Whatever Happened to Technical Writing?

Elizabeth Tebeaux[1]

Abstract
This article provides a short history of the continuing issues that modern technical communication and technical communication faculty face. It discusses the first texts and many of the early pedagogical battles: Technical communication faculty faced literature faculty who saw the practical as the work of the devil, despite the fact that technical writing courses remained in high demand. Many recent books presented here discuss the problems of a culture steadily declining in educational quality and students who cannot write.

Keywords
technical writing history, technical writing academic challenges, value of technical writing

Whatever Happened to Technical Writing?

This year, 2014, marks the 40th year I have taught technical writing. During that span, I began my career as a technical writing teacher by preparing technical writing instructions for Southwestern Bell Telephone. I was fascinated with the challenge, which seemed much more valuable than teaching composition. Following completion of my second master's, I began, with trepidation, courses toward a PhD in English, probably one of the biggest mistakes of my life, a point I will explain later. As I reexamine my career, I realize how little has changed for those of us who populate the ranks of technical communication courses and programs. In our search for respect, we have changed our name to

[1]Texas A&M University, College Station, Texas, USA

Corresponding Author:
Elizabeth Tebeaux, Texas A&M University, 5013 Augusta Circle, College Station, TX 7784, USA.
Email: e-tebeaux@tamu.edu

technical communication, a term which sounds less ephemeral than technical writing. Many universities have developed a variety of BA, MA, and PhD programs and certificates in technical communication. Preserving an understanding of the recent history of technical writing seems an important contribution for senior faculty to give new faculty, many who have emerged from recent technical communication programs with no concept of the emergence of technical communication.

Tech Writing in the 20th Century—An Overview

At the beginning of my career, as both a technical writer and teacher, I used basic rhetoric and never thought much about it. I never considered myself a rhetorician as did James Kinneavy (1980). In developing instruction manuals, my first challenge as a technical writer, I was keenly aware of the purpose of instructions and the audience: people who *needed* to read instructions. In my first efforts I also adapted a concise, direct style and diction (what *I would have wanted* if I were reading instructions) and taught my students to do the same. I had an over-powering sense of what I thought readers would need. Four decades ago, the rules for good technical writing were simple, even though texts we used in the early 1970s did not discuss rhetoric "as rhetoric" or document design. These texts focused on content needed for letters, proposals, instructions, reports, and foundation works such as definition papers, technical description papers, and process analysis papers. Students who took technical writing had a fairly sound command of English, a characteristic that today's students no longer have. (That is, they could punctuate a sentence correctly, knew subject/verb agreement, had a basic knowledge of syntax, and avoided major errors in diction and usage.) What was strange during the early 1970s, English faculty were willing to teach composition which was a five-paragraph theme with no particular audience or purpose; but many thought that technical writing supported the corrupt world of business and thus had no place in an English department. If you tried to explain to them the rhetorical complexity of many technical documents, these people gave you a dazed look and shook their heads. Faculty who thought technical writing was worth teaching were considered strange, to say the least. I was considered particularly corrupt because my husband was having a productive career with AT&T.

Those of us who saw the intellectual and rhetorical demands of creating good reports were held in contempt. Our pretentious colleagues really did not believe that the reports many of us had to write because of our administrative or committee positions within our departments or for our universities really should be called technical writing, or writing for the world of work. If you write personnel reports, recommendation reports, or proposals to expand curricula or to apply for funded research, for example, what else can you call these documents besides workplace writing?

Texts and Authors

Since I began teaching tech writing in the early 1970s, I will begin with those texts I often used. The first texts we used in the 1970s were Houp, Pearsall, Tebeaux and Dragga's (2005) *Reporting Technical Information* (*RTI*) and Mathes and Stevenson's (1976) *Designing Technical Reports: Writing for Audiences in Organizations*. Pearsall divided audiences into four categories with examples of writing for each group of readers: technicians, executives, general readers, and experts. He covered style, graphics (we did not have word processing then), business letters, proposals, and instructions, argumentation, and oral presentations. Pearsall never seemed aware that reports could be memo reports, the most common type, but formal reports only. Mathes and Stevenson focused on the process of report development and used as examples real documents they found in businesses in Ann Arbor and Detroit. These reports were letters, memoranda, and formal reports. They provided the examples new technical writing teachers needed. The summer workshops Mathes and Stevenson held at University of Michigan were incredibly valuable and gave many of us a head start into teaching of technical writing from a fully rhetorical perspective—creating report design for audience(s) and purpose(s). Pearsall, among many other technical writing faculty, learned technical writing by teaching at the Air Force Academy and the National Defense University, and, like John Mitchell, by serving in the military in World War II. Mitchell, a Boston Braham from Amherst, knew about all anyone needed to know about military specifications and standards. Hermann Wiseman (1968) provided the first book on technical letters , information I still use and have shared with engineering students pursuing internships. I never knew Herman Weisman, but I believe he would be impressed that many nuclear engineering students have found his little book useful.

