. This is another aspect of the power of technical communication, and it must be used ethically.

Choose **one** Group option and **one** Individual option. Advanced assignments are now available.

Assignment Descriptions
Group: Informational Flyer
Design an Informational Flyer. Refer to **Case 11 on page 303** of our textbook and follow its instructions when creating your flyer. Include a GUS.
Group: Report With Graphics
Create a Report With Graphics. Refer to **Case 12 on page 347** of our textbook and follow its instructions when creating your report and the memo. Instead of presenting your findings to the class (Assignment Part 2), create at least three of the graphics you recommend in Part 1 and integrate them into the report. Include a GUS.
Individual: Departmental Advertisement
Create a persuasive advertisement for your academic department. You are in charge of selecting the audiences (Students at ISU? High-schoolers considering ISU? Teachers who might apply for a job? Parents of incoming students? The community at large?), as well as the medium, genre, content, and purpose. **NO FLYERS**. Be sure to discuss your choices in the GUS.
Individual: Infographic
Scenario: You work for a museum or zoo that's putting together a new exhibit. Create a related infographic to accompany the exhibit. Before starting, you should make some choices: What kind of museum or zoo is it? Who is the exhibit's target audience? Who is the infographic's target audience? What physical or digital format will the infographic take, and how will it be distributed? Will it be web-only, web and print, print only, or something else? Be aware of how these choices will affect your document.
Example: The McLean County Museum of History has an ongoing exhibit on Irish immigration and settlement in the mid-1800s. An accompanying infographic might include basic statistics or facts about these immigrants, their lifestyles, or their

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contributions, as well as a pitch to come see the exhibit and learn more in person. Be sure to discuss your choices in the GUS.

Advanced: Quick Start Guide

For this assignment, you will hand in a physical item instead of submitting through Google Drive. Choose a household object that you use regularly and make a Quick Start document for it (like the kind that might come with a new electronic gadget). This document can be in the form of a fold-out poster, a center-stapled brochure, or any other format you feel is appropriate. Include both graphics and text. You should assume that at least some people in your potential audience(s) have never seen or used this object before. This will be harder than you think, so don't save it until the last minute. Include a GUS (the GUS can be submitted through Google Drive).

Mandatory: Peer Review 1

Exchange your group's work with another group. Review what that group has done so far and write up a 1-page set of comments and suggestions for improvement for the other group. This is an in-class exercise, meaning that you must be here to get credit.

Project Three: Instructions and Documentation

Date range: October 8 to November 5 (written items due on this day).

Readings: *Technical Communication*, Chapters 9, 10, and 20; *How Learning Works* summary (PDF)

- Project discussion: Instructions call for action on the part of the audience. How can we avoid causing confusion, mistakes, and harm with our writing? What are our ethical and legal obligations, and what do we do if the two obligations conflict with each other?

- When we work as technical communicators, we often act as teachers. Our instruction sets, our directions, and even our reports and documentation can do some of the work that a teacher does: explaining new concepts and new ways of understanding to a diverse audience. Teachers and technical communicators both act as facilitators or go-betweens among different discourse communities (groups of people with the same understanding of a particular piece of the world). Because of this potential overlap, we will look at the work of a technical communicator from a teacher's point of view. Many resources exist for technical communicators, and many other resources are available for teachers. Our purpose is to discover the areas of overlap or harmony between these two disciplines in order to improve the quality and effectiveness of our own work.

Choose **one** Group option and **one** Individual option.

Group: Office Documentation

Scenario: You work for a technical communication consulting firm with 25 employees. Choose one of the following options and create a 4-5 page section of the relevant document.

(A) A detailed office netiquette policy for the company's computer users.

(B) A policies and procedures manual for the company's Human Resources department.

(C) A guidebook for newly-hired and/or less-experienced technical writers.

Incorporate at least two relevant outside sources, such as a reliable survey/study or a trade journal article about office policies and their benefits/drawbacks. Use your design skills from Project Two to control the document's visual appearance. Include a GUS.

Individual: Software Guide

Scenario: You work in an office with computer users of many different skill levels. You've been asked to create a guide for employees who occasionally perform complex tasks using a specific software tool, such as producing a company newsletter in Word/Publisher or drafting monthly budgets for managers in Excel. Create a guide that breaks these complex tasks into smaller functions or processes and instructs the user how to perform them as a part of their larger goal.

