Abstract

The purpose of this paper is to examine some of the characteristics of technical writers to better explain the genre to the layman. There are a lot of misconceptions about the duties of technical writers, and this paper looks to clear up some of these misconceptions by analyzing interviews with technical writers and examining academic research on technical writing. To conduct my research, I interviewed four technical writers from four different companies: Charles Machine Works (Ditch Witch) in Perry, Oklahoma; Keybridge Technologies in Oklahoma City, Oklahoma; Coating Robotics in Tulsa, Oklahoma; and Fire Protection Publications in Stillwater, Oklahoma.

After analyzing the results of the interviews, I identified three emerging themes present in each one of the four technical writing jobs: audience analysis, collaboration, and flexibility. The themes are examined in greater detail and supported with evidence from academic articles. I reveal how each theme emerged in each workplace, and discussed the importance of the theme to technical writers. By recognizing these characteristics of technical writing, we can better understand the responsibilities of a technical writer and hopefully clear up some of the confusion about technical writing.

Workplace Writing: An Examination of Technical Writers in Action

Professional and technical writing may be two of the most misunderstood professions that exists today. It seems that most people are not aware that there are technical writers, even though they are everywhere. Others just do not understand the responsibilities of a technical writer. It is not just writing "boring" manuals. There is extensive research that goes beyond just searching the web. A technical writer may have to take a concept he or she knows nothing about, and quickly craft it into a detailed and accurate document. To do this, technical writers have to be skilled in communication with others both in and out of their field.

Research that goes beyond the Internet and requires communication skills can include talking to experts and/or physically seeing the concept in action, rather than looking it up online. As a technical writing student who is soon to be in the workplace, I wanted to find evidence beyond what is commonly theorized about technical writing and what is taught in the classroom so that I can better prepare myself for the future. This paper will attempt to better explain the wide range of responsibilities of a technical writer, through online research and personal interviews in the technical writing in the workplace. Hopefully, this paper will clear up some of the misconceptions about technical writing and provoke more interest in the field.

Before examining some of the themes of technical writing, it is important to understand why it is needed. Because there are many that are unaware of technical writers, there may also be some misperceptions about the importance of technical writers. For example, engineers, while very skilled at their jobs, are not always the best writers. Julie Dyke Ford recognized this in her own study "Student Perceptions Of Communication: Undergraduate Engineers' Views Of Writing And Speaking In The Classroom And Workplace." In this study, Ford was trying to

discover the best way to teach writing to engineering classes. After examining engineering students, she found that students tend to separate writing tasks and engineering tasks. Carolyn Miller described this separation as the "ex post facto expression of a scientific idea or technical effort, not as part of that idea or that effort" (qtd. in Ford 36). Ford saw that students were viewing writing as a process, not because they can see how it fits with their engineering tasks, but because they see all tasks as process-oriented. Ford argued that engineering students need to be taught that "writing is a process, but it is part of the same process as the object or system it is describing. The two are not separate" (Ford 34-41). Technical writers are in place to ensure that the writing task and engineering task ARE the same process. Technical writers are simply taking the task of an expert and translating it for the layman. The intention is for the process to stay the same, while making sure the target audience can understand the process.

People frequently confuse technical writing with creative writing. When I tell people what I am studying in college, many ask, "So you want to be an author?" While both professions require research and writing, there are some differences. Technical writing is normally targeted at a smaller, more specific audience, whereas creative writing is targeted at a more general audience. Sometimes, a technical writer can target a larger, more general audience for a consumer product, but he or she must still understand the knowledge level of the audience and the language that would appeal to them. There are not very many outside of the engineering realm that would want to read the technical specifications for a particular piece of equipment. You wouldn't just pick up an operator's manual and read it like a Stephen King novel, unless you are a technical writer.