At the University of Houston, I had the privilege of working with Dr. Nelda Lawrence, who taught business writing and office administration, a major department in the business school of University of Houston (Lawrence & Tebeaux, 1982). During the years before World War II, she had been asked to prepare shop manuals for industrial companies that dotted the banks along the Houston ship channel, to enable employees to manufacture bomb casings and tank parts instead of refrigerators. The effort was part of the need to prepare the country for war. Another challenge was to prepare women to take over positions in those plants, as many men had been drafted for military service. As Dr. Lawrence remarked, this was the consummate challenge: changing standards and specifications to *written* instructions and procedures. As Dr. Lawrence commented,

> I always tried to put myself in the shoes of these women, to find out what they knew, and to find out what would help them. Prior to the conclusion of WWI and

then the beginning of WWII, the need became apparent that having written instructions would be useful for new employees when seasoned employees left for the military.

Oral instructions were no longer effective in this setting, as these new employees needed more information.

As Dr. Lawrence remarked, having instructions contained in written form had a variety of benefits. Industrial workers could help write the instructions; and as procedures changed, they could be updated to help current and replacement workers.

Many English faculty who had taught Shakespeare and Milton found themselves preparing technical writing as they prepared written reports, technical description, extended definitions, procedures, and drawings needed by the navy, army air corps, and marines. Following World War II and then Korea, these faculty returned to their college teaching. Many established technical and business writing courses. College students who took composition, which focused on four kinds of themes—definition, process analysis, technical description, argumentation, and then research papers—were likely to enroll in technical writing, which reflected the kinds of writing these men had been forced to develop and learn. The simple fact was that modern technical writing teachers have benefitted from the background and on-the-job-training of the faculty who learned what they knew from their military experience. Houp and Pearsall exemplified text that showed that different levels of readers required different content. Examining the 11 editions of *RTI* shows how the world changed and what readers wanted and needed. By the seventh edition, *RTI* included document design, a more sophisticated approach to reader analysis, and a richer array of visuals, thanks to the arrival of computer graphics. Experience preceding the teaching of technical writing made a major difference, but hiring faculty who had work experience had and has become increasingly difficult. The result: Unlike books by Pearsall, many of today's books look and sound like academic discussions, a point that Sam Dragga and I have worked assiduously to omit in *Essentials of Technical Communication* (Tebeaux & Dragga, 2014).

Good Books but Very Bad Personnel Policies

While this progress explains in general how we arrived at the curriculum we now have, personnel issues were becoming more of a problem for people in technical writing. Tenure was becoming more and more difficult for technical writing faculty. Without publications (and you never knew how many were required), tenure became impossible. Publications had to show how technical writing

mirrored literary studies in terms of theory, philosophy, then politics, collaboration, and gender studies. Fortunately, some really useful research in document design, readability, style, and graphics surfaced. Articles on pedagogy almost disappeared, and faculty who really cared about teaching were derided as non-intellectual. If you published in *The Technical Writing Teacher*, you likely received no credit in your department; and the other journals, *Journal of Technical Writing and Communication* and *Journal of Business and Technical Communication*, did not focus on pedagogy. For reasons I have never understood, the phrase "teaching technical writing" makes many faculty ill.

Panels at meetings exuded intellectual nomenclature drawn from a host of fields. If you could "talk the literary talk of the day," you could get tenure. Journals with a variety of themes appeared, such as *Computers and Composition*. Articles on deconstruction—the theory of the day—required authors to relate technical "communication" to Bakhtin, Foucault, Derrida, etc. whatever theory was in vogue. Increasingly, only graduate students were willing to teach the basic course, while tenure-track faculty preferred courses in gender, collaboration, ethnicity, politics of language, Marxism, environmental rhetoric, and then power—theories of using technical communication as a means of power, rather than clarity. Trying to find faculty who believed in teaching technical writing became more and more difficult. Preparing Graduate Assistants Teaching (GATs) became harder, and many GATs focused more on citation format in their teaching then on rhetorical strategies, report design as response to rhetorical analysis, and content development for readers. The founders of Association of Teachers of Technical Writing (ATTW) understood the principles of rhetoric because the writing they had to do for the military made an understanding of audience, purpose, and context critical. Many of them produced excellent surveys to help teachers learn what workplace writing really meant and required (Tebeaux, 1985). While they were not logical positivists, they did know their readers and how to massage information to meet the needs of their readers.

By the end of the 1990s, faculty with roots in both the workplace and the academy argued, via surveys, what kind of writing was characteristic of the workplace. However, faculty like Gill Storm (Tebeaux, 1985) of Miami of Ohio found themselves excoriated for this kind "practical" research. Patrick Moore (1999a, 1999b, 2001) along with Smeltzer and Suchan (1991) became voices for practical research:

> The need for academics to provide research relevant to practitioners is particularly compelling given the finding of one study that less than 15 percent of those surveyed read academically produced research . . . [Research] should not be derived from questions unanswered in academic literature or from the belief that one's research interests are automatically relevant . . . Rather it is important to look at current trends and predict future ones. (p. 184)

What is peculiar about this perspective is that it anticipates what thought processes Google now seeks for its employees, intensive critical thinking, not about today but the future.

