Purpose: This article describes a study conducted among technical communication managers. As one part of a special issue reporting on the entire study, this particular article focuses on the participants’ responses to questions about education and training of technical communicators, including credentialing, skills and competencies, the gap between school and work, professional development, and the pattern of technical communication careers in terms of professional growth.

Method: This study used a modified Delphi method. To gather data, we used two sets of survey questions and two structured interviews.

Results: Participants valued basic technical writing skills and traditional credentialing (such as college degrees in TPC) over technical degrees or certifications. Yet they also advised that academic programs push students to develop strategic thinking and other professional skills and confidence.

Conclusion: Practitioners will need both basic skills and strategic skills to advance in their careers.

Keywords: education, training, technical communication

Practitioner’s Takeaway

- Technical communication managers value traditional degrees in technical and professional communication.
- They also value skills beyond basic technical writing abilities, including general business skills, content-area skills, and iterative project management skills.
- They felt that technical communicators were often distant from corporate strategies for satisfying customer needs.
- They observed that the technical communication career track has a “glass ceiling,” requiring technical communicators eventually to leave the profession behind in order to advance.
- They encouraged more technical communicators to get involved in professional development efforts.
Training and Education in Technical Communication

**Introduction**

Training and education for professional technical communicators have (naturally) long been concerns for the academics training new practitioners. Many teacher-scholars have focused on these concerns, giving advice for what skills, competencies, or literacies are most important for the academy to teach novices (for often-cited examples, see Brady, 2007; Cargile Cook, 2002). One of the most prominent academic journals in the field, now *Technical Communication Quarterly*, was in fact originally named *The Technical Writing Teacher*. The importance of good teaching has been a central value of the field, to the point that even the most empirical of empirical studies in technical communication often ends with at least a nod toward how the findings might affect what and how we teach.

Acting upon this value, technical communication teachers often take their cues for what knowledge and skills to teach from what they believe corporations wish graduates to know and to do. This pattern is visible in scholarship in the field. For example, Cargile Cook (2002, p. 19) argued for practical skills in a framework of “layered literacies” including “social literacy” and “ethical literacy,” but the curricular example she provides makes it clear that when her students create professional portfolios, their aim is “to focus on a particular skill a student wishes to market to an employer.” Whiteside (2004) conducted a study of technical communication curricula, program graduates, and managers to identify what skills technical communicators should learn. Rainey, Turner, and Dayton (2005) asked straightforwardly, “Do Curricula Correspond to Managerial Expectations?” Bryans et al. (2000) analyzed job advertisements to assess what skills employers wish technical communicators to bring with them to the workplace. Similarly, Stevens (2005) surveyed recruiters to determine what technical communication skills employers wanted. Another common move has been to advocate for some extension or refocusing of the technical communicator’s skillset to make the professional a more valuable employee. Among many examples, Carliner (2001) focused on the growing importance of information design for the professional skill set, and Applen (2002) made a similar argument for XML and knowledge management as skills students need to learn in technical communication programs.

Perhaps the clearest mark of the prominence of some strain of thought is the expression of its opposite. True to form, some researchers and teachers of technical communication have taken a contrarian position on this issue, disagreeing with the corporatization of education and the temptation to turn the university into a training ground for corporations’ convenience (Bushnell, 1999; Savage, 2004). Others (see for example Hayhoe, 2003) have responded by lamenting the distance between academics and practice, particularly in terms of the perceptions of what technical communication students need to know how to do.

Suffice it so say that the bridge between school learning and professional practice has long been a matter of concern for researchers and teachers, who have expended considerable time and effort to find out what companies need and want in a technical communicator, and to bring curricula into alignment with those requirements and desires.

Standing at the center of this span between curricula and employed practice are technical communication managers, who supervise technical communicators in corporations. These essential people not only oversee the work of technical communicators—they often also participate in the hiring of technical communicators, as well as in their professional development. As a result, these managers can strongly influence the training and education of practitioners, as educators try to meet industry needs and as professional try to improve their skill sets and value to the organizations that employ them. Further, these managers are frequently technical communicators themselves who have risen in the ranks to supervise the work of others.

To understand the attitudes and ideas of technical communication managers more fully, we conducted a study of representatives from prominent companies in the tech sector, including Adobe, Boston Scientific, Computer Associates, Google, IBM, Madcap, and Oracle. These managers served on the Advisory Council for the Society for Technical Communication in 2013–2014.

This article reports the results of one part of that study, focusing on Education and Training. It is accompanied by two other articles addressing findings about other pertinent aspects of technical communication today: Products and Processes (Dubinsky, 2015) and Identities and Relationships (Baehr, 2015).
In particular, in this portion of the study we hoped to identify what skill sets these managers and their companies value in the practitioners they supervise, what relative importance they gave to these skills, and what they value in terms of the education and professional development for technical communicators. Our intent was to answer some questions that sound straightforward, but that are actually quite complex:

- What training, education, and credentials do we expect technical communicators to have before hiring?
- How do we manage their continued professional development?

Summary of Methods

For a full description of the methodology for the entire study, please refer to the special issue introduction (Kimball, 2015). But in short, we conducted a modified Delphi study, which is a methodology intended to assess the ideas and opinions of a group of experts by asking them to address similar questions through several rounds of surveys, interviews, and focus groups.

Specifically, we conducted four rounds of data collection:

- Round 1: survey
- Round 2: survey
- Round 3: face-to-face focus group
- Round 4: synchronous online focus group

The population for the study was small, defined by the membership of the STC’s Advisory Council. Nonetheless, the iterative framework provided by a Delphi study generated a large amount of data for analysis and comparison, including survey data, written comments, textual transcripts, and observational notes.

Given the large and multivariate nature of the data, we employed text mining and visualization techniques extensively to code and identify patterns and contradictions in the attitudes expressed by the participants. Statistical information graphics including bubble graphs, sparkline graphs, and radar charts were created using content analysis themes, categories, and relationships. These graphics provided us with a more objective perspective than simple subjective interpretation would allow, and arguably greater reliability than manual content analysis, which relies on subjectively derived codes to begin with. This analysis revealed interesting, though inevitably provisional and exploratory findings.

The following sections provide a summary of results from the four rounds of the study. Throughout the following sections I employ results from the sequential rounds of the study to address several important topics relating to Education and Training. Please note, however, that not all