While technical writing may not be as glamourous as creative writing, it still has an important purpose: to inform and instruct the reader properly and accurately. The approach to technical writing will most likely be different than that of creative writing. In creative writing, specifically fiction, you are able to write anything you want. You can make up people, places, and things. Some fiction novels require research, others don't. Technical writing, on the other hand, cannot afford this leniency. The research must be factual and accurate. There is no room for error. Most technical writers have to follow a company style guide. This is not to say that creative writers have it easier. It is difficult for fiction writers to think of creative concepts on their own, when technical writers have the information already in front of them. While some writers have been able to write under both categories, it is not entirely true that a technical writer is a creative writer, nor is a creative writer a technical writer.

Research Methods

To better understand the role of a technical writer in the workplace, I interviewed four current technical writers in different workplaces in Oklahoma: Charles Machine Works, Keybridge Technologies, Coating Robotics, and Fire Protection Publications. I traveled to the company locations and interviewed the writers in person. This onsite visit allowed me to see their work environment and the overall setup of the workplace. Two of the interviewees worked at companies with a large number of technical writers (15-30), while the other two worked at companies that employed 1-3 technical writers. This diversity was important because it allowed me to see similarities and differences in different technical writing situations. I have ordered the companies from the smallest number of technical writers to largest below.

Coating Robotics Technology Services in Tulsa, Oklahoma, designs and builds robotic coating equipment that is used to coat internal field joints on new pipeline projects by field technicians. Most of this work is done in the field at well sites around the world. I met with Caroline Fisher, who has the unique designation as the first and only technical writer at CRTS. As the only technical writer, Ms. Fisher has the opportunity to work in multiple styles of writing. She supports the engineering, manufacturing, and marketing departments, as well as the website, with written documentation. She helps write equipment manuals as well as brochures and flyers and also contributes articles to pipeline magazines. She sometimes helps engineers design presentations.

Charles Machine Works, better known as Ditch Witch, is a large equipment manufacturer located in Perry, Oklahoma. Ditch Witch is one of the largest creators of trenching equipment in the world. While there are distributing plants around the world, the only manufacturing plant is located in Perry. I met with Amy Davidson, the lead technical writer at Ditch Witch. Although it is a large plant with many employees, there are only two other writers and two illustrators in the employ of Ditch Witch. Together, they work together to create all of the materials for the equipment. They may have to write an instruction manual for a machine or equipment. Safety manuals are also a common part of a technical writer's duty, as most of the machinery and equipment can be very dangerous.

Fire Protection Publications, located in Stillwater, Oklahoma, is a division of the College of Engineering, Architecture, and Technology (CEAT) at Oklahoma State University. Fire Protection Publications creates and publishes training manuals and courseware for Fire Service Training courses throughout the world. Besides writing textbooks and testing materials for

students, they also design materials for the instructors like PowerPoint slides and manual outlines. I talked with Leslie Miller, curriculum manager at Fire Protection Publications. As the curriculum manager, Ms. Miller supervises the lead instructional developers (LIDs), keeps projects on track, and handles customers. She is also a working manager, so she participates in content development as well.

Keybridge Technologies in Oklahoma City, Oklahoma, is a large company that focuses largely on designing information technology and logistics support for government agencies. Most of a technical writer's duties at Keybridge consists of writing government contracts. A lot of the writing is training materials for military agencies. I met with Jennie Hendrix, a proposal manager in the corporate section of Keybridge. Her job is to analyze a government document and create a proposal of how Keybridge could fit the requirements of that document. If the government approved the proposal, the project staff would begin to write the document.

The purpose of the interviews was to see the writing process for each technical writer. I was searching for similar themes of technical writing in each situation, even though their work environments are vastly different. At each interview, I asked the following set of questions pertaining to writing in the workplace:

- What are the duties of the technical writer(s) at (company name)?
- How many tech writers are employed there?
- What kind of tasks and responsibilities do you have?
- What is the structure of the technical writing department?
- How much do you interact with those working for/with you? Other departments?