However, the situation for student-oriented faculty has not changed, and the value of a college degree continues to decline, as shown by research by people like Derek Bok and Aran and Roca who see commitment to provide students quality education gnawed away by faculty who have been sold on the "importance" of theoretical research that links technical communication to linguistics, anthropology, ethnography, social science, psychoanalysis, sociology, various strands of philosophy, ethics, and aesthetics. But none of these "studies" seem to meld to tell us what TC should mean. The goal is to build prestige, and faculty with this goal do not seem to care what the end goal is and when it has been achieved. The irony today is that academic research means less and less in all disciplines not just technical writing. The goal: Publish SOMETHING so that tenure is at least possible. The problem is equally ludicrous in the business schools, where faculty cannot receive credit for publishing a really useful article in the *Harvard Business Review*. Instead, they must write something totally theoretical and verbally dense. Why? Because literature faculty detest pragmatics, just as they did 150 years ago, a point Kanell (1996, Chapter 2) notes.

Technical Writing in the Modern University

Today the status of technical writing faculty proves difficult, just as it was four decades ago and, as Kanell (1996) stated, in the closing decades of the 19th century [Chapter 1]. As faculty we thought that showing the worth of what we teach—business and technical organizations wanted students who had studied technical writing—would enable us to establish the value of technical writing to our colleagues. We were wrong: An increasing number of departments outside liberal arts respect English less and less because many of our courses had and have little to do with literature or writing and much to do with politics. Our liberal arts colleagues know we think we are too elite to teach writing, and as one of my Political Science colleagues acidly remarked, "Why don't you at least teach literature and stay out of political science?" The unspoken answer: We are trying to find something to write about. From my four decades in English, I know that most of the science, engineering, and business colleagues with whom I work respect the improvement in writing I achieve in their students' work, but they do not understand why technical writing is detested by the humanities. As I finally figured out in 1991, "humanities faculty perceive the practical as the work of the devil because humanities should not be utilitarian" (Tebeaux, 1991, p. 25). This perspective sustains the entrenched liberal arts belief that college should emphasize intellectual pursuits absolutely devoid of application. As I heard a candidate for a liberal arts deanship state, "engineering and business should be moved off campus. They keep students from seeing the world in terms of ideas."

For some reason, pragmatism and applied learning have continued to be viewed as enemies of real education, even though jobs for liberal arts majors continues to shrink, a fact clearly evident in the Occupy Wall Street movement a few years ago.

The acrimonious division between the sciences, professional programs, and humanities programs has remained since the 19th century and has now worsened. As Daniel Kennedy (1994), former President of Stanford, and Nannerl Keohane (1993), former President of Duke, stated, the university should combine the work of practical and humanistic scholars to produce knowledge that can improve the human condition, a goal that cannot be achieved by each form of work by itself. However, faculty want to see only intellectualism. As Rebecca Schuman (2016) from SLATE recently wrote,

> First of all, as important as research is, the way it is currently conducted in American universities helps faculty do nothing except head to an early grave. Whereas even a decade ago a single well-received book and a handful of articles were sufficient to secure tenure, nowadays there are many Ph.D.s with those credentials who cannot even land a tenure-track job. And for the lucky ones who do get hired, sometimes nothing is good enough to get tenure, no matter what they do . . . Today's scholars are forced to produce an absolute torrent of academic publications—that *nobody reads,* because they too are under so much pressure to write. It's gotten so bad that Peter Higgs, whose name you might know because it adorns one of the most revolutionary developments in the discipline of physics, is outspoken about the fact that in today's academic environment, he'd never be hired. In short, graduate school leads more and more to a jobless hellscape.

The public's suspicion about the value of a college degree emerges from the excessive production of worthless "research," the decreasing course loads and increasing salaries of faculty. Combined, these factors ensure the rising cost of college. However, the increasing numbers of degrees for which jobs do not exist after recipients graduate underpinned much of the anger during Occupy Wall Street. Too many students lack practical writing skills that would make them attractive to U.S. corporations (along with some common sense). As I point out to students, I have never seen job ads for highly-skilled jobs that did not include "excellent communication skills" in the description.