Difficulty: Your guide should be useful for computer novices and technically savvy users – be sure to describe how you achieved this goal in your GUS. Use your design skills from Project Two to control your guide's visual appearance. Be sure to read Eng249_SoftwareInstructions-Notes in our Google Drive Course Docs folder. Include a GUS.

Individual: Instructions

Select a complex activity or task (one made up of at least three smaller related sub-tasks) and write an instruction set which can be effectively used by both novice and advanced participants – and describe how you achieved this goal in your GUS. Use your design skills from Project Two to control the document's visual appearance.

Individual: New Student Plan

Create a detailed, semester-by-semester guide for an incoming first-year student at ISU who wants to major in the same field you are. Assume that the student (a) wants to finish in four to five years, (b) wants a broad education and not just a job-training experience while at college, (c) wants to understand your reasoning, and (d) wants some flexibility in their choices each semester. Student activities, organizations, internships, and other parts of the college experience are optional but can absolutely be mentioned in as little or as much detail as you see fit. Include a GUS.

Advanced: Improved Instructions

For this assignment, you will hand in two physical objects in addition to your GUS. Find a real-world set of instructions that you think is poorly done or needs improvement. Create a replacement set of instructions **in the exact same format as the original**. For example, if the original is on the side of a package, create the new set to fit precisely over that same side of the package. Turn in the original instructions and the revised instructions together. Put your name on it with a sticky note. Include a GUS.

Mandatory: Peer Review 2

Exchange your group's work with another group. Review what that group has done so far and write up a 1-page set of comments and suggestions for improvement for the other group. This is an in-class exercise, meaning that you must be here to get credit.

Project Four: The Open World

Date range: November 5 to December 3 (written items due on this day). Because of the late due date, these assignments are not eligible for rewrites.

Readings: *Technical Communication*, Chapter 22; "Drive" (video)

- Project discussion: We all want to do more with our lives than just work. The world is filled with opportunities to try new things, join new groups, share our talents, and mutually improve one another's lives.

Choose **one** Group option and **one** Individual option.

Group: Non-Profit Document Review

Scenario: You have been hired as a consultant by [local or national non-profit organization]. Your task is to analyze the organization's current documentation and make recommendations for improvement. Select a substantial piece of their online documentation (instructions, reports, informational material, and so on) and do each of the following:

(1) Write up a detailed analysis of the document **and its genre** What are the general parameters of this genre? (Revisit the Genre and Writing Research Guide.) What is the document doing, and why is it doing this? What do the authors' goals or purpose appear to be? How does the item appear to serve its purpose/genre/audience? How did the authors use persuasion to achieve their goals?

(2) Write up a detailed critique of the document, explaining what you would change and why. Since this organization is directly involved in helping its community, part of your critique should be done from an Ethics/Civic Engagement perspective. These two items can be handed in as a single document, though they should be in separate sections.

Individual: Collaborative Site Proposal

Find an open-source or collaborative online project that interests you—this could be something based on a hobby you enjoy, a game you play, a club you belong to, an open-source software program, or anything else you like. **The only exceptions are that you cannot submit cooking recipes or comments in a discussion forum**, because these two items are not substantial enough for our purposes. Analyze the project you've selected based on the information available and produce the following:

Write a 4-page proposal to whoever runs the project for a technical communication contribution you feel that you could make to the project. This proposal should include at least one sample or illustrative document or page created for this purpose (i.e. not samples from previous assignments). The proposal is a *persuasive* document, not just a list of the site's problems and how to fix them! Your proposal should include all of the usual niceties of a business letter, such as the recipient's name and address, an introduction, your name, the date, a signature block, and so forth. Include a GUS. Note that there are two genres in play here – the proposal and the genre of the site itself (where your proposed changes would reside).

Be sure to review the wiki's guidelines for entry format, length, style, and so forth. Remember that the site's style guidelines should be mentioned in your GUS, because they affect what you're proposing to do.

