SOME ASSEMBLY REQUIRED: INCLUDING TECHNICAL WRITING IN GENERAL COMPOSITION CURRICULUM

A Thesis by
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I have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Master of Arts with a major in English.

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We have read this thesis and recommend its acceptance

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DEDICATION

I would like to dedicate this work to my husband Tim, who provided plenty of inspiration and moral support for this thesis. I would also like to dedicate this to all the “geeks” I have tried to understand throughout the years.
ACKNOWLEDGEMENTS

I would like to thank my committee chair, Dr. Darren DeFrain, for his guidance and encouragement throughout the process of preparing this thesis. His assistance proved invaluable. Thanks also to Dr. Diane Quantic who provided many lessons on the preparation of this thesis. I am also grateful to Dan Close for his editing skills. I would also like to thank Karen Burge and Sue Wilcox for their assistance in my teaching duties which provided a solid background for my thesis work.
ABSTRACT

This research studied problems related to the teaching of technical writing on the college level. It also attempted to establish parameters for the development of a general technical writing course which could be added to core curriculum for all majors.

In preparation for this thesis, information was gathered regarding current technical writing curriculum from a variety of experts in the field. The Wichita State University Department of English provided additional information. The emphasis of this research centered on current problems in pedagogical and workplace environments, and on suggestions for change within those areas. This research also considers the influence of technical writing on the general populace.

In the course of researching the field of technical writing pedagogy, weaknesses in preparation for the workplace were discovered. Weaknesses in the actual practice of technical writing, and its bearing on business and the general public became evident as well. Several theories for improving the formation of technical writers and those who may manage them in the future are discussed in an effort to enrich the classroom experience.

This research has resulted in several conclusions. Of particular importance is the need to develop adequate communication between technically-minded employees, their employers, and their general audience. In order to improve the field of technical writing, college courses must place more emphasis on developing an enhanced method of conveying specialized information to an audience which may not possess a technical background. Those engaging in technical writing must also be able to recognize the changing nature of the field, and the forces which affect the sending and receiving of technical messages.
Rapidly advancing technology provides many advantages, yet provides its own set of problems, particularly in the classroom and the workplace. Students in today’s classroom frequently possess technical knowledge beyond the comprehension of even a middle-aged instructor. Likewise, most college graduates entering the workforce are more experienced than their potential managers when it comes to issues of technology. A growing number of employers expect new hires to communicate highly technical information clearly and effectively, yet many in highly technical fields such as engineering or information technology have a difficult time communicating with people whose technological expertise lags behind. After years of research and personal experience, being both the technologically informed and the technologically deficient at different points, I felt a consideration of the need for a course which would give both sides a basic form of communication was necessary. The following work is the result of my studies within the field of technical communication, most specifically in the area of technical writing and its pedagogy.
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DEFINITION OF TERMS

For the purposes of this thesis, the following definitions apply:

**Business writing:** General writing done within the course of normal business operations and communications, i.e. memos, business letters, resumes, and letters of application.

**Professional Writing:** Writing which is specific to a particular field or profession. Examples include duties such as advertising agents writing ad copy or accountants preparing a narrative of financial statements.

**Technical Writing:** Highly specialized documents, such as manual and handbooks, which provide detailed instructions for, or explanations of, technological items or processes, i.e. directions for setting up a computer, using a cell phone, or an explanation of how a database program operates. These documents are most commonly prepared either by the designer(s) of the technology, or by a professional technical writer working closely with said designer(s).
CHAPTER ONE

INTRODUCTION

For decades, the major focus of theory and research concerning the relevance of the college composition class has focused on general writing programs. Instructors become inundated with information on how to do the greatest good for the large variety of students in such basic courses. Because introductory writing courses contain a fraction of students who will continue to study the field of English, pedagogues devote a significant amount of research to reaching those students who will most likely never take another English course. However, students on a scientific or technical path are frequently overlooked even though composition continues to play a significant role in these students’ education. Too many general composition students find later that technical writing appears in required coursework. As their studies advance, technical writing normally becomes a separate subject, focusing on independent issues and avoiding many of the components of general composition.

Upon entering a technical writing course, those students discover that the composition course skill sets which formed their basic writing knowledge are no longer adequate. Critical thinking, principles of argumentation and debate, and even word choice and tropes are thrown out in favor of clear and concise technical writing. Writing therefore is no longer a joy, but a task which must be completed before a project is considered finished. Technical writing courses must address these issues by recognizing the rhetorical and persuasive possibilities inherent in technical writing. Instruction in rhetoric, especially the specialized uses of language, the artistic nature of prose, and the use of reason and judgment in selecting information will increase technical writers’ abilities to successfully address a variety of audiences. Writers’ acknowledgement of their writing as an essential entity within the workplace supplements the
potential for success in the workplace. In “The Researcher as Missionary: Problems with Rhetoric and Reform in the Disciplines,” Judy Segal and several of her peers analyze their work as composition consultants and trainers in a variety of scientific fields. The group asserts in their analyses, “the point is for practitioners to know enough about their discourse practices to know when to revise them – and when to protect them” (Segal et. al. 77). The study of such practices in the technical writing classroom establishes a deeper understanding of writing as more than just a means of completing a project. By addressing such rhetorical issues in the course of education, the technical writer learns the connective potential of their writing.

In the workplace, writers must bridge the gap between highly specialized knowledge of a particular field and successful explanation of such knowledge to less technically informed audiences. Information Technology (IT) professional Bill Pfleging and business writer Minda Zetlin study this problem, particularly between technologists (referred to as “geeks” throughout the book) and the business people (“suits”) who usually manage those geeks. According to Pfleging and Zetlin, an inability to successfully bridge the gap creates a wider chasm:

We gradually became aware of the Geek Gap over years of writing articles on business and technology. It seemed every problem came down to this: business and technology professionals have trouble communicating effectively with each other, which has led to a lack of both respect and trust between the two groups. (30)

As a result of the so-called Geek Gap, inadequate communication of technical information during the course of business transactions proves detrimental to professional duties and relationships. Overcoming such communication problems between “geeks” and “suits” could become less problematic if methods of coping were introduced within core curriculum studies. A common language takes on significant importance because of the large number of technical workers entering the workforce each year. The IT industry alone provides a startling example of
the growth expected within technical fields. According to the U.S. Department of Labor Bureau of Labor Statistics Occupational Outlook Handbook, the demand for computer scientists and database administrators alone is expected to increase more than 27% per year through 2014 (“Computer” n.p.). Clearly, if many technically-inclined workers have a different mentality than the average member of management, the ability for each type of worker to communicate with the other takes on a greater significance. If students, whether on the “geek” or “suit” path, learn the same basic information toward the beginning of their studies, it is less likely they will have a difficult time communicating in the future. In other words, “geeks” should not only learn the language of business, “suits” should learn the language of technology because technical issues increasingly affect almost every aspect of the business world.

Whether dealing with e-mail, specialized computer programs, or their iPods, many workers find that technological literacy and a basic familiarity with technical language take on a significant role in the knowledge necessary to successfully complete work-related tasks. Likewise, many people find that the same background in technical language is necessary to assemble and operate many items in their own home. A recent study conducted by Elke den Ouden, a Ph.D. candidate at the Technical University of Eindhoven in the Netherlands, found that half of all defective products returned by consumers actually have no flaws, but are returned because the consumer cannot figure out how to operate the device (“Scientist”). As Anders Bylund, a writer for the online computer news source Ars Technica, points out:

Den Ouden also asked a group of managers from Phillips to take home and use a few products over the weekend, but most of them never got their items to work. If managers of a consumer electronics company (who we can assume are fairly tech savvy) can’t figure out how to handle today’s new interfaces, the importance of good interface design seems more important than ever. Our favorite gadgets are sprouting more and more functions. (n.p.)
The example of cell phones further establishes the author’s point. These devices now include features such as cameras, global positioning systems (GPS), and e-mail, but as Bylund aptly points out, “many of these features go unused simply because we don’t feel like reading badly written manuals or go exploring yet another menu system” (n.p.). The inability to express technical knowledge in a straightforward and understandable manner could result in disastrous sales and minimal customer satisfaction. Because of this fact, successful communication of technical information becomes tantamount to simply possessing technical knowledge. Well written technical information develops into a means of ensuring customer satisfaction and successful sales of a product.