For example, J. P. Morgan states that business and technical writing skills stand at the top of the list of required competencies needed to apply for a permanent position. Liberal arts colleges often ignore workplace writing and require both composition and advanced composition, neither of which addresses workplace issues, rhetoric, and style. The last time I found myself trapped in a course of advanced composition, I found a class of 28 students who had no clue about the meaning of "advanced" composition. Some had taken composition as dual credit while they were in high school, had never written a research paper, or

done database research. Some GATs openly resented teaching advanced composition because they saw that students would never write essays, a point with which I agreed. We all tried teaching writing software, but the course still had no goal. After a few weeks I redesigned it to include business writing, rhetorical analysis of workplace scenarios, PowerPoint reports, and memo reports. Many students wanted help with resumes and letters of application, so we did that.

After the course concluded, I proposed that the course be removed from the catalog, until I found out that freshman composition would no longer be a State requirement. The Texas Legislature suddenly realized that too many students were enrolling in freshman composition as "dual credit." It was a cheap way to move beyond the dreaded freshman comp class but no one was checking to see that the course taught anything prescribed by the State. Because the course contained very little, the Texas Higher Education Coordinating Board decided to drop the course as a requirement. I found students enrolling in my technical writing classes who had never written a research paper in any course, a topic that had been REQUIRED in the State syllabus for freshman composition for two decades at least. I sent the clueless students to the Writing Lab and required a signed statement of participation. But even that idea became defunct.

College in the 21st Century

Traditional universities often attack for-profit universities, such as University of Phoenix, because they offer students what they need for the careers they seek, namely career-focused courses and internships. These new universities, which have developed their curricula with input from the workplace and state governors, have shown that the traditional university structure, faculty roles, and tenure hinder change and flexibility necessary to allow postsecondary education to meet the needs of students. Derek Bok (2008), in *Our Under-Achieving Universities* and Stuart Rojstacze's (1999) *Gone for Good: Tales of University Life After the Golden Age* (Rojstacze, 1999) lay the decay of higher education at the feet of faculty. Research commands higher respect than teaching, and research—numbers of articles and research funds generated—has become the foundation of rankings and the "prestige" that colleges seek. Colleges hope that parents and potential employers will assume that a college with a high ranking means something. However, no one has shown how numbers of articles and books help students and improve student learning.

In the meantime, technical writing research, like nearly all academic research, continues to become a conglomerate of theoretical books and articles that mean little in terms of improving student and employee writing. When I questioned a colleague at another university to explain to me his research, which I could not understand, he told me that his job is to generate knowledge and that knowledge must be presented in "the academic register to provide a full range of subtle meanings." Implication: If people can read and understand what you write, then

it has no value. Books like *Academically Adrift: Limited Learning on College Campuses* (Arum & Roksa, 2001) and *Aspiring Adults Adrift* (Arum & Roksa, 2014) emphasize the problems of limited student learning—including writing—but nothing really changes.

From a broad and fundamental perspective, the problems faced by workplace writing courses have become icons for the issues facing higher education. English departments often despise not only technical writing but rhetoric courses in general. The new focus, gender studies, rhetoric of body parts, queer theory, women's studies, and digital humanities have taken hold in many departments. One international faculty member told me that rhetoric had nothing to do with feminist literature. Many departments in elite Eastern liberal arts colleges still require advanced composition instead of technical writing, although I have yet to see how advanced composition improves preparation for workplace writing. The emphasis on diversity drives common core courses in rhetoric, British literature, and American literature. However, pushing for core goals in humanities can easily be seen as racist and nonintellectual.

Higher Education: An Icon of Selfish Commitment

The division between writing and literature has never abated since technical writing emerged as the kind of writing instruction engineers needed (Moore, 1999b). Many English departments that have to offer technical writing courses provide minimal focus on quality and inadequate preparation of teaching assistants who carry most of the teaching load. As Willliam Chace reported in 2009 (Friedman, 2014a), English has continued to decline in enrollments and refuses to seek pragmatic directions, even though demand for literature continues to fall. Noone in my department cares that in 1995, ABET, the engineering accreditation unit, dropped literature as a requirement; and in many universities, such as land-grant universities, the demand for technical writing has remained unabated, but liberal arts colleges have rejected practicality in college education. Their rationale is reflected in the 1869 view of William Eliot, President of Harvard, who stated that "the practical spirit and the literary or scholastic spirit are both good, but they are incompatible" (Moore, 1999b, p. 6).

During the past decade, the importance of a bachelor's degree that prepares students for the workplace has increased. For-profit universities like Phoenix, much to the chagrin of many traditional universities, have focused on surveys of governors about the needs of the 21st century workforce. With the emergence of technical communication programs, fewer and fewer tenure-track faculty are interested in teaching undergraduate students in engineering, science, health, and business. Teaching the basic course has been left to graduate students, many of whom have no work experience and no sense of what writing on the job requires. Many still teach the Modern Language Association (MLA) style sheet with no effort to teach a rhetorical approach to the design of TW reports: analysis of context,

audiences, purposes, and context, to style, tone, and graphics. Many teaching assistants have little preparation for teaching technical writing and simply assign a topic, such as climate change tuberculosis, or terrorism with no rhetorical context.