Individual: Collaborative Site Entries

Find an open-source or collaborative online project that interests you—this could be something based on a hobby you enjoy, a game you play, a club you belong to, an open-source software program, or anything else you like. **The only exceptions are that you cannot submit cooking recipes or comments in a discussion forum**, because these two items are not substantial enough for our purposes. Analyze the project you've selected based on the information available and produce the following:

If the project is a wiki, create entries on appropriate topics, using your best technical writing skills. Entries are weighted as follows: substantial (2+ paragraphs) = 2 points; small/housekeeping (1 paragraph) = 1 point. You can mix and match. **Create at least 6 points worth of entries. E**ntries do not all need to be on the same site.

Be sure to follow the wiki's guidelines for entry format, length, style, and so forth. When you're satisfied that your entries are polished enough and meet the site's standards, publish them to the site or submit them to the site administrator. Include a GUS. Remember that the site's style guidelines should be mentioned in your GUS, because they affect how you will perform in that genre.

Advanced: Organization Wiki

Create an online knowledge base or wiki for <u>one</u> of the following entities:

(A) New and current students in your major at ISU

(B) A club, group, or organization that you currently belong to or participate in

(C) Your current employer

Your final product should include a clear organizational structure, self-documentation, a brief style guide for new entries, and at least three entries on relevant topics of your choice that match your style guide's instructions. Plan on analyzing other knowledge bases and wikis to see how they are structured (just like analyzing any other genre). Remember that a knowledge base or wiki is meant to be a living, growing, changing document. Planned growth should be included in your analysis. Include a GUS. Students in the same major can collaborate on <u>option A</u> **if you get my approval first**.

Advanced: Wiki Proposal

Write a detailed <u>proposal</u> for a knowledge-base or wiki like the one described in the Organization Wiki assignment above, to be delivered to the appropriate person in your department. Part of your assignment is to find out who the appropriate person is. Note that there are at least two genres in play for this option—the proposal and the wiki or knowledge-base being proposed. Research and discuss both genres in your GUS.

Plan on analyzing other knowledge bases and wikis to see how they are structured (just like analyzing any other genre). Remember that a knowledge base or wiki is meant to be a living, growing, changing document. Planned growth should be included in your analysis. **Important note**: You are <u>not</u> proposing to replace the department's existing website – this is a different site with a different audience and purpose. Your proposal is a *persuasive* document, not a list of problems or complaints. Include all of the usual niceties of a business letter, such as the recipient's name and address, an introduction, your name, the date, a signature block, and so forth. Include a GUS. Students in the same major can collaborate on this option **if you get my approval first**.

Mandatory: Peer Review 3

Exchange your group's work with another group. Review what that group has done so far and write up a 1-page set of comments and suggestions for improvement for the other group. This is an in-class exercise, meaning that you must be here to get credit.

Floating Assignments

Date range: August 18 to December 3 (written items due on this day).

These assignments are not tied to a specific project. Floating assignments (except surveys) are due on the last day of class, although you may be asked to share drafts of these assignments before then. Because of the late due date, these assignments are not eligible

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for rewrites. You can talk with me any time before they're due if you want to make sure you're on track. You can turn in one (max) of the floating advanced options if desired.

Individual: Research Journal

The purpose of the research journal is to help you review how your understanding changes over time. Use this journal to analyze our readings, to track how your understanding of technical communication changes over the semester, to connect our work to your major, and to discuss outside readings or other material you've researched. At least 3 entries should be about relevant outside reading you've done in trade journals, textbooks (not including ours), or other sources. In other words, take the initiative and read up on technical communication and/or your chosen profession from the perspective of people who already work in that field. A minimum of 10 entries are required; each entry should be roughly a page or more (double spaced is fine). The full journal is due on the last day of class, but I may occasionally ask to see what you've got so far. Do not save them all for the last week; you will not receive credit for them. Your research journal doesn't need to be in any particular format. You can keep it in a Word doc on your computer, put it up on Google Drive, or whatever works best for you (as long as it's digital, please). **Put all entries in one document and put a date on each entry you make**. This assignment does not require a GUS.

Individual: Surveys

As noted above, you will be asked to take a few brief surveys during the semester as a regular part of this course. The surveys are an important part of my research, and your thoughtful answers are appreciated. The surveys will be done online. You must respond to **all** of the surveys to receive credit.