Furthermore, the corporate workplace, particularly in America, is continually shifting toward an information-based atmosphere. Less importance is placed on performance of tactile skills in favor of knowledge-based performance. Hence, an adequate ability to convey essential data becomes imperative. Greg Wilson of Los Alamos National Laboratory and New Mexico State University, in his assessment of technical communication pedagogy argues, “in a global economy where information increasingly is the product [. . .] changing the ways students perceive their relationship to authority structures, technology, and information itself is the greatest positive impact we can have on their lives” (97). Studying organizational dynamics and the nature of information compilation and transfer within technical writing establishes a crucial background for technical writers. The study of theoretical approaches may assist in establishing general knowledge of current issues facing technical writers and those who work with them. In the modern workplace, the limits of technical knowledge do not end with technically-inclined workers.
A basic knowledge of technical writing and the forces affecting it is essential for success in today’s workforce. Students do not receive this basic knowledge unless entry into a specific field requires it. Yvonne Merrill, a retired University of Arizona Composition Board member, asserts that a weakness becomes evident in this area because a general knowledge of how to engage in technical writing holds sway in the university as well as the workplace “Not only do our students need to understand the process and principles of composing writing, but professional people in work settings also need to understand these concepts because they, too, do very real teaching of writing in their professional practice” (Merrill 76). Along with a comprehension of general principles influencing composition, teaching ethical and legal concerns affecting the field becomes essential in today’s workforce. Currently, the ethos of technical writing is merely glossed over. Without adequate education in such issues, technical writers and their employers could find themselves in difficult situations. Knowledge of ethical and legal issues forms a critical base necessary for technical writers, particularly those engaging in online writing. Without gaining that knowledge in the classroom, the responsibility falls on the workplace. Merrill articulates the fact that workplaces conduct additional training because of gaps in core coursework “Time costs money, and the more quickly new employees can begin writing effectively in their positions, the less costly they are to hire and train” (77). The addition of theories and issues facing technical writing in basic composition courses could greatly improve students’ preparation for today’s workforce, and would decrease pressure on workplaces to fill in gaps caused by a deficient technical writing background.

Considering the substantial effects of adequate and deficient technical dissemination, a greater emphasis on technical writing should be present in a general composition curriculum. The current program at Wichita State University lacks many of the components necessary for
technical writers in the workplace; however, the problem is not unique to Wichita State. Many programs across the country fail to recognize that technical writing should take into account more than just providing readers with scientific observation or instructive writing. Technical writers must possess the ability to express necessary information in a manner which their audiences (both intended and potential), coworkers, and managers can understand. Technical writing courses need more emphasis on preparing writers for issues which traditionally exist on the periphery of such courses: for example, cultural differences which may be encountered and rhetorical choices that will need to be made.
CHAPTER TWO

REASSESSING THE NUTS AND BOLTS AT WICHITA STATE UNIVERSITY

Current teaching in general composition programs frequently neglects the importance of technical writing. In the case of Wichita State University, one course combines business, professional, and technical writing. According to the University course description, “Business, Professional, and Technical Writing provides instruction and practice in writing the kinds of letters, memos, instructions, and reports required in the professional world of business and industry. Emphasizes both formats and techniques necessary for effective and persuasive professional communication.” Thus, students spread attention among three varied forms of writing which may be encountered in a generic workplace environment. Additionally, the university’s goal for the course hinges on the ability of students to engage in business and professional writing, with the only references to technical writing present in the course name and the brief mention of instructions.

While each form of writing present in such a course will likely be useful to the majority of students, technical writing is frequently overlooked. Syllabi from the last four semesters illustrate a variety of approaches to the course. However, of important note is the absence of much practice in the area of technical writing. Perhaps the reason for the deficiency in this area stems from the use of an extremely generic definition of technical writing present in the overview of one syllabus: “Technical communication is the kind of writing done in the workplace.” While a seemingly straightforward explanation, this definition leaves out an immense amount of information and oversimplifies the field. The idea that technical writing is merely carried out in order to fulfill the duties of a job misses the mark. Den Ouden’s work
illustrates that writing as a means of merely finishing the job may unsuccessfultly complete technical work on a project.

In some cases, technical writing completely disappears from a Business, Professional, and Technical Writing syllabus. One such course previously taught at Wichita State University utilized the textbook Business and Administrative Communication. According to the syllabus, course assignments focus on writing memos, résumés, interoffice messages, and conducting interviews. No mention of technical writing appears anywhere within the general outline of the course.

The most significant example of the neglect of technical writing within current curriculum at Wichita State University appears in the choice of textbook for the Fall 2006 semester. The Business, Professional, and Technical Writing course presently requires the textbook Business Communication Essentials. Clearly, the title of the text leaves little doubt that the course focus settles on business communication. The textbook does not contain any elements of technical writing, not even a lesson in writing instructions – the most basic form of technical writing.

In the syllabi studied for this paper, the importance of integrating technical information into a non-technical setting is absent. The work of Pfleging and Zetlin emphasizes the fact that the inability to adequately convey technical information in a simple manner sometimes leads to conflict and catastrophe in business settings. The occasional conflict between technical workers and business-oriented workers stems from a lack of common language and understanding. This potential for conflict illustrates the importance of the various cultures that may be encountered when technical writing takes place in business and industry. Studies of such cultures should form a crucial portion of technical writing coursework. A common use of language and format for
conveying technical communication would also decrease the possibility of problems within the business world.
Current technical writing curriculums, particularly within English departments, face a variety of troubles when it comes to applying principles and creating a finished product. The traditional position of technical writing, both in the workplace and the classroom, needs to be scrutinized. Methods of successfully conveying specialized knowledge also require close consideration, because the knowledge itself may cause communication difficulties. Further problems stem from questions surrounding what constitutes good writing: Are grammar and punctuation the only things which create a successful text? Although largely overlooked in the technical writing classroom, the study of rhetoric could help writers effectively present highly technical information.

3.1 An Issue of Knowledge

A significant amount of technical knowledge is essential for any technical employee, but may cause serious problems when it comes to communication. Technical writers usually possess a considerable amount of knowledge appropriate to their field. Problems may arise, however, as text linguist Robert DeBeaugrande notes, “Insiders all too readily judge their writing as understandable because they are so well in control of the content; they fail to read from the perspective of someone else” (82). In general, technical writers possess the knowledge necessary to understand what information must be conveyed, but fail to effectively reach a broad audience. This becomes problematic because, “If functional documents are uncommunicative, the general public is kept ignorant of technological issues and even experts waste valuable time deciphering each other’s reports” (DeBeaugrande 81). If readers find technical writing to be overly difficult,
technological advancement may actually lag. The scientifically minded and educated could be hindered because of their comfortable relationship with highly specialized language.

The relationship those in scientific fields have to specialized knowledge enters the composition classroom in several ways. While technical writing differs significantly from general composition, teachers often find the scientific minded student within basic writing courses. Instructors are often faced with the student who says “I’m a math, (engineering, or science person) so I’m not good at English.” While this statement may be a cultural stereotype that must be overcome, there is also a certain amount of fact contained within it. Many scientifically-minded people have a difficult time learning to express ideas creatively. The persistent stereotypes of left-brained/right brained people come to mind. Take, for example, the engineering student:

Engineering defines itself as a field concerned with the production of useful objects. In keeping with this concern, engineers tend not only to see their own knowledge as coming directly from physical reality without textual mediation, but also to devalue the texts engineers themselves produce, seeing them as simple write-ups of information found elsewhere. (Winsor 58)

In other words, engineers and scientists often view the results of projects and experiments as concrete outcomes. Writing about successes or failures within the lab seems redundant: “Textual mediation of knowledge is difficult for engineers to accept because they see themselves as working directly with physical objects” (Winsor 58). Writing then becomes a method of filing reports, not a means of communicating explanations to those who do not directly participate in scientific endeavors. Essentially, writing becomes an extra task: “For the technologist, writing is a means to an end of producing an object” (Winsor 60). This view of writing becomes problematic in the real world. If the end goal of writing is merely to construct an object that must be handed to management or a potential customer, the art that goes into writing is often
abandoned in the effort to complete the task. Thus, for the scientifically-minded student, writing becomes a necessary evil rather than an enjoyable experience.