Who Wants to Teach Writing as It Really Exists in the Workplace?

As the public continues to question the value of a college degree, as prices increase, teaching writing becomes more difficult. Students do not come to college with basic writing skills. Many two-year colleges push dual credit for courses like composition and even technical writing and argue that this approach will save money and enable students to graduate from college sooner. The problem, however, is that English majors do not have an understanding of the workplace: They are too immature to grasp the meaning and importance of technical writing. They want to take technical writing and perhaps editing and then wonder why businesses do not find them employable. These students' lack job preparation, and many come from non–English-speaking homes. College writing faculty are often part of the problem. Many resent having to teach writing to future public school teachers. Too many faculty who find themselves forced into teaching technical writing, usually teach the textbook rather than developing or finding writing scenarios that require students to determine audience(s), purpose(s), organization, and content needed to respond to readers and purposes. They do not understand common workplace issues and the ways in which these affect what has to be included in technical writing. In Texas, our public schools are failing due partly to the influx of Hispanic children who cannot speak and write English and probably finding teachers who want to teach them or know how to do so.

Many of us have argued that English majors who want to become technical writers need to study courses in business (a four-course minor) and computing science. This mix of courses would open workplace opportunities and help our would-be technical writing students understand how workplace issues determine technical writing content.

A Sample of How Real Technical Writing Emerges

While faculty lean heavily on text books, the problem is that current textbooks usually teach report development in a specific way that does not reflect the shifting context in which these reports have to be planned, written, and edited. The best example I have seen appears in *Writing and Designing Manuals* by Robinson and Etter (2000).

> Indeed, many of the major decisions affecting the production of the manual, including both content (information) and schedule (time) are often made by persons in

other areas of the company. Deadlines may be set by marketing to coincide with the new model period without regard to the complexity of the writing task. Information needed to meet those deadlines may be held up in engineering because of last-minute design changes. Yet the technical writer is expected to produce usable accurate manuals, on time and within budget. And in a real situation, writing manuals will never be accomplished the way you were taught to write technical reports in school (p. 69).

Rather than a neat linear model involving designing, collecting information, outlining, drafting, editing, approving, and printing, you face the following the nearly unreasonable deadline.

1. Begin making some basic decisions.
2. Deadline moved up two weeks.
3. Try to get information from engineers. Receive spec sheet with illegible hand-written changes.
4. Receive torn copy of competitor's; overheard hall conversation about radical design changes in production (Friedman, 2014a, p. 8).

This situation reflects the reality of on-the-job writing: technical writers do not have control of the writing process. They have to learn to produce a manual within often chaotic situations that will inevitably produce a report. If the report has to be prepared in too short a time, it may also lack accuracy. However, as we have told students, you must analyze, plan, draft, and edit: that is the writing process. But, the reality does not fit "the book." Writing as it is taught in school assumes two things: complete control and linearity of process—neither of which you have in writing manuals for publications . . . What you do have, always and forever, is chaos and a deadline. Out of these you create a manual.

Ironically, this reality echoes what Google is looking for when interviewing potential employees:

For over a decade, when Google conducted job interviews, they'd ask their applicants questions that have no answers. Google is a company whose very existence depends on innovation—on inventing things that are new and didn't exist before, and on refining existing ideas and technologies to allow consumers to do things they couldn't do before.

But Google doesn't even know what skills they need new employees to have. What they need to know is whether an employee can think his way through a problem that may not exist right now. (Friedman, 2014b)

And many times, developing technical writing places technical writers in the same situation, as Etter shows. For years, we have taught that writing is

thinking, and when a major document cannot be completed "by the book," writers may have to "think" their way through the dilemma, once they can estimate the dilemma. Contrast this with how most companies conduct job interviews: In the skills portion of the interview, the company wants to know if you can actually do the things that they need doing. But Google does not even know what skills they need new employees to have (Friedman, 2014b).

Technical writing jobs often reflect the same confusion, particularly as companies become global, content needs shift rapidly, and different cultures have different demands and languages. Content arrangement in this situation may lead to "incorrect" information for some readers. How do you decide who gets the incorrect answers?

Consider the following question that has been asked at actual Google job interviews: How much does the Empire State Building weigh? This question has no practical answer, but Google is not interested in the answer, though; they are interested in the process. They want to see a reasoned, rational way of approaching the problem to give them insight into how an applicant's mind works and how organized a thinker he or she is. More and more companies are applying this strategy to find out how far ahead the interviewee can think.

After getting an opportunity to develop and teach a course in Engineering Workplace Writing for a few years, I knew that for me, I could not go back to the English department mentality with its contempt for not just technical writing but sound writing of any type and its entrenched disdain for admitting that English may be on its way out as a discipline that prepares people for life after college. Many companies like Google want writers who think like engineers, not like English majors. They do not want people who can discuss stories and novels, gender issues, and arcane philosophical, psychological, and sexual theories. They want people who can anticipate real-life problems that do not yet exist but whose shadows are lurking on the horizon. To deal with life in the 21st century, really smart people need to apprehend the transcendent forces peering through the cracks in the universe and be able to communicate them, use a leadership style to help others to see them, and help guide the organization toward a new reality (Friedman, 2014a). Many employees at Google already see the universe as quantum and encourage other employees to track possible occurrences of these events that have been linked to the Erhlinger equation.