- Is there a specific method of management/work that you like use or find more effective?
- Are there specific guidelines that you and your department follow? What are some specific rules you have to adhere to? Does this create complications?
- What kind of process does writing go through at your company?
- Do you have a particular writing process you use when you work?
- How often do you have meetings? What is usually discussed? What kind of participation do you have?

Often, one question would lead to a new question or thought, so the interviews sometimes deviated from the question set. Some questions yielded stronger answers, while others were not applicable to the writer in that situation. After analyzing all of the interview results, I found three key themes of technical writing that are important to the workplace: audience analysis, collaboration, and flexibility. I looked for similarities in the work process for each technical writer, and discovered that each one practiced these themes, although they may not have specifically stated it. The themes were the best description of a technical writer I could get based on the interviews. These themes have been theorized in academic literature, and I will be using some of the literature as a starting point for analysis of each theme.

Audience Analysis

The most important part of technical writing is audience analysis. It is important to realize you are writing for the audience, not yourself. You have to be able to recognize your audience, as well as their level of knowledge on the subject. In Michael J. Alber's "Multidimensional Audience Analysis for Dynamic Information", an argument is made for

increased audience analysis in technical writing. Albers argues that "economic and technological limitations often mandated a 'one size fits all' document" in the past. Because of these limitations, "specific details about different levels of audience could not be applied" (Albers 263). However, with the advancements made in technology, we can now address multiple audiences.

Albers shows why the "one size fits all" method of audience analysis can be a problem. It may be acceptable to use the method in creative writing, but in technical writing you must be more specific. A document may be written so that a novice can understand it. If a novice can understand it, then an expert will understand it as well. The more experienced users would then complain that the document was too novice-oriented (Albers 264). This highlights why it is important for a technical writer to analyze his or her audience. If a writer does not analyze his or her audience correctly, he or she may do one of two things: first, the writer may be writing information that the audience already knows; second, the writer may be writing information that is beyond the expertise of the audience. In the former scenario, the audience may skip the information because they already know it. In the latter scenario, the audience may skip the information because they do not understand the jargon or context of the document. In both cases, the technical document becomes ineffective.

Another problem with audience analysis is when a writer relies on his or her own perspective when developing a document (Albers 265). When writing from their own perspective, writers are using terms they are familiar with, but may not fit the audience. It is easy for you as the writer to understand the content. That is why you are writing it in the first place. Writers need to be careful that they don't become too reliant on their own style and terminology.

Writers have a tendency to use large, complex words in writing. This is not always necessary when writing for others. The audience are probably not English majors. They understand terminology within their field, which may not be a field the writer is initially used to. The audience has a different knowledge level and perspective than the writer. If a writer can acknowledge that, audience analysis is more effective.

Albers goes on to develop his own theory of multidimensional audience analysis. He establishes three dimensions important to audience analysis: knowledge level, detail level, and cognitive ability. He describes these dimensions as "orthogonal," meaning they are independent of each other and do not affect each other. The knowledge dimension "is the subject knowledge the user possesses about the topic". It "influences word choice and determines how much supporting information must be provided". The detail dimension "is the amount of detail the user wants about the specific situation". Writing style and word choice are connected to this dimension. The cognitive ability dimension "is the ability of the reader to comprehend and understand the material". Factors may include reading ability, education level, and physical/mental limitations. It is less about the knowing and more about how easily the audience understands the material (Albers 266-269).

While it may not be necessary to develop an extensive and detailed model like Albers does every time you write, it is helpful to consider the three dimensions that he mentions, especially starting out. A writer should study the intended audience carefully before he or she even begins to write. It helps the writer if he or she is able to discern what level of each dimension that the audience contains. Audience analysis may require more time and attention to detail, but it is necessary to develop a complete, clear document. The audience may be different

for each new document, so the writer must know not to use the same style of writing with each document.