Pfleging and Zetlin further this idea of different-minded technologists when they point out: “frustrated suits often report that the geeks they work with take too much technical knowledge for granted” (103). One example of this phenomenon is evident in a memo highlighted in The Geek Gap. Pfleging and Zetlin discuss a marketing manager who wanted to know if chat rooms and a message board could be added to a company website. The IT consultant provided the following answer: “We could throw up a quick and dirty ASP Dev XM forum, but not sure whether to use LDAP for member recognition. Or, we can do a phpBB and customize the SS to our specs, since we already have PostgreSQL in place” (129). The plain and simple answer to the marketing manager’s question was “yes, and here are a few different ways the company could achieve that goal;” however, that message is buried in a maze of jargon and acronyms. While an understandable response to someone with insider knowledge concerning the IT department, it obviously has the potential to completely confuse anyone outside that realm. Messages such as this also provide the possibility for failure. The authors of The Geek Gap sum up this problem: “geeks often discover that most technological terminology does little to communication between techies and their business counterparts” (Pfleging and Zetlin 129). The professional arena is not the proper place to come to this realization. Likewise, it is impractical for workers already on the job to begin learning successful methods for communicating with coworkers who are not technically inclined.

The difficulties faced by a scientifically-minded writer when it comes to conveying technical information in a way that everyone can understand has a far-reaching effect in
business. For example, The Geek Gap finds that perhaps the most harmful effect is on a company’s bottom line:

According to researchers at the Standish Group, only 34 percent of all IT projects in the United States are successful. The rest either fail completely or are ‘challenged’ – that is, are seriously late, substantially over budget, or both. In total, they say, this cost American businesses about $55 billion in 2003, the last year for which figures are available. (Pfleging and Zetlin 26)

Thus, the inability to appropriately communicate technical information within companies leads to a huge amount of failure just in the area of information technology. Add to this information Den Ouden’s discoveries concerning returned products, and poor communication, including technical writing, has the potential to seriously damage a company’s bottom line.

The problem of communicating overly technical information to those lacking knowledge in specific technical fields clearly exists. As Pfleging and Zetlin illustrate, these difficulties also drain a significant amount of money out of companies. While the problems partially stem from the classic stereotype of the left-brained/right-brained dichotomy, methods to overcome this obstacle should be included in writing courses. Possible means for correcting challenges caused by the issue of knowledge are discussed throughout this chapter.

3.2 Choosing a Focus

Another problem within the teaching of scientific writers is the pervasive notion that good writing is accomplished solely through good grammar and usage. While grammar and usage provides the tools for successful writing:

This disproportion between a search for patterns and recognition of the communicative elements of text is closely tied to a prescriptive approach to teaching: student writers are not encouraged to use their own judgment but to follow an incompletely realized set of teacher’s ‘rules.’ These writers never learn to assume the perspective of the audience and to estimate the rhetorical effects of their own writing decisions. In their later careers as technical writers, they do not know what strategies they need for the more important tasks of prose organization. (DeBeaugrande 81-82)
In DeBeaugrande’s view, technical writers learn to focus almost exclusively on the conventions of grammar, which should be the focus of basic skills classes. Background knowledge of grammar, ideally, is already present for students engaged in a technical writing course. In more advanced courses, the focus on proper grammatical usage tends to draw attention away from the importance of issues such as the function and influence of a document.

Along with the function of a particular document, scholar Stuart A. Selber argues for the consideration of user-centered issues such as “end-user work habits and learning styles, digital literacies, and a wide range of aesthetic issues” (35). Like DeBeaugrande, Selber seeks to increase awareness of audience in drafting technical writing. While Selber’s work focuses primarily on a specific form of technical writing within the IT sector – hypertext – a parallel can be drawn to all forms of technical writing. No matter the form of technical writing, the composition issues addressed remain the same: clear and adequate information dissemination to primary and secondary audiences. Whether writing instructions for baking bread or installing new software to a server system, the amount of knowledge the audience has should affect the type of writing used. For example, software installation instructions, ideally, should be written on a level which includes the most inexperienced computer user.

3.3 Technical Writing for Its Own Sake

Perhaps the foremost issue in conducting technical writing education is the pervasive belief that this form of writing is merely supportive of other aspects of work. As Johndan Johnson-Eilola points out in his work Relocating the Value of Work: Technical Communication in a Post-Industrial Age: “Technical communication has traditionally occupied a support position in both academic and corporate spheres. In general, this model encourages communicators to focus on either technologies or on the limited aspects of a user’s overall
project that require technologies” (574). Methods of performing technical writing usually take a back seat to the tools needed to finish such writing. Selber further acknowledges this weakness in current programs, “Technical communication courses including computer-related instruction are often skills-based, focusing too heavily on production issues at the general expense of literacy and humanistic concerns” (18). While the tools needed to perform technical writing are clearly necessary, basic knowledge of how to perform high quality writing tasks cannot be overshadowed by the use of such tools. Technical writers must strive to overcome the pervasive notion that the proper technical skills are all that is needed to complete their job.

In order to raise the profile of technical writing, recognition of the field as a crucial part of business must be established by technical writers. While the shift to a more information based workplace began many years ago, the recognition of such a shift has lagged. Recognizing technical writers as symbolic-analytic workers, as former United States Labor Secretary Robert Reich referred to them in his work during the early 1990’s, must play a role in establishing technical writing as more than a subservient task. Utilizing Reich’s work in labor theory, Johnson-Eilola defines symbolic-analytic workers as people who “identify, rearrange, circulate, abstract, and broker information in response to specific, concrete situations” (Datacloud 28). Technical writers fall into this category, as writing in the field continually presents information concerning specific situations, for example adding peripheral hardware such as a scanner to a computer. In such an example, a technical writer may not need to write new instructions for installing a scanner because earlier versions may already exist; however, the writer may need to reorganize information in a more user-friendly manner, or identify and remove unnecessary directives. Johnson-Eilola argues that such tasks create the perspective that technical writers become technical rhetoricians or rhetorical technicians. Regardless of the moniker assigned, the
task remains the same: utilize language and manage information resources to successfully communicate complex instructions in a simple manner.

Symbolic-analytic workers’ responsibilities do not end there, however. Johnson-Eilola argues that workers of this type must also justify themselves within their respective work contexts. Such justification becomes difficult, in part, because of the pervasive view of “language and discourse as mere packaging for thought [which] inhibits full exploitation of language practices” (Henry 115). One challenge facing technical writers is the opinion that writing simply organizes ideas and does not affect the conveyance of such ideas. Yvonne Merrill, writing from the perspective of a composition teacher, points out an additional misconception about writing: “we face the almost universal perception by people who are not writing theorists that composition is a field without a content” (76). A lack of appreciation for other aspects of composition, such as rhetorical decisions, may lead to the impression that anyone who can write is capable of completing symbolic-analytic tasks. Because of the nature of symbolic-analytic fields, such as technical writing, some may develop the opinion that a professional is not necessarily needed to complete reports and prepare proposals. Plain and simple, if a company does not need to pay a professional, it will not. Therefore, symbolic-analytic workers, in the course of work-related tasks, must clearly establish how indispensable a professional, technical viewpoint is through their work.

The employer also plays a role in the challenge facing the establishment of technical writing as a separate and credible part of the creation process. Corporate culture dynamics can result in another trial for technical writers: “The second reason why professional writers’ work remains under-exploited in generating value is that organizational hierarchies remain largely pyramidal” (Henry 116). While changes in some areas have reduced or eliminated tiered levels
of management, much of the corporate world still relies on hierarchies. Technical writers, in most cases, fall at the bottom of such pyramids and, therefore, must work harder to establish credibility and worth within the workplace. In order to accomplish such a task, an understanding of the inner workings of the corporate world becomes a necessity. Increasing technical writers’ attentiveness to various cultures encountered in the workplace will improve their ability to display the significance of writing to coworkers in areas such as upper management.

Recognizing the importance of technical writing as an essential part of technological projects, not as an afterthought or a support role, develops into an educational necessity. If the view of technical writing continues to be that of a subservient task, then industry prolongs the disregard for the field. In addition to raising the profile of technical writing, courses must also strive to instill the magnitude of rhetorical usage.