Thinking Like Google Wants Us to Think—A Small Example

Good business thinkers need to be able to think analytically and write that way. When I established distance education at my college, I had to set up rules and regulations, and I had to anticipate what activities would be needed. Distance education was fairly new, so I put together a team of people who were really

smart and were not afraid to make mistakes. We compiled a list of problems we would have to solve before we could offer distance degrees and stay in compliance with the State and then with the national accreditation agencies. Reports had to be written along the way. The Provost wanted to know what we were doing, and he knew we were covering new territory.

The problem list looked something like this: borrowing courses (why develop new Distance Education (DE) courses if you can borrow them; determine how much to charge; what fees were pertinent; which weren't; what would DE students need that resident students wouldn't, and what services do resident student need that DE students won't need. Who would need to approve all our decisions? What technology would we need to find and purchase? Who in the administration should be asked for approval?...What programs needed to be converted? Why? The more we talked, the longer the list became, and with length came the problem of solution order: What had to be done and what did not? As a good tech writer, I drafted a report and created headings and then arrangement from this list. Actually, the first report was a list of 120 questions to which we had almost no answers. And, this work yielded 30 DE programs and recommended programs that some of the college deans could not swallow.

As we began looking for answers, we organized the questions into stacks. Along the way, we found engineering students (former tech writing) who had superb skills in engineering and helped us decide on a course management tool, which did not exist, but which they helped design and build. These students were superb at anticipating problems and looking for new ones as we tried to solve the older ones. In many cases, we trashed ideas because...I do not know why, but we were not sure about something...and had a gut feeling that in stack G, something was not working. As I soon saw, this sort of analysis was not a friendly terrain for English majors looking for internships. And they certainly could not write what we had to write when we found the "answers."

However, the half-dozen or so engineering students, excellent technical writers, used this experience to apply their engineering and technical writing skills to the oil fields in Texas, learned to apply computer-based skills across engineering courses, pursued several summer internships, and used these opportunities to further develop their technical writing. These students have no problems in finding a permanent job. Many of the companies who have hired them offer paid additional course work and continuing education in the science of fracking and Air Rescue. This experience showed me that what we are teaching in technical writing in English is probably wrong, if for no other reason than the standard English degree is out of date and does not prepare English majors to work comfortably in a quixotic, quantum environment.

Even though I share these students' success in the petroleum workplace with my English colleagues, the response I receive is often contemptuous.

Humanities, many state, should help our students become better people: We should not concern ourselves with employment. For example, most of my colleagues seem to think that digital humanities should be sufficient as workplace preparation, not the programing courses our engineering and business students may be required to take as part of the engineering curricula. What technical writing skills offer these students is another job direction along with their engineering background. Having to communicate what they may find on a fracking site often forces them to look cautiously at danger they face on the job. (That is another question that crawls through my mind: How does danger, real danger from poisonous gases, high winds across the Texas desert, and suddenly emerging sink holes, shape our critical thinking and the speed at which we must think?)

The Intransigence of the University

Despite the lack of real jobs for English majors, many/most of English faculty focus on their own interests—what is needed for promotions and recognition. Tenured faculty feel comfortable with their own situations. Articulation of problems plaguing higher education continues to increase, and much of this emerges with the emphasis on research. As Page Smith (1990), a distinguished historian, stated in *Killing the Spirit: Higher Education in America*,

> A vast majority of the so-called research turned out in the modern university is essentially worthless. It does not result in any measurable benefit to anything or anybody. It does not push back those omnipresent "frontiers of knowledge" so confidently evoked; it does not in the main result in great health or happiness among the general population or any particular segment of it. It is busywork on a vast, almost incomprehensible scale. (p. 70)

The most common problem I find in English majors who want to become technical writers is lack of knowledge of the technical aspect of the world outside academe, what jobs in business, technology, engineering, and financial analysis, for example, really require. They may take tech writing, editing, and a media course, but they have no clue about what happens in the world of business and engineering because they lack analytical skills. These students do not recognize that the laws of nature really exist and underpin many of the real reports we have to write. As Sam Dragga remarked, former department chair at Texas Tech University, the quantitative part of the GRE has been shown to be a better predictor of success in selecting students for the English Ph.D. The verbal segments want answers to the questions; the analytical segment wants an answer but wants to see if students can apply one or more of the approaches listed.