After examining the scholarly article from Albers, I then looked at the audience analysis within each workplace to find similarities and differences. I found that the writers at Charles Machine Works, Keybridge Technologies, as well as the sole writer at Coating Robotics, all had similar situations of audience analysis. They all had to write several manuals and documents for several, specific audiences. This was extended even further at Fire Protection Publications when the writers had to create one manual for two different audiences. In each workplace, there is an argument for Alber's theory of audience analysis. Each writer engages in multidimensional audience analysis whether they know it or not.

At Charles Machine Works, audience analysis begins with knowing the audience for each type of document. Amy Davidson and her employees may have to write instructional and safety manuals for customers and employees. Based on the knowledge level of the customers, there could be a gap between customer and employee. The manufacturing plant is divided into many departments like welding, machining, paint and assembly lines, and shipping. Since the skill levels of the employees varies, it is better not to write one manual that can be distributed to all of the departments, unless the subject material is company-wide policy that must be understood by all employees. Material specific to welders may not be understood by machinists. Writers should know the vocabulary of the employees within each department.

Similarly, Keybridge Technologies is divided into the corporate staff and project staff. Audience analysis is a big part of the difference between the two departments. The corporate division focuses on writing government proposals. In these proposals, the writers are basically

bidding on projects that the project staff division will create. The corporate staff is writing in response to a request for proposal. The request could come from someone of high authority while the actual document written by the project staff could be intended for government trainees. While both divisions are writing for the same project, they are writing for different audiences.

At Coating Robotics, Caroline Fisher is in a situation similar to the writers at Charles Machine Works. As the only technical writer, she is responsible for creating multiple documents for multiple audiences. The website, flyers, and brochures are intended for customers and/or the general public. The machines can be very complex and require a large amount of detail for the layman to understand. If the document is too descriptive for a potential customer, he or she may give up on reading it. When working with engineers, she can afford to use more shortcuts and technical language because of the knowledge level of those she is working with.

In contrast, the curriculum unit at Fire Protection Publications creates components of the same chapter for two different audiences: instructor and student. The main audience is obviously the students. Curriculum writers design tests, quizzes, and skill sheets that correspond to the content chapter. The writers will also compose chapter outlines and PowerPoints for the instructors. The components intended for the instructors are less detailed than the components intended for the students. The outlines and PowerPoints reflect the high points of the chapter. This allows the instructor to teach the most relevant material to the students without the instructor having to sift through information that he or she already knows. The intention is for students to read through the detailed material on their own. Instructors have an allotted time to teach all of the material in one manual. By recognizing the fact that instructors already know the

material, the curriculum writers can reduce the details, making it easier for instructors to teach the material with the time given.

Collaboration

Another important piece of technical writing is collaboration. This work style has become even more important with the increase of technology, because it is easier for writers to share and edit files through their company's network. The popularity of file sharing formats such as Google Drive, Dropbox, and Skydrive has increased. This popularity has made it easier for writers to share their ideas and develop documents together. Not only does this new technology allow writers to collaborate with coworkers easily, it also makes it easier to collaborate internationally. A writer can now share a document with somebody across the globe. Together, they can make changes and comments to the document without leaving their desks or boarding a plane.

There are some complications that can arise with collaboration. When several writers are working on different projects, it can be hard to get everyone on the same page. There may be disagreements about how a document should be composed. Michael Knievel discusses this exact situation in his article "Police Reform, Task Force Rhetoric, and Traces of Dissent: Rethinking Consensus-as-Outcome in Collaborative Writing Situations." In this article, Knievel gives an example of a collaborative effort among a group that resulted in a "dissensus", rather than the desired consensus. Most research on collaborative writing recognizes that there will be disagreements among collaborative writers and communicators. In fact, it is seen as advantageous to the process: "dissensus must at some point give way to consensus". Most researchers agree that collaboration should not be about conformity. If the members of a group

agree on a document because they don't want to cause a disruption, then the writing may lose its strength (Knievel 332-338). Writers need these types of conflicts to discover weaknesses in a document, eventually leading to a consensus. However, Knievel gives an example of a scenario where a consensus is never reached.