Advanced: Analysis of the Field

Select two or more articles on a related topic from technical communication journals (such as *Technical Communication*, *Technical Communication Quarterly*, *Journal of Technical Writing and Communication*, *Currents in Electronic Literacy*, *Journal of Business and Technical Communication*, and others—all of these should be available through Milner's online journal catalog). Try to pick a topic that interests you and is relevant to your own profession as well as to the profession of technical communication. Write a response paper (a regular scholarly essay) in which you explain the topic or problem in your own words, critically analyze the other authors' thoughts on the matter (**do not** just summarize here), and provide your own thoughts on the matter, backed up with outside evidence or sources where appropriate. You can propose a solution to the problem being discussed (if that applies), but you don't have to. Your paper should be 4-5 pages and should use MLA or APA citation style. This assignment does not require a GUS.

Advanced: Technical Creative Writing

You are the [Master Archivist or Chief Scribe] for [a planetary colony or a fantasy kingdom]. You may assume that you have a small staff of other writers. Select one of these three options:

(A) Create a master plan for the upcoming year's work (such as what documentation is to be created or updated, what resources or expert input will be needed to create each document, what should be included in each document, how each document will be stored and retrieved, and/or how each document will be referenced in the other documents or in a master index). The Master Plan should address at least 8 different planned projects

(though the level of detail for each can vary and is up to you). Your audience is your own staff, your leaders/rulers, and possibly the other people or groups (SMEs) who rely on your documentation services.

(B) Create a set of 2-4 related documents (totaling at least 5 pages), each dealing with the same specific aspect(s) of the colony/kingdom's infrastructure or governance. Think carefully about who your audience will be for these documents: the leaders, the SMEs (such as the wastewater reclamation managers or the administrators of the Mage Academy), the scribes themselves, the general public, or a combination. You only need one GUS, but spend a little time discussing each different genre in your set.

(C) Your leader is pleased with the quality of your work and has asked you to create a training program for other archivists/scribes in the outlying settlements. Develop a course plan (not the lectures themselves) for a 5-day training seminar with 6 classroom hours per day, including practice time, and 10 students per seminar. You understand that you won't always be the one to teach it, so be thorough in your details. Your goals are to cover the basics of technical writing and to instill good practices in other writers. The number of days and students per class can be adjusted slightly if needed. When you research course plans, keep in mind that a full-semester course plan (like ours) has different goals and requirements than a course plan for a short training seminar. Include a GUS.

APPENDIX E

LEARNING CONTRACT

This contract is a binding agreement between student and teacher. Its purpose is to get rid of the tyranny of grades as much as possible, and to let you focus on the actual work and learning you're doing. Since you still need a grade at the end of the semester, I will agree to give you a B for the course if you meet all of the following conditions:

1. Attend every class. Arrive on time and stay until the end. You have two no-penalty absences available; use them carefully. Each absence after the second will lower your final grade by one-third of a letter. Students who expect to have excused absences for official ISU events must give me a letter or schedule from your advisor or coach at the beginning of the semester. Absence penalties are applied after all other factors have been counted, so turning in extra assignments will only partially mitigate absences. If you miss 20 percent or more of the class sessions (six or more classes for a MW course), you will receive an automatic F regardless of any other work you've done in the class. This is English Department policy.

2. Turn in all assignments on time. Assignments are described in more detail in the Projects document. Late or unsubmitted items will receive a "No Credit" (NC) and cannot be rewritten. Only one advanced assignment is allowed per project.

3. Demonstrate a good-faith effort to meet each assignment's terms, including all of the following:

        a. quality of writing, research, and careful attention to detail

        b. mechanical accuracy, including grammar, spelling, punctuation, and citations

        c. page length or word count, where applicable

        d. incorporation of at least some suggestions from your peers and teacher in your revisions, where applicable

        e. relevance to the topic or business task at hand

        f. thoughtful content, which means thorough, accurate, intelligent, and deliberate writing on the subject

        g. a Genre Understanding Sheet (GUS), which also meets the standards above, for each written assignment

        h. following all other requirements for assignments as described in the Projects document

4. Written assignments which fail to meet one or more of the above terms may be marked as either "Fix" or "No Credit" (NC). A "Fix" item may be redone within one week of the day I return the item to you; after that, it becomes a "No Credit." Each NC will lower your final grade by one-third letter. You can rewrite one item (total) from our first three projects. Project Four items will be due too late to allow time for rewrites. Presentation and peer review assignments may not be redone.