3.4 An Absence of Rhetoric

A survey of what is currently being taught in the writing classroom points out weaknesses in methodology. However, perhaps the most tragic weakness is the exclusion of rhetoric in technical writing. The term rhetoric connotes numerous interpretations, mostly involving persuasion and influences, which do play a role in technical writing. Of major concern here is the fact that rhetoric deals with specialized uses of language and the arts of prose. Rhetoric also concerns itself with human reason and judgment, which can play a significant role in both the creation and reception of technical information. Technical writing is traditionally seen as a form of clear, concise, and objective composition; however, the inclusion of rhetoric within a technical writing classroom expands the power and reach of technical writing.

Scholar Christine Barabas notes that the absence of rhetoric within technical writing exists because of the notion that rhetoric is not a concrete method of conveying information,
“rhetoric is usually regarded as anathema to technical writers – at best deception and puffery; at worst effusive self-indulgence” (141). The idea of using rhetoric within the scientific world, to some, appears subjective and insubstantial. In such cases, rhetoric is not considered a part of serious writing. An instructor’s establishment of rhetoric within a technical writing classroom faces challenges because of the black and white nature stereotypically assigned to science. This is particularly true of Aristotelian Rhetoric, partly because of the establishment of the concepts of “common topoi” and “special topoi.” In Aristotle’s view, “common topoi,” or motifs, are those that can be understood by anyone, while “special topoi” are reserved for use by those in a particular field of knowledge. This approach to scientific language means the general view technical writing needs to be rethought:

Aristotle’s identification of rhetoric with probability, uncertainty, choice, and persuasion implies that to see classical rhetoric as relevant for technical communication one must reconceive technical communication as involved…with the fallibilities and uncertainties of human reason and judgment and thus with the dynamics of persuasion. (Ornatowski 35)

While scientific writing may seem concrete and unwavering, there is considerable evidence that it is also persuasive because of the revered status scientific thought has earned in today’s society. As Barabas asserts, “The apparent invincibility of facts and the scientific aura of technical jargon have become themselves a mode of discourse and a means of persuasion” (142). The presence of scientific information often serves to convince an audience of a text’s importance. Likewise, rhetorical systems of discourse, use of language, and definition of terms all act to convince the reader that the scientific writer does know the details of the subject being written about.

Another example of the use of persuasive techniques present in technical writing is the use of motivational language. Researchers at the University of Twente, in the Netherlands, conducted a study of the effect of motivational traits on forty users of an office phone system.
Two instruction manuals were written; one utilizing traditional technical writing characteristics like succinct and clear language, the other containing motivational elements such as using non-technical language, specific examples, and late point-of-attack sequencing describing the results of a particular action (Loorbach et. al. 178). While the manuals were written in different styles, they contained exactly the same information and instructions. By providing what may be considered by some as excess information, the study found:

In comparing the ratings for text appreciation, we found that the participants using the M [motivational] version of the instruction manual rated their text as significantly more attractive, better, and simpler before they performed the tasks and as more attractive, more long winded, and more written toward users after they performed the tasks than those using the T [technical] version. (Loorbach et. al. 188-9)

The study establishes some evidence of the positive aspects of an audience-centered writing style. Participant responses verify that the motivational manual seemed to provide instructions which were easier to follow. The results of the study show those participants reading the motivational version were able to complete tasks more quickly than those using the technical version (Loorbach et. al. 187). Although limited, this study indicates that language and rhetoric within technical writing is not only desirable, but beneficial to the end-user.

Traditional ideas of rhetoric are not the only forms which should be evident in technical writing coursework. In practically every field of coursework, computer drafting has become so commonplace it has been overlooked:

which underscores the need for writers and scholars to be developing a rhetoric from technology to raise technology’s subtle shaping of subjectivity to the conscious level and to aid practicing writers in coordinating cultural authorship as technology progresses. (Henry 153-4)
Particularly in cases of web-based composition, traditional rhetoric may not go far enough in teaching writers how to address an audience. Further complications arise because technology effects the way a text is perceived.

Methods for understanding and interpreting the differences between traditional composition and electronic text must be introduced in the classroom in order to fully prepare technical writers for the workforce. Studies in traditional rhetoric provide a solid basis for comprehending the possible effect texts have on an audience. Subsequent exploration into the creation of web-based rhetoric allows writers to develop a greater sense of power and ownership over their writing.

3.5 A Question of Ethics

Along with the need for an online rhetoric, a development of ethical and legal standards must also be developed. Currently, perhaps the biggest quandary in the realm of technical writing is the question of what behavior, writing, and compiling of data is acceptable, whether published on the Internet, or merely researched online. Many court cases have sought to establish answers concerning the legality of the use of web-based documents, yet suitable conclusions remain elusive because the judgments in such cases revolve around the standard applied to print documents. The legal arena, however, is not the only place which fails to answer questions of ethics adequately; technical writing textbooks and handbooks fail as well.

Technical writing textbooks mention conventions of ethics, but only in a general sense. The directives concerning ethics in most classroom materials deal with presenting information honestly and avoiding plagiarism. While ethics are crucial to the field, such edification is inadequate, especially considering that the Internet has blurred the lines of copyright and fair use laws. The concept of the Implied License Principle, which holds that publishing information on
the Internet serves as defacto approval for users to copy, republish, and quote from the document as long as it remains in the public domain, further complicates the establishment of ethical and legal norms.

Another difficulty in establishing online norms stems from the fact that little to no research exists in the areas of legal and ethical issues as applied to web-based information. James E. Porter, in his work on cyberwriting, points out that a plethora of handbooks and guidebooks are available to technical writers, but that “typically these resources focus on the how-to rather than the whether” (Porter 47). For example, the seventh edition of Technical Communication by Mike Markel provides instructions on how to locate and copy the source code of a website, then recommends that students use copied source code to build their own website. The only ethical suggestion is that students may want to ask permission of the website designer. Directions such as this completely disregard the presence of possible legal hindrances such as Intellectual Property laws, or ethical consideration of honest presentation of information or avoiding plagiarism.

While ethical and legal ramifications concerning the internet and online work are currently nebulous at best, students must be informed about the issues. Simply skimming over ethics and legalities of technical writing could prove detrimental once a technical writer enters the workplace. Without knowledge of existing debates and legal actions affecting the field, writers could find themselves making mistakes which could greatly harm their careers or their employer.
CHAPTER FOUR

PUTTING THE PIECES TOGETHER: KEY COMPONENTS OF A TECHNICAL WRITING CURRICULUM

The problems in current technical writing pedagogy presented in the previous chapter show a need for close scrutiny of components which would create a successful course on the subject. While many general characteristics carry over from current technical writing programs, presentation of additional information should be added in order to augment technical writing education.

4.1 General Characteristics

Many technical writing textbooks begin with the characteristics of the field. Normally, six characteristics are recognized in such texts. Students are taught to focus on providing practical information, either in the form of instructive writing (action-oriented writing), or as a means of providing understanding (knowledge-oriented). An emphasis is placed on providing facts, not impressions, in technical writing. Thus, there is no leeway provided for authorial voice or figurative language. Along these lines, technical writing demands accurate measurements. Additionally, visuals may be included in technical, and particularly instructive, writing. Technical writing students are also asked to consider a specific audience only when stating responsibilities for the target audience. Hence, the writer is expected to make the responsibilities of the audience clear while neglecting what the reader may anticipate from the text. Finally, persuading and recommending is included, but only when a writer is attempting to sell an audience on an idea. Current texts contain little or no encouragement in developing an “art” of technical writing.
4.2 Tell a Good Story

One aspect of successful technical writing commonly appears in the creative writing classroom. In his book, *Essential Communication Strategies for Scientists, Engineers, and Technology Professionals*, Herbert L. Hirsch explains: “The common denominator among all documents is that they each tell a story” (11). According to Hirsch, regardless of the purpose of a document, the impetus remains the same; telling a good story simplifies the purpose of technical writing to its most basic form.