Knievel cited a case in which the mayor of Denver was charged with developing a task force that would examine the department's use-of-force policy, as well as developing a model of police oversight. This idea stemmed from an earlier case where a police officer shot an African American youth that was threatening his family with a butter knife. The shooting caused a lot of concern among the citizens about the police department. As a result, the mayor of Denver created the task force to resolve the issue for the citizens. Unfortunately, this committee was unable to come to a consensus. Their disagreements spilled over into the final reports, which is unusual for a document of this magnitude (Knievel 339-343).

The final reports that were submitted by the task force showed obvious dissension: they submitted two reports that suggested opposing ideas. In the task force report, the writers put areas of consensus in bold typeface, and areas that were not in full consensus in light typeface or italics. In the end, this dissension among the task force actually worked out for the primary audience, Mayor Hickenlooper (Knievel 343-351). Although Knievel is actually arguing that a final dissensus actually helped the situation, I do not believe this is applicable to most collaborative writing situations. In most collaborative writing situations, there will be conflict of interests. There will be opposing styles and ideas. It is part of the duties of a technical writer to navigate these problems and develop a consensus. A technical writer's main duty is to write so that others can comprehend. A document that has dissenting ideas and is not clearly composed

can be difficult to comprehend. The document, and the collaborative group for that matter, would then lose its purpose.

Conflicts during collaborative efforts, while unfortunate, can occur often but can still be remedied. At Fire Protection Publications, collaboration is key. The editorial and curriculum units are contained in the same building, and the offices are arranged close to each other. Each project goes through a process that requires multiple editors and multiple curriculum developers to work together. Each chapter is assigned a lead instructional developer (LID). The LID is in charge of managing the project from start to finish. This includes collaborating with the writer of the chapter, as well as other curriculum developers assigned to the project. The curriculum components are written, edited, and revised. During this process, the material is examined by a committee of experts. The graphics department also contributes to the project. There are several proofers that check for errors in the documents before sending the materials to e-products for distribution. This is the process for one chapter in a manual. Before a chapter is finalized, it has gone through the hands of close to thirty individuals.

Of course, with this much collaboration conflict does arise. Leslie Miller discussed some of the difficulties of working collaboratively with her fellow employees. Because there are so many contributors to a project, a clash of styles may arise. Each writer has his or her own style that may not match the style of another writer. If two writers are working on the same component, conflicting styles may affect the flow of the component. Neither writer is considered a “bad writer”, they just have different writing processes. Ms. Miller has even had instances where a LID had to leave their job position in the middle of a project. The new LID assigned to the project starts where the previous LID left off, and as a result, part of the project has been

written in a different style. The writers have had to backtrack and rewrite some of the content because unlike the task force incident, there can be no dissensus in the writing. It must look as if one person wrote all of the material.

H. Allen Brizee offers some ideas for improving collaboration in his article "Stasis Theory as a Strategy for Workplace Teaming and Decision Making". In the article, Brizee recognizes collaborative writers have the problem of finding "common ground on which we can cooperate and make decisions. We have the tools in place, but we lack the right strategies for cooperation. Brizee then goes on to explain stasis theory and how it can encourage teams to "work *with* (rather than against) parties involved in projects" (Brizee 363-364). This theory shows us how to avoid situations that the Denver task force ended up in.

There are four stases that Brizee describes: conjecture, definition, quality, and policy. Conjecture asks the team to agree on the facts, definition asks the meaning of the issue, quality asks the seriousness of the issue, and policy asks the group members to work together to find a solution (Brizee 364). Brizee argues that "if parties cannot agree on every element of their discussion, stasis can help identify areas of disagreement to allow participants to build bridges where possible" (Brizee 374). Stasis theory was a concept developed by the Greeks, but Brizee suggests a tweak on its previous usage:

> Rather than using stasis as a battleground where combatants circle one another to find openings in rhetorical armor, the stases should act more like a puzzle where the parties involved in discussion work together to build facts, agree on definitions and quality, so they can develop policies that emerge as multi-sided, shared processes (Brizee 376).