5. Come to class prepared every day: assignments done, research completed, readings read, and so on.

6. Actively participate in the day's work every day. Some days we will work in our groups, some days we will work as a whole class, and some days we will work individually. Give useful feedback, engage in our discussions, help your group, and otherwise stay involved. Avoid Facebook, texting, unrelated discussions, and other time-wasters while in class.

7. Keep a current copy of all documents/drafts in our Google Drive folder and other systems we use (e.g. Reggienet).

8. Cite all of your sources when appropriate. We are all the sum of many thousands of other peoples' ideas plus our own unique view, but be sure to give credit to others where it's due. Don't violate ISU's Academic Honesty policy in any way. Don't copy and paste something from the web or elsewhere and try to pass it off as yours. See the Projects document for more specific rules on using web text in your documents.

9. I encourage creativity, but I also value attention to detail. If you want to modify an assignment to better suit your needs or interests, be sure to ask me first. "Modify" does not mean "make shorter." Be sure to include a note at the beginning of any modified assignment to remind me of how you've changed the assignment.

10. Grade Modifiers: Your default grade for the course is a B. This grade may be affected by penalties and/or bonuses, depending on your choices and performance during the semester. Each penalty reduces your final grade by one-third letter. Each bonus improves your grade by one-third letter. Since ISU does not

use plus/minus grading, one penalty will mean you'll still receive a B for the course (a B- becomes a B), but two to four penalties would become a C, five to seven a D, and eight an F. Earning an A for the course requires that you meet additional conditions described in section 11 below.

a. Assignment penalties: these are given for each NC assignment, whether group or individual

b. Behavioral penalties: these are given for repeated disruptive or unproductive behavior in class

c. Assignment bonuses: awarded for each advanced assignment you turn in (subject to conditions in item 3 above)

d. Absence penalties: each absence after the second will reduce your final grade by one-third letter, calculated after   all other bonuses and penalties have been applied

11. To earn an A for the course, you must meet all of the above conditions, plus the following:

a. You cannot have received more than one NC on an individual assignment, even if you rewrote the item

b. You must complete the appropriate number of advanced assignments from the Projects document

c. You cannot have more than three absences (no-penalty absences + 1), excluding excused absences

d. You cannot have any behavioral penalties

By signing below, I certify that I have read and understood the course syllabus and the grading contract. I agree to abide by the terms of the syllabus and the grading contract.

_____

Signature, Printed Name, and Date   Instructor's   initials

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THE BIG QUESTION

How do we successfully explain complex things to others?
The Technical Communicator's Big Question
(Text-only version)

<u>How</u> do we successfully explain complex things to others?
What are some of the tools we can use?
-Selection of genres
-Images, graphics, charts, illustrations
-Our writing
-Methods and types of persuasion
-Distribution systems
-Research
What are some ethical issues we might run into?

How do <u>we</u> successfully explain complex things to others?
Who is on our team?
-Our employer
-Our co-workers
-Other (external) technical writers
-Subject matter experts (SMEs)
-Our readers
What are some ethical issues we might run into?

How do we <u>successfully</u> explain complex things to others?
How do we define and measure success?
<u>Define</u>:
-Our learning goals or objectives
-Our readers' tasks or needs
<u>Measure</u>:
-Usability testing
-Peer reviews
-Reader feedback
What are some ethical issues we might run into?

How do we successfully <u>explain</u> complex things to others?
What kind of teaching are we doing?
-Shaping information to effectively plug it in to our readers' prior knowledge and experiences
-Cognitive processes dimension: how does the reader use the information?
-Knowledge dimension: what type of knowledge?
-Assessing readers' responses (See Successfully)
What are some ethical issues we might run into?

How do we successfully explain <u>complex</u> things to others?
How do we unravel complexity?
-Logical orders (chronological, hierarchical, etc.)
-Subsets or groups
-Analogies and metaphors
-Removing what's not needed
-Connect to readers' prior knowledge (See Explain)
What are some ethical issues we might run into?

How do we successfully explain complex <u>things</u> to others?
What are our topics (specific and in general)?
-Instructions
-Concepts
-Procedures
-Warnings
-Documentation
What are some ethical issues we might run into?

How do we successfully explain complex things to <u>others</u>?
Who are our audiences?
-Experts, novices, or a combination
-Local, regional, or global
-Customers, colleagues, citizens (See We)
-Age, gender, cultural background, native language, discourse community
What are some ethical issues we might run into?