The characteristics of story writing therefore become the necessary means of conveying technical writing:

Given then, that good documents tell stories, what do we know about a story, especially one that is effective, memorable, and convincing? The answer is easy: it has a beginning and an end, which are connected by a smoothly flowing rhetoric that is well supported by necessary facts and details. (Hirsch 12)

Hirsch emphasizes the need for factual, detail-driven prose. The operative word in this case becomes “prose.” While technical information must be expressed, it should be done in a manner which not only logically connects the document, but also artistically joins the writing. According to Hirsch, connection, flow, and reinforcement should guide writers engaging in technical communication.

The language of a good story is of interest to Pfleging and Zetlin. Specifically, their work in *The Geek Gap* discusses the reluctance of “geeks” to utilize language they may view as excessive:

The problem-solving world of technology leaves little room for obfuscation, verbal manipulation, or ambiguity. This is particularly true for programmers: writing effective code demands the exact opposite skill…Geeks’ use of language tends to follow the same rules – it may seem confusing and impenetrable to suits, but is actually specific to their work, and very much the opposite of double speak. (Pfleging and Zetlin 137)
Unspecific and excess language must be shunned in the course of much technical work, particularly that of the IT industry. Because avoidance of extraneous language in many technical fields is a necessity, creative word choice and expressive voice essentially become obnoxious and malevolent to technically inclined workers.

4.3 Avoid Format Hindrances

While no instructor could ever be able to understand every field represented in the technical writing classroom, a basic understanding of formats and terms used within prominent fields (computer science and engineering, for example) could go a long way in aiding classroom instruction. Perhaps the clearest example of tribulations in an English based technical writing course is the case of citations of outside sources. Many English departments use MLA format exclusively. Different formats are used among the sciences. For example, a student may use APA or Chicago formats for papers once he/she fully enters coursework in his/her major. In the professional world, formats other than MLA will also be used for many professional publications. Many teachers from an English studies background do not work with such formats on a regular basis, however. Thus, exclusive knowledge of MLA format could become a hindrance. Additionally, it could become a detriment for the scientific student who may use MLA format in a technical writing course in an English department, then have to learn the necessary field specific format later. Allowing technical writing students to use the format which will be needed for their future coursework would prove beneficial in future schoolwork.

The importance of format also enters into actual assignments within a technical writing course. Traditionally, many instructors rely on industry specific forms, reports, and publications for use in the classroom. Such forms may benefit some students but be detrimental to others. For example, an aerospace engineering student would probably welcome an assignment based on a
lab report used by Boeing; a criminal justice student would not. When using industry-specific assignments in a technical writing course, instructors must consider whether, “we are training our students to be active and complicit in the reinscription of work practices and relationships that are not in their own interests” (Wilson 78). If an instructor had knowledge of a report or form which a student would definitely use in their future career, teaching directly to that form could hinder all students in the course, even the one to which the assignment is tailored.

While industry-specific forms possibly provide benefits in some cases, students may find themselves hamstrung by such assignments. Rather, technical writing professor Greg Wilson suggests, “we should also emphasize teaching students to claim and inhabit agency (ability to act in one’s own interest) as technical communicators” (78). Wilson argues that by empowering technical writers in areas such as information selection and organization will improve their overall abilities and assist them in reaching their full potential. Although forms and reports will play a role in the workplace, students will achieve greater writing quality through the understanding of forces which openly or subversively dictate their work.

### 4.4 Working with Rhetoric

One force which effects writers’ performance and the interpretation of their work is rhetoric. Foremost in the study of rhetoric is the fact that “rhetoric is not only an art of description and explanation. Like a social science, it seeks to explain systems of knowledge in order to increase understanding of how those systems, and systems of knowledge in general, work” (Segal et al 75). Thus, rhetoric exists as a means of discourse among specialized communities charged with reaching the outcome of imparting information and methods. It also expands on the act of learning:
rhetoric seeks to know how discursive systems work in order to improve the ways in which people learn those systems, and even, though it seems like hubris, to improve the systems themselves – as though, by understanding discourse, one could direct it to better projects, or direct it to existing projects better. (Segal et al. 75)

Thus, a utilization of rhetoric in the field of technical writing could benefit both scientific writer and lay reader.

Another portion of rhetorical theory which could assist technical writing pedagogy is the importance of tropes and schemes. An opportunely placed metaphor can sometimes go a long way in explaining difficult technical information to a general audience, particularly in a workplace setting: “saying the right thing in the right way at the opportune moment is critical to persuasive workplace communication, and workplace communicators consciously cultivate this skill as practical rhetoricians” (Merrill 81). By relating a complex idea to everyday experience, understanding can be greatly improved.

While possibly not a cure-all, the proto-scientific basis of Aristotelian rhetoric could be of significant use in the technical writing classroom. It could serve as the basis for teaching science minded students to prioritize: “The point is for practitioners to know enough about their own discourse practices to know when to revise them – and when to protect them” (Segal et al 77). A basis in rhetorical theory helps the technical writer appreciate that the discourse of a given field must be considered when engaging in technical writing, while still recognizing that the discourse with outside communities should play a role during final analysis.

The traditional rhetorical practices of Plato and Aristotle often find their way into a composition classroom; however, other rhetorical options should also be considered within the technical writing classroom. For example, the tradition of Isocrates provides a compelling perspective for technical writers:
Yet, whether they like it or not, both industries and the humanities in universities confront matters similar to those associated with the Isocratean rhetorical tradition—current human problems, their changing particulars, the prominence of decision making, the value placed on usefulness, and the necessity of using judgment. (Whitburn 227)

While traditional writing programs are securely grounded in the humanities, technical writing potentially addresses similar issues.

Isocratean theory also allows room for the brokering of information which is so useful to symbolic-analytic workers. One aspect of Isocrates theories involves the belief that “something said by one person is not equally useful to the next speaker; the most artful impression is created by one who speaks in a way which befits the subject, and yet is able to find something different to say from the rest” (Halliwell 112). The technical writer may find himself/herself needing to repeat ideas and language from previous communication, and the capacity to rearrange, rearticulate, and reinterpret such information develops into a rhetorical decision. Choosing when to make such rhetorical decisions depends on “adapting oneself to kairos – the ‘moment’ or ‘opportunity’ which is also the principle of the ‘right time.’” (Halliwell 112). Isocratean rhetoric allows writers the opportunity to adjust communication to particular circumstances, or on a basic level, practice symbolic-analytic work.

Technical writing may deal with humanistic issues as well. After all, much technological advancement comes about in order to improve human problems, whether personal or universal. Judgment and decision making must be utilized in order to create and test such advancements. A scientific method must be followed; likewise with technical writing. Getting scientists to understand that writing is a formula with a specific method and specialized criteria should be the foremost task assigned to instructors of technical writing. When approached from an Isocratean perspective, the chasm between creative writers and scientific writers does not seem so great.
While traditional rhetoric should help shape the technical writer, a newer form of rhetoric must also emerge. Increasingly, technical communication and Internet composition scholars are calling for “a ‘critical rhetoric’ that is sensitive to the particular rhetorical context(s) of electronic discourse” (Porter 46). With the growth of the internet and online work, rules applied to traditional text do not always encompass the rhetorical issues writers face. New concerns arise because of the technology used to convey the message: “The new technical writer, the cyberwriter, must understand the rhetorical nature of the different technology in order to understand how to use it effectively” (Porter 47). For example, providing only an online instruction manual for assembly of an office chair automatically excludes a portion of the intended audience because the writer has assumed that everyone purchasing the chair will have internet access. The shift to new technology affects rhetorical implications and such moves must quickly find their way into classroom study.

The importance of rhetoric is clearly established in general composition; however, the need for various forms of rhetoric within technical writing is commonly ignored. By including rhetorical studies in a technical writing classroom, writers will increase their ability to recognize the impression of their writing. The impression created upon the audience by the technology utilized in transmission of a message would also be clearly understood. The rhetorical impact of a message could therefore be maximized.