This method would appear especially effective in situations like that of the police task force and the curriculum writing at Fire Protection Publications. If the police task had communicated better and worked together efficiently, rather than creating a battleground of dissenting ideas, they could have presented one complete document to the mayor. At Fire Protection Publications, Leslie Miller and her colleagues are already using stasis theory to solve their problems. The audience can't tell by looking at one of the manuals that there was a conflict in styles. It is important to remember that when there are so many writers trying to work together, there will be disagreements. However, multiple perspectives can also create a more complete, accurate document if the writers involved in the process are able to bind the best ideas together.

Collaboration does not just include other writers, but subject matter experts (SMEs) as well. A technical writing project could not be completed without the advice and knowledge of a subject matter expert. An SME attempts to explain technical information to a technical writer. Although a technical writer's job is to explain important knowledge and information to a specific audience, the writer does not intuitively know the details of the assigned subject. Instead, he or she will have to rely on the expertise of an SME. The SME speaks the "language", and the writer "translates" it. In fact, Brizee identifies collaboration with SMEs as one of the primary skills a professional writer must possess (Brizee 364).

In "Breaking the Technical Training Enigma" by Sarah Wakefield, she states that "a good SME should be able to walk you through the basic process of the job and pinpoint major portions that should be clarified and emphasized". She also identifies SMEs as the one important person that a writer cannot "miscast". A writer is so reliant on the words of an SME that he or she cannot have one that gives information that is inaccurate or misleading. By talking to multiple

SMEs, writers can gain a broader perspective and solve this problem. When communicating with an SME, a good writer should "maintain discipline and eliminate content that is not related to the objective of the section" (Wakefield 54). Subject matter experts are what completes the document for the writer, so the writer must maintain good relationships with them

This is especially true for Caroline Fisher. As the only technical writer at Coating Robotics, her work is centered around subject matter experts. She rarely works with other writers, but corresponds with engineers at Coating Robotics every day. Her office is located near the engineers, so an SME is easily accessible. SMEs may include: engineers, field technicians, drafters, electrical engineers, mechanical engineers, and salespeople. She meets with any of these on a regular basis when drafting any document. She sets up meetings once a week with SMEs to discuss progress, complications, and what is needed to finish a project. Because she is the only technical writer, she also does not have a managerial structure like most of the other places. She does not have a supervisor at her workplace. Her assigned supervisor lives out of state, so she mainly communicates through email and cell phone. As a result, her writing is strictly between her and the SMEs.

The environment that the writers at Ditch Witch work in is also very collaborative. The writers and illustrators are confined to a section surrounded by employees from the marketing and sales departments. Within the technical writing section, the writers and illustrators sit in clear glass cubicles. The cubicles are close enough that the employees can see each other's computers without having to get up. This allows for easy communication as well. Rather than send an email or walk to another office, a writer can simply talk to his or her coworker. The writing projects are posted on a bulletin board and each writer works to complete a project as it comes in. Because

the writers are so close to each other, there is less need for a regular meeting among the writing staff. Ms. Davidson does keep track of how the projects are moving along, in case a certain project needs extra assistance or attention. She also has to collaborate with SMEs, and sometimes she will look at a prototype or demonstration of the equipment before she writes about it, so that she can gain a better understanding of the process and the safety hazards that arise with it. She is also in close contact with the safety department so she can ensure that her writing is correct and will not mislead the reader.

Similarly, Keybridge Technologies has close to thirty writers employed, and they all interact with each other. The projects are a collaborative effort, from the proposal manager to the project staff writers. Some of the work rooms contain three or four writers in the same room, working collaboratively or individually on projects. One project may pass through several writers' hands. It starts with the proposal writers. If they are given the greenlight, the project writers may begin. The projects also require the writers to collaborate with a subject matter expert. An SME at Keybridge is usually a former or current member of the military or a government agency; somebody that understands the content clearly and can explain it to the writer.