Does Everybody Really Need to Go to College

I have arrived at the point, based on serving on the core curriculum committee, that I am convinced that a college degree may not be necessary for a variety of students. The technical writers I have developed are extremely bright engineers who write extremely well, and many corporations are quite happy with people who have a solid background in science, math, and engineering but not a college degree. For example, when an airline company in Texas needed help in developing the F-22 (described as a computer with wings by one of the chief engineers), the State Distance Advisory Committee found 8 to 10 courses from six universities across the United States that could be offered by distance education to computer technologists from two-year colleges the company had hired. In short, these gifted technologists—with some additional help from several universities—could do the development needed on by F-22.

What does this have to do with technical writing? The answer is simple: teaching standard rhetoric should be sufficient. Edwin P. J. Corbett (1990) has not gone out of style and neither has James Kinneavy (1980). English should not focus on how to use software—many short courses in software are offered by a university's computer information office; but change management, how to communicate it, how you know what needs to be changed, how to implement it, how to find what you think you do not know, and the basics of business, accounting, marketing, business technology, and finance are needed by all of us. With this kind of background, many organizations will offer English majors a meaningful internship. But without courses that exemplify the world of work, English is losing its ability to attract quality students because as a major it lacks grit and rigor, to echo Laszlo Bock, who is in charge of all hiring at Google (Friedman, 2014b). Employers have lost faith in grades because of the specter of grade inflation and cheating. More and more companies have seen that grades say nothing about the student. The more weak students universities have to take because of diversity, the worse the grade inflation because of the push to get weak students through the university leads to problems if you give too many bad grades.

Business organizations want students who have the ability to learn and solve problems, to think in a logical way. Analytical training gives you a skill set that differentiates you from most people in the labor market. Why do I focus on Google? Because good technical writers often have to anticipate lack of information to create documents. But the lack of information becomes the beginning of a solution!

Grades that show you know answers to specific questions are not what Google—and an increasing number of business organizations—want: These organizations want to know how you attack problems that may not be defined, how you anticipate problems and questions for which no answer exists.

While college graduates may make more money than high school graduates, college enrollments have been falling. And the difference between what a college graduate earns as compared with what a high school graduate earns has narrowed. While earning power of college graduates decreases, even though jobs are still available, the result has been underemployment accompanied by a dislocation. College costs continue to rise because of addition of new degrees for which no jobs exist, excessive spending on posh dormitories with equally posh recreational facilities, and decreased numbers of courses taken per term to allow students to enjoy themselves. This situation will not constrain costs. As I predicted 17 years ago (Tebeaux, 1985), tenure would shrink, and the number of tenured positions has shrunk, along with the number of students completing degrees and attending football games. Instead of pretending that the world has not changed and that English is "good for students souls," English must teach utilitarian research that focuses on outreach. What the public and businesses need will be required to ensure that degrees are meaningful.

Approaching the Educational Cliff

So where are we now? Again . . . about where we were 40 years ago with one significant difference. Basic literacy of new college students continues to decline more and more rapidly. *Academically Adrift* provides a disgruntling overview of the problem. And, as Aram and Roska state in *Aspiring Adults Adrift*, college graduates are showing much less evidence of real learning. Many have degrees but little else to show growth.

The number of articles describing the declining value of a college degree continues. The official line is that if you have a college degree you will make substantially more during your working career than you will if you do not have a degree. Yet, a disconnect exists. College enrollments have fallen. The median difference between what a high school graduate earns compared with what a college graduate has earned has narrowed. This phenomenon leads to underemployment and an explosive growth in the number of college graduates taking low-paying jobs to provide some sort of income. The number of taxi drives with college degrees has increased 14% since 1970 (Vedder & Denhart, 2014). What the Center for College Affordability and Productivity found in 2013: Explosive growth exists in the number of college graduates taking relative unskilled jobs (Vedder & Denhart, 2014).

Why is this happening? Colleges continue to spend lavishly. They also create new degrees based on what faculty *want to teach* rather than what the Bureau of Labor Statistics shows are needed. Add to that grade inflation, lower academic standards because students coming to college are poorly prepared in just about every area. In 1996, I wrote a short article that college costs had to be constrained: They have not (Tebeaux, 1985). Colleges are spending more and not constraining cost in administration, for example. Many of us who have

served on core curriculum committees are asking if students really need core curriculum, as some of the courses are as arcane as the articles written by the faculty.

I have discovered that an excellent engineering student who does well in my technical writing course for engineers can move into technical writing by entering an internship in engineering. Right now, with fracking on a role to produce astounding amounts of petroleum, the job market for engineering offers excellent jobs for engineers who can write. And, as many Massachusetts Institute of Technology (MIT) students have discovered, you do not have to have a degree to land a good job. However, what you do need is the ability to write and speak well and the grit to pursue a major like engineering or computer science. Thus far, I have produced six engineering technical writers in the past 3 years who have had only one technical writing course. Yet, these engineering graduates are doing very well in their new field and enjoy writing often combined with engineering.