4.5 The Theoretical Viewpoints

Social constructs within the workplace must also be considered when addressing the importance of clear technical writing. For example, some theorists embrace the social perspective which proposes: “that composing processes and the texts produced reflect complex interrelationships between authors, audiences, and the social contexts in which they are all
situated” (Harrison and Katz 18). The social perspective is not unique to professional and scientific writing, but should be placed at the forefront of such writing. Teaching technical writers to recognize and appreciate the social constructs within a company must also enter into their education. Relationships within an organization sometimes become crucial to success:

Beyond sharing conventions for discourse and common ways of knowing, believing, and persuading, members of an organization are relatively tightly connected in inter-dependent relationships, upon which they stake their prospects for short- and long-term goal accomplishment. (Harrison and Katz 28)

An understanding of dynamics within an organization could become the deciding factor which makes or breaks a project. Pfleging and Zetlin’s research is full of real-world examples which illustrate that without proper comprehension on all levels of an organization of the need for a specific project, development of new accounting software for example; such a task may face considerable challenges, or even be discarded completely. In such cases, the ability of technical writing to convey the value of technically-oriented projects successfully becomes the catalyst for such a venture. Thus, consideration of the audience(s) present within a technical writer’s workplace becomes critical to future success.

Further consideration of audience in technical writing can logically come in the practice of articulation theory, which “provides a way for thinking about how meaning is constructed contingently, from pieces of other meanings and social forces that tend to prioritize one meaning over another” (Johnson-Eilola, Database, 202). Articulation theory therefore allows for study of the connections which can be made among workplace cultures. Johnson-Eilola espouses this idea, especially when dealing with Internet writing:
If we start to understand connection as a form of writing, then articulation theory can offer us a way to understand the ‘mere’ uncreative act of selection and connection as very active and creative. Perhaps, as importantly, it moves the idea of database construction – or any sort of connective writing, like hypertext – away from technical/functional skills only and toward the sense that making decisions about how to arrange ‘facts’ is a very important process, one that involves ethical responsibilities on the part of the writer/designer. (*Database* 226)

In Johnson-Eilola’s estimation, even the stereotypically objective technical writer exercises some form of rhetorical practice simply by choosing what information is presented and in what way. Selber further supports this belief when he argues for promoting a social perspective of hypertext writing (a form of electronic technical writing) in the classroom. A further contention is that instructors should “challenge limited communication models by revealing the additional forces influencing hypertext development and use in classroom contexts” (Selber 34). Instructors should provide a wider view of what issues, perspectives, and even technologies, possibly manipulate writing. Through understanding that such forces play a role in writing, student writers’ could more easily anticipate the effect of those forces while still in the process of composition.

Articulation theory also helps writers comprehend a workplace shift to symbolic-analytic work. The symbolic-analyst must communicate across workplace boundaries, and with the audiences of their work, “but the key focal point of their work lies not in simply having good traditional communication skills. Instead, symbolic-analytic workers are valued for their ability to understand both users and technologies, bringing together multiple, fragmented contexts in an attempt to broker solutions” (Johnson-Eilola, *Database*, 201). By drawing together a multitude of data from varying sources and technologies, technical writers must gain an understanding of how those efforts are perceived by different audiences. Additionally, some comprehension of the forces which influence information gathering and dissemination is necessary as writers create
documents. For example, many younger college students tend to seek answers from general information website databases such as Wikipedia, or About.com. Utilizing information from such sites constitutes a rhetorical choice and influences the information a technical writer has the opportunity to present to his/her audience. Johnson-Eilola stresses the importance of articulation theory in such instances:

> Articulation theory provides a way for thinking about how meaning is constructed contingently, from pieces of other meanings and social forces that tend to prioritize one meaning over another. Because articulation conceives meaning as a contingent play of existing forces rather than a traditional ‘creation’ and ‘reception,’ the perspective can be useful in helping us understanding writing as a process of arrangement and connection rather that simply one of isolated creative utterance.” (Database, 202)

Through the use of articulation theory in a general technical writing course, instructors could thwart the stereotype that technical writers are completely objective. A greater understanding of what influences may be present when writing and collecting data greatly increases a writer’s ability to seek the best method of reaching his/her audience.

4.6 **Ethical and Legal Issues**

Ethical and legal issues are often glossed over in the technical writing classroom. A portion of the discrepancy may be attributed to the broad number of disciplines present within a technical writing course. After all, a writer compiling technical specifications for an aircraft company has different concerns than an instructive writer for a furniture company. Both have a message to convey, possibly in the same manner, but the ramifications of error or poor instructions are extremely dissimilar. Technical writers are effected by ethical and legal issues exclusive to the particular workplace within which they are writing. Although some ethical and legal issues fluctuate, others are standard across disciplinary boundaries. These standard issues need to be presented in a general technical writing course.
Perhaps the most pressing standard ethical and legal issues affecting technical writers are those revolving around online writing and internet publication. Laws dictating the use of writing within the traditional print medium are currently being applied to online publication. Weaknesses arise, however, because of the nature of internet information sharing. A vast chasm exists regarding the interpretation of dissemination throughout the Web. In order to navigate the differing opinions on issues such as fair use, intellectual property, and licensing, technical writers must be aware of debates surrounding each issue, both online and in the legal arena.
CHAPTER FIVE
A MEANS OF “GOING LIVE”: SAMPLE LESSON PLANS FOR AN INCLUSIVE TECHNICAL WRITING COURSE

While students who enroll in a technical writing course run the gamut of majors and career fields, a common denominator exists – teaching technical writers to write successfully. As Greg Wilson of Los Alamos National Laboratory and New Mexico State University advocates in his work on technical communication pedagogy: “The goal is to instill the students with a sense of agency [ability to act in one’s own interest] as communicators and workers in order to improve the profession of technical communication and the products of companies that employ technical communicators” (74). No matter the field, technical writers must be able to adequately communicate on their own behalf, as well as that of their future employer, and such writers must often successfully communicate with an audience outside their career field.

Because of the variety of fields represented by technical writers in today’s business world, and due to the need for those working with such writers to understand the “geeks,” a general course in technical writing is recommended. In such a course, those on technical career paths would have the opportunity to work with others in a variety of disciplines. Essentially, the goal of a general technical writing course would be to increase the ease of communication between technically-inclined workers and the rest of the world. The following proposed course outline and lesson plans are provided as a means of establishing such a course.

5.1 Establishing the Basics

Technical writing includes a wide array of writing tasks; from crime lab reports, to software design project proposals, to engineering plans; however, common links exist among all forms of technical writing. Clearly, common composition standards apply, but students entering
a technical writing course should already be familiar with those norms. Introductory composition courses, ideally, provide a sufficient background in principles of grammar, organization, and critical thinking. Important benchmarks within the realm of technical writing include providing practical information, and addressing ethical concerns.

An additional benchmark which should be added to the technical writing classroom is the use of rhetoric. An understanding of the changing idea of rhetoric must also be included. Technology affects the methods in which information is conveyed, and the manners in which it is received. The ability to recognize and anticipate such effects has become essential for technical writers. The rhetoricians and theories discussed in Chapter Four serve as possibilities for classroom inclusion; however, the complexity of the symbolic-analytic approach calls for its own attention.

5.2 Teaching the Symbolic-Analytic Perspective

The shift to an information-based workplace leads to the need to adjust teaching to reflect new abilities. One such aptitude is that of information compilation and transfer. Robert Reich’s concept of the symbolic-analytic worker would enhance the preparation of all professionals: “courses that focus on technical communication as symbolic analysis may better prepare students to be corporate citizens in the postmodern workforce – not just the students who go on to be professional technical communicators but also the future engineers who learn new ways to think about communication and technology” (Wilson 85-6). By introducing symbolic-analysis to a general technical writing course, future workers who will deal with a technical field would benefit. This concept would provide a greater understanding of the ways in which information is gathered, transmitted and received, and the forces which influence each step of communication.
While the notion that symbolic-analysts serve as information brokers who guide communication under specific circumstances may seem simple, building the ability to perform such a task proves more time consuming. Due to the fact that symbolic-analysts must also strive to demonstrate the importance of their work tasks, more than just compiling information is necessary for successful performance of work-related duties. Johnson-Eilola establishes four key areas which should be addressed in the education of those entering a symbolic-analytic field: experimentation, collaboration, abstraction, and system thinking (Datacloud, 29-30). While educating students to become symbolic-analysts can stretch over the course of many years, assignments in the classroom may be tailored to accomplish Johnson-Eilola’s suggested goals.

A practical approach to teaching methods of symbolic analysis within the composition classroom involves ongoing tasks applied to one assignment. I would propose beginning with instructive writing. Topics selected should involve simple tasks with which students will not be too familiar. For example, having small groups of students write instructions for making candles, paper, or Play-Doh would be ideal because creation within a classroom is not difficult, and students would most likely not be accustomed to creating such items.

Experimentation would present itself in the process of drafting instructions. Student groups would exchange instructions within the classroom and see if results can be duplicated. Ideally, students would revise instructive writing until another group could successfully reproduce a particular item. Students could also perform a smaller form of the Loorbach et. al. study mentioned in Chapter Two in order to find the most effective form of instructive writing within a given situation. This form of experimentation also lays the groundwork for collaborative efforts within the classroom.
Collaboration among students is a given because of the use of group activities. Further collaboration among groups would also be possible because of the exchange of information concerning the quality of instructions. Such collaborative discussions would easily cross disciplinary boundaries because technical writing courses already draw students from a variety of backgrounds and majors. Collaboration among disciplines will enhance the success of technical writing, as Judy Segal and her companions point out, “our projects will fare better if we acknowledge disciplinary complexity and collaborate with members of the disciplines we study” (Segal et. al. 84). Designing assignments which allow interaction with the audience will also prepare technical writers for the 21st Century work environment.

Teaching abstraction, or “learning to discern patterns, relationships and hierarchies in large masses of information,” seemingly becomes more problematic in such a small-scale assignment (Johnson-Eilola, *Datacloud*, 29). However, through the repetitive process of writing instructions and attempting to duplicate the creation of an item, an additional assignment would be to have students prepare a report on those efforts. For example, students would analyze the process of following instructions to discern the most important elements of their instructive writing and report on which elements were most effective and why. Regardless of the assignment, Wilson stresses, “Students need to become more comfortable with nebulous assignments, to look for multiple good answers in a churning sea of possible, yet contingent, answers” (87). Instructors should focus on creating assignments which pose questions that seem unanswerable in order to express the concept of abstraction.

System thinking, which “requires recognizing and constructing relationships and connections in extremely broad, often apparently unrelated domains,” could present itself in the very form of the assignment given within a writing course (Johnson-Eilola, *Datacloud*, 29). In
other words, the emphasis of such efforts amount to getting students to articulate what a task such as making Play-Doh has to do with the process of technical writing. Another option is suggested by Wilson, who builds assignments around the study of maps (88). By studying a variety of maps, students view them as more than linear, two-dimensional objects and begin to comprehend the interrelatedness of systems represented by such maps. System thinking also lends itself quite well to preparing students for the workplace. Jim Henry, in his archeological approach to writing in the workplace, supports teaching writers to recognize and comprehend organizational systems (an idea further discussed later in this chapter). Henry argues that concepts of the organization of the workplace supplement system thinking and, “may become integral to understandings of authorship much in the ways that it is already integral to understanding phenomena in other disciplines preparing students for the workplace” (129). Through classroom collaboration and association, the writer’s differing audiences become a tangible model for students instead of a theoretical concept. By studying the accomplishments of other assignments, students can reach an overall understanding of potential relationships between disparate tasks. This comprehension leads to future benefits when exercised in the workplace.

Assignments which allow students to form and explore their own hypotheses about communication are necessary to establish the importance of the proverbial ability to “think outside the box.” This ability can also be increased through the use of collaboration. Wilson further suggests that only on rare occasions do workers make decisions based on perfect information. Instructors should prepare students to face such situations: “Assignments with fewer instructor-stipulated parameters can help stimulate this condition by encouraging students to find alternative rules and appropriate responses” (Wilson 87). While instructors would relinquish some control over assignments, the sacrifice would encourage critical thinking and varied
approaches; students would begin to break the cycle of blindly following directions. Furthermore, by utilizing an interdisciplinary approach, teachers greatly increase students’ preparation for dealing with varied cultures and viewpoints within the workplace. Preparation for the interrelatedness of the workplace must also be further developed throughout a technical writing course.

5.3 Ethics and Legalities in the Classroom

The debates over ethical and legal considerations in technical writing, particularly when it comes to online composition appear to be far from over. However, the development of an ethos for online writing is becoming a necessity. Theorists such as Johndan Johnson-Eilola and James E. Porter are among the advocates for those utilizing online technology to lead in the establishment of ethical and legal guidelines. In order for technical writers to take part in development and augmentation of such guidelines, groundwork must be laid in the classroom.

In his work on cyberwriting, Porter offers advice to cyberwriters, or those writing for potential online publication. His guidance includes the use of critical rhetorical ethic, which is further addressed in the discussion of rhetoric and its bearing on technical writing. Among legal and ethical considerations, Porter further suggests writers consult a variety of sources for information concerning the latest legal debates. In the classroom, such information is often a mouse-click away. An ongoing assignment which could add to legal and ethical discussions would be to have each student report on a single debate or court case going on within the field. While teachers could assign a specific topic to each student, in keeping with Wilson’s advisement against instructor-stipulated parameters, students should be encouraged to seek out concerns on their own. Porter further espouses collaboration when dealing with ethical questions, “make ethical decisions in a dialogic and cooperative manner” (68). Having each student present
an issue to the class establishes the possibility for discussion and collaboration on development of a technical writing ethos. Ethical decisions and interpretations would thus be created through the work of people from a variety of disciplines.

While legal and ethical considerations are often nebulous and transient, their presence must be incorporated into the technical writing classroom. Porter advises instructors and program administrators, “build awareness of legal and ethical issues into every course in the curriculum [. . .] teach students to interrogate all their writing projects from a legal and ethical viewpoint. Although no concrete answers may be provided by the study of current legal and ethical interpretations, the inclusion of such issues provides students with a framework for consideration. Even though it would be nearly impossible to keep up with all changes in ethics and legalities awareness of landmark legal decisions and precedent would help guide future technical writers. By establishing background knowledge in technical writing coursework, writers’ capability to recognize and address similar ethical issues would be expanded. The awareness of potential problems, ideally, will lead students away from committing errors in this area once in the workplace.

5.4 Week by Week Course Schedule

No compilation of the important elements of a technical writing course would be complete without the inclusion of a potential course schedule. The following suggested syllabus has yet to be field-tested, so it is merely proposed topics and assignments for a general technical writing course. The keeping of a journal would also be required for this course. Patrick Dias and his companions, in their study of the differences between writing in the classroom and in the workplace, recommend that writers attempt to make a habit of jotting down ideas. The main purpose of a journal would be to encourage students to “register fleeting impressions, sketch
transient ideas” (Dias et. al. 232). The ensuing suggestions include only classroom assignments and work; no textbook or additional readings are mentioned or recommended. Any reading or textbook assignments would be at the discretion of the instructor.

Week one of the course would center on introductions, not only of people, but of technical writing and the course as a whole. The first week of class should set the tone for the remainder of the semester. With that in mind, the introduction to technical writing would involve creating a working definition of the field for use during the entire semester. Since there is a need to change the perception of technical writing the students should begin with their own definitions of technical writing. Through the exchange of student views on the subject, a working definition would be established for the rest of the semester. Week one would focus on collaboratively building an encompassing definition of technical writing which could be revisited and revised throughout the course.

After introductions, students would begin to get into the meat of technical writing. A unit on instructive writing could begin with hands-on learning as students create an item in class such as suggested earlier in this chapter. Once students have created the selected item, they would then write instructions on how to replicate the process. The definition of technical writing created in the preceding week may need to be adjusted according to students’ experiences with writing instructions.

Now that students will have written their first piece of technical writing, the class should focus on elements of style in technical writing. Much of this type of information can be provided by any technical writing textbook. Of particular importance for a general technical writing course such as the one proposed here would be avoiding needlessly complex words, phrases, and sentences. Ambiguity from word order or phrasing could also be an area to consider.
Supplemental information for this section would involve working with rhetoric. Students would learn ways in which technical writing could be improved through the use of rhetorical schema and persuasive methods. Once a discussion of language usage has been completed, students should be instructed about format issues.