Flexibility in Technical Writing

The role of a technical writer has begun to increase, resulting in more flexibility for a technical writer. It is not just about writing. It is about research, communication, and working with others. Sarah Wakefield outlines some of these responsibilities:

> Whereas nontechnical content often can apply across the board, technical content is specialized to each topic. Other characteristics that make technical training development unique include scarce or confusing

> information, constantly changing technology, the status quo of previous (ineffective) courses, and—most important—reliance on subject matter experts (SMEs). Effective developers must juggle all these factors while still producing a technical course that is truly valuable to the organization. (Wakefield 53).

By looking at the job descriptions of each one of the interviewees, it is obvious the writers balance multiple tasks. Each job may require a different skill set, but it still requires the writers to be flexible in their job position. A writer must continue learning new ideas and concepts within his or her field. With the increase in new technologies, it is even more advantageous for a technical writer to be flexible. A company that a technical writer works for may implement a new technology that the writer must adjust to. When beginning a job at a new company, a technical writer may be unfamiliar with the technology in place, requiring the writer to expand his or her knowledge.

Bonita R. Selting identifies this very problem in her article "Conversations with Technical Writing Teachers: Defining a Problem". In the article, Selting examines the clash between technical writing instructors teaching writing and teaching technology:

> We are teachers of the complex rhetoric of workplace literacy. We are teachers of technology and expected to teach students how to manipulate hypertext, video presentation equipment, and copious amounts of computer software. How do we conflate the two into one class time and one instructor? (Selting 252).

In her study, Selting polled 64 distinguished technical writing experts about this issue. She found that many instructors felt it was unnecessary to be teachers of technology and teachers of technical writing (Selting 253-255). This research raises the question of how we, as technical writers, can learn new technology when starting a job, and it offers a reason why flexibility is important for a technical writer.

As discussed before, technology may be different wherever a technical writer goes. The evidence from Selting shows that it is difficult to prepare students for technology in the workplace. Many students are familiar with the Microsoft Office programs, but not every company will use those resources. I might add that many of the complex software programs cost money to use, so even if a school was able to devote more time to teaching technology, it may still be difficult to teach software and hypertext because it is not financially feasible to either the students or university. As a result, technical writers may enter the workplace with a minimal knowledge of technology. By either learning it at home or on the job, technical writers can quickly learn the new technology. This ability to learn new concepts and technology beyond university teachings is how I define flexibility. A writer must be open to learning new technology to be successful at his or her job, and then melding this knowledge with what he or she already knows.

Continuous learning does not just apply to different technologies. At Coating Robotics, Caroline Fisher has to be a flexible technical writer because she is the only technical writer in the company. Not only does she need to know how to use the technology at her workplace, she must also identify the different types of audience and the various skill levels of each. Her responsibilities are not limited to just one document. As mentioned before, she writes documentation for the engineering, manufacturing, and marketing departments. She contributes to the company website. She also writes equipment manuals, brochures, and flyers as well as articles for pipeline magazines. Each genre of writing that she participates in requires her to be flexible. The audience changes. The document layout changes. The medium changes. Each one of these changes requires her to know which resources to use for the documents. She has also

been willing to learn new concepts while at Coating Robotics, as she now assists a sister company, CCSI, that coats external field joints. Most recently she has been learning about the marketing side of Coating Robotics, which is quite different from technical writing.

The writers at Fire Protection Publications are similarly flexible. Fire Protection Publications has multiple curriculum components that the curriculum developers are responsible for. Chapter outlines, PowerPoints, tests and quizzes, and skill sheets are some of the major components that are created for each chapter. The curriculum developer assigned to a certain manual may be in charge of creating the outline and PowerPoint, while another writer takes charge of the test and quizzes. For another project, the roles could be reversed for the writers. Each writer should know how each component is created based on audience, software, layout, and style guides. The process for creating a PowerPoint is different than a test or quiz. By understanding the process and applying the correct style to each component, the writer can design a clear document for each component.