Playing Google

As I conclude this description of the problems facing technical writing as it strangles in English departments, I find myself examining Google's website and seeing that having the skill and sensitivity to look ahead, to anticipate problems, to sense how something comes from nothing—those sporadic bright shoots of everlastingness—will become more critical. The world is no longer simple, and everything we have to write has to face answers to questions we have yet to prepare to answer.

Declaration of Conflicting Interests

Funding

References

Arum, R., & Roksa, J. (2001). *Academically adrift: Limited learning on college campuses*. Chicago, IL: University of Chicago Press.

Arum, R., & Roksa, J. (2014). *Aspiring adults adrift*. Chicago, IL: University of Chicago Press.

Bok, D. (2008). *Our underachieving colleges. A candid look at how much students learn and why they should be learning more*. Princeton, NJ: Princeton University Press.

Chace, W. M. (2009, September 1). The decline of the English department. *The American Scholar*. Retrieved from https://theamericanscholar.org/the-decline-of-the-english-department/

Corbett, E. P. J. (1990). *Classical rhetoric for the modern student* (3rd ed.). New York, NY: Oxford Press.

Friedman, T. (2014a, February 22). How to get a job at Google. *New York Times*. Retrieved from http://www.nytimes.com/2014/02/23/opinion/sunday/friedman-how-to-get-a-job-at-google.html

Friedman, T. (2014b, April 19). How to get a job at Google, part 2. *New York Times*. Retrieved from http://www.nytimes.com/2014/04/20/opinion/sunday/friedman-how-to-get-a-job-at-google-part-2.html?_r = 0

Houp, K. W., Pearsall, T. E., Tebeaux, E., & Dragga, S. (2005). *Reporting technical information* (11th ed.). Lincoln, NE: Oxford University Press.

Kanell, T. (1996). *Writing in a Milieu of Utility: The move to technical communication in American engineering programs 1850–1950*. Norwood, NJ: Ablex.

Kennedy, D. (1994). Making changes in the research university. *Dadelaus Journal of the American Academy of Arts and Sciences*, *125*, 127–156.

Keohane, N. (1993). The mission of the research University. *Daedalus Journal of the American Academy of Arts and Sciences*, *18*, 101–126.

Kinneavy, J. (1980). *Theory of discourse: The aims of discourse*. New York, NY: Norton.

Lawremce, N. R., & Tebeaux, E. (1982). *Writing communications in business and industry*. New York, NY: Prentice-Hall.

Mathes, J. C., & Stevenson, D. (1976). *Designing technical reports: Writing for audiences in organizations*. Indianapolis, IN: Bobbs-Merrill.

Moore, P. (2001). Evolving paradigms of communication analysis: A defense of teaching software programs in technical communication classes. *TEXT Technology*, 25–38.

Moore, P. (1999a). Myths about instrumental discourse: A response to Robert R. Johnson. *Technical Communication Quarterly*, *8*(2), 210–222.

Moore, P. (1999b). When persuasion fails: Coping with power struggles. *Technical Communication*, *46*, 351–359.

Robinson, P. A., & Etter, R. (2000). *Writing and designing manuals* (3rd ed.). Boca Raton, FL: CRC Press.

Rojstacze, S. (1999). *Gone for good: Tales of university life after the golden age*. Oxford, England: Oxford University.

Schuman, R. (2013, December 18). Thinning the Ph.D. Herd. *SLATE*. Retrieved from http://www.slate.com/articles/life/education/2013/12/johns_hopkins_plans_to_lower_ph_d_enrollment_and_raise_grad_student_stipends.html

Smeltzer, L. R., & Suchan, J. E. (1991). Guest editorial: Theory building and relevance. *Journal of Business Communication*, *28*(3), 181–186.

Smith, P. (1990). *Killing the spirit: Higher education in America*. New York, NY: Viking, Penguin.

Tebeaux, E. (1985). Redesigning professional writing courses to meet the communication needs of business and industry. *College Composition and Communication*, *36*(4), 419–428.

Tebeaux, E. (1991). Technical communication, literary theory, and English studies: Stasis, change, and the problem of meaning. *Technical Communication Quarterly*, *18*(1), 15–28.

Tebeaux, E., & Dragga, S. (2014). *Essentials of technical communication* (3rd ed.). New York, NY: Oxford University Press.

Vedder, R., & Denhart, C. (2014, January 8). How the college bubble will pop. *Wall Street Journal*. Retrieved from http://www.wsj.com/articles/SB10001424052702303933 10457930295121456 1682

Weisman, H. M. (1968). *Technical correspondence; a handbook and reference source for the technical professional*. New York, NY: Wiley.

Author Biography

Elizabeth Tebeaux is professor of English at Texas A&M University. She has taught writing for over 40 years and technical writing for 35 years. She co-authored nine texts on TW and two historical books about technical writing in English, 1475–1700. Another interest: procedure manuals for form implements.