While the format of research papers and academic assignments will vary from field to field, basic structures can be covered in the classroom. Students will already have some background in this area because of previous coursework, but a short review would be helpful. The location of citations for research information is almost universal, even if the form those citations take is not. Another appropriate task this week would be a study of examples of forms students may see in industry settings during their future careers. As stressed in Chapter 4, instructors must avoid teaching straight to a particular form in order to encourage critical thinking skills. After viewing sample forms, students would be required to create their own form for a simple task, for example: a purchase order, or an expense record. Once the basics are covered, students can begin to think about their audience.

Audience analysis would follow the creation of initial instructions. Students could be introduced to several means of interpreting their potential audience(s). Factors such as audience knowledge, perspectives, and textual interpretation are issues which should be addressed during week three. An introduction to articulation theory, which provides a means of studying how social contexts affect meaning, would also assist in audience analysis. Instructions would be adjusted accordingly after students have conducted an analysis of their potential audiences. The purpose of writing instructions before formally analyzing the audience is to help students understand the importance of revision.
The introduction of the potential for revision provides an excellent point to include methods for drafting and revising. As an assignment for this week, students would be asked to find one example of instructive writing, perhaps an owner’s manual they have lying around the house, and bring it to class. Students would then be required to use the previous lessons on instructive writing and audience analysis to rewrite their example. Another possible approach to this week would be to have a guest technical writer bring in examples of his/her own instructive writing and allow students to revise that. Providing students with a resource actually working in the field of technical writing could also lead to more changes in the working course definition.

More potential for revision would be introduced the following week through the inclusion of research. Work during this period would require students to seek outside examples of instructions for the particular item they have created in class. Assignments for this week would have students engage similar forms of instructive text. Through research, students may discover better ways to write or edit the instructions written during week two. Likewise, students may find poorly written instructions that provide a real-world example of what not to do. Students would revise their instructions as needed.

During the following unit, students would be more fully introduced to the idea of symbolic-analysis with the use of collaboration. Although some collaboration will have already taken place in the classroom, this would be a week of formal study. Students would be asked to work in small groups and compile the information provided by the instructions they have already written. Each group would then develop one set of instructions to be provided to another group in the class. Individual groups would also be asked to develop hypotheses about how the instructions will be interpreted and received. In this way, the experimentation that plays a role in symbolic-analysis would also be included.
The results of experimentation and the resolution of hypotheses would be the focus of the next unit. Each group would attempt to follow the instructions provided to it the previous week and replicate the item the original group created. An exercise such as this has the potential to become extremely amusing. Fun and games should be far from the only accomplishment this week, however. Groups should review their instructions, audience analysis, and hypotheses to find problems and successes within their writing. An overall assessment of each set of instructions should also be done by the class as a whole. Also this week, a midterm test opportunity would be to have students write a progress report reflecting the progression of the course to this point.

The subsequent coursework would expand the overall assessment of instructions in an effort to practice abstraction. This week would also give students a unit on researching and writing analytical reports. Students would compile the instructions which have been written and revised since the beginning of the semester, which would provide them with a mass of information. This mass of information could provide details such as what set of instructions worked best, which elements of the instructions were most successful, and whether there were any inclusions which hindered successful execution of the instructions. Each student would then file an analytical report in which he/she provides an assessment of his/her findings.

Following the creation of a formal report, students would be introduced to the concept of systems thinking. The assignment for this week is loosely based on Wilson’s mapping assignment. An organizational chart of a local major corporation (for this geographic region, perhaps Boeing, Raytheon, or Coleman) would be obtained or created by the instructor. Students would be faced with one question: “If you discovered faulty instructions for a product created by your company, what areas of the company would need to be told?” The work during this period
would require students to practice systems thinking in order to find the answer to the question. Intensive study of the organizational dynamics, hierarchies, and connections need to be considered. For example, faulty instructions for a product would clearly involve the technical writing cubicles, but may concern such diverse portions of the company as research and development labs, public relations offices, and legal staff. An activity such as this would give students the opportunity to think creatively about how one problem may cascade into several areas of a company or organization.

Organizational charts provide a transition into the following coursework. Although not addressed in this paper, the visual elements of technical writing are dealt with in most textbooks. Some mention of general principles for using diagrams, flowcharts, and graphs would be a good supplement for students. An assignment for this week would require students to create their own organizational chart of their neighborhood, workplace, or university.

As a follow-up to studying organizational charts, weeks twelve and thirteen could focus on organizational dynamics and workplace culture issues. During the next unit, the examples of work such as the research done in *The Geek Gap* would be the focus. Students should gain a grasp of current problems facing technical duties in the workplace. This presents another opportunity for guest speakers. One suggestion is to assemble a panel of professionals, both “geeks” and “suits,” who would present the class with real world examples of communication failures and successes. This panel discussion would set up the work of the following week: studying ways to avoid communication problems in the workplace. Social perspective theory and articulation theory (discussed in detail in Chapter 4) are examples of concepts which could be taught to the class. Work during weeks twelve and thirteen also establish a potential final paper for the course: a research paper covering either one theory on improving workplace
communication, or a paper studying a project which has gone awry because of faulty communication between “geeks” and “suits” (many examples exist, the cliché example being the space shuttle *Challenger* disaster). This final paper may need to be assigned earlier than this point and built up to for the remainder of the course.

As previously mentioned, this suggested course schedule has yet to be tested in the classroom. Therefore, some additions or deletions may be necessary. In any alterations to this outline, Johnson-Eilola’s and Wilson’s suggestions regarding symbolic-analytic assignments (discussed previously in this chapter) should be considered.
CHAPTER SIX

CONCLUSION

Rapid advancement in technology is resulting in dramatic changes in a variety of environments. Due to the increased technical nature of everyday life, the need for technical workers to adequately and successfully communicate with an audience of varying levels of technical knowledge is crucial to the future of the workforce. Likewise, the shift to an increasingly information based workforce must be addressed within the classroom, particularly in the field of technical writing.

While some classrooms may afford students the opportunity to work with the latest software and the most recent technology, preparation for the workforce still lags because of the neglect of topics beyond use of such tools. While the tools are needed to complete the job, more goes into composition than just the action of writing. Issues such as rhetorical studies, organizational dynamics, and ethical considerations cannot be overlooked or even glossed over. Education in the practice of technical writing requires an approach which encompasses the latest advancements in the understanding of the new Information Age and its effect on the field of technical writing.

During the course of researching and compiling the information for this paper, the subtle changes technology has brought to the nature of composition became startlingly clear. The need for a symbolic-analytic perspective came to the forefront, mainly because of the amount of information gathered in order to compile this work. The ability to practice symbolic analysis and to justify its presence within an organization will assist students as they enter any workforce. Through the understanding of systems thinking, students will come to a greater appreciation for collaboration among varying aspects of the professional world.
Collaboration, in turn, opens the door to a greater comprehension of rhetorical modes and their influence on audience. By establishing a rhetorical basis in the classroom, the application of such ideas will be carried into the workplace and into future technical writing. Additionally, the awareness of the changing nature of rhetoric, particularly in the practice of internet writing, will aid students in the development of their own rhetorical approaches to an appreciation for their writing.

Essentially, general technical writing courses need to draw the focus away from the mechanics needed and concentrate on the art which is possible. Technical writing’s presence in a multitude of disciplines illustrates the importance of the field. Coursework must recognize this importance and distinguish technical writing as its own specific aptitude, not as a service to the fields in which it is present. In recognizing technical writing as a separate aptitude, the added-value of the field must be appreciated by others in the business world.

In order for businesspeople outside the technical realm to grasp the importance of technical writing, some means of bringing Pfleging and Zetlin’s “geeks” and “suits” together must be established. Universities have the opportunity to connect these traditionally disparate groups through the establishment of general technical writing courses for students on all career paths. By giving such students the same foundation in technical writing, the success of future communication becomes more likely.

Each of the aforementioned issues has been discussed by communication, composition, and social theorists. However, this is among the first comprehensive attempts to compile all of these issues in order to build a general university-level technical writing course. The research presented in this essay shows that weaknesses in technical education exist. These flaws in the classroom influence the workplace and lead to numerous difficulties among professionals. By
improving the classroom, technical writing instructors can not only enhance their students’ future success, but can also increase the profile of the field of technical writing. The ultimate goal of this research is to expose weaknesses in technical writing education and propose a means of improving the field as a whole.
LIST OF REFERENCES