At Charles Machine Works, the technical writers have a similar flexibility as Caroline Fisher. Because there are just three writers that must produce a wide range of workplace literature, Ms. Davidson and her staff must be able to adapt to the various requirements of the documents. As mentioned before, audience analysis is important at Ditch Witch. Audience analysis is also an example of a writer's flexibility. By understanding how the audience may be different, and subsequently adapting the writing to the audience, the writer is showing his or her flexibility. The more a writer can learn about multiple audiences and their needs, the more successful a writer can be at creating a detailed and accurate document.

Keybridge Technologies presents writers with an opportunity to expand their skills as well. The type of documents created can differ based on the government agency. I mentioned that Keybridge writes some military documents. There are five military branches in the United States. Each branch has a specific function, and their members have a particular skill set. A technical writer at Keybridge may need to become familiar with each branch before writing an official document or manual. Of course, not every document is produced by Keybridge for the military. The writers must be prepared for multiple types of documents from multiple sources. Much like the writers at Fire Protection Publications, the writers at Keybridge are not continually working on the same project. They may work on one component for a project, and begin a different component on another project. If the writers are willing to be flexible, they can adapt to these changes successfully.

Conclusion

Based on the interviews in this article, the duties of a technical writer are not easily defined. I came up with the three themes because of the amount of materials each person had to compose, the amount of time they spent working with other writers or SMEs, and the broad range of documents they had to create. Each writer participated in the themes differently, but the themes still existed in the writers' work. Even though I used the three themes to describe the characteristics of technical writers, there is even more to the themes than that. Audiences differ based on the purpose of a document. Collaboration methods differ if it is a subject matter expert versus another writer. These differences also define the flexibility of the writer. A technical writer does not just need one or two of these attributes, but all three.

Audience analysis, collaboration, and flexibility are not characteristics that can just be taught in the classroom. The concepts can be defined and practiced in the classroom (I have heard the terms pop up multiple times in university teachings), but it takes experience in the workplace to master the skills. This is not a deficiency on the part of universities. In my experience, technical writing programs do a great job in preparing students for the workplace. In fact, academic courses that focus on technical writing develop critical thinking skills in the students. These critical thinking skills really benefit students when they begin their technical writing jobs. Because the students went through the critical thinking process, they are able to analyze new concepts and learn quickly on the job. Technical writers can and should be prepared to know some of the responsibilities of technical writing beforehand, but experience will strengthen their skills and make them better writers.

With technical writing skills changing in tandem with technology, it becomes necessary for a technical writer to have an expanded skill set. If a technical writer continues to take on more responsibilities like Ms. Fisher did at Coating Robotics, it may seem like the company is underpaying the technical writer. Sometimes the writer will receive an increase in pay, and other times the pay will stay the same despite an increase in work. However, by increasing their skill set, writers are also increasing their value. Technical writing jobs are not always permanent, so it is in the interest of the technical writer to be as skilled as possible. Some technical writing jobs are short-term contract jobs. Workers in general, not just technical writers, struggle finding a job that is the right fit. Other times, employees have to move to a new city and start a new job. If a technical writer has developed their job skills, it can make them much more marketable when searching for a job. The skills present in the writer can make the transition to a new job

smoother. Even if it seems like the pay is not up to par, especially starting out, the experience technical writers gain can increase the earnings of the writers and keep them from fading out of the market if they are searching for another job

In conclusion, technical writers should be skilled in both communication and writing. They must know how to translate information from the mouth to the pen. They should know how to craft their writing to their audience. They should be prepared to work with others daily. They must recognize that their writing duties may change from week to week. It is not like working on an assembly line where you produce the materials over and over. Technical writers should be willing to learn while on the job. This learning can include new content or technologies. Technical writers should also realize that technology is constantly changing. Writers must be able to adapt to the changes quickly. All of these factors make up a successful technical writer. It is up to the writer to bring out these abilities, and that starts with realizing that technical writing is not what most people think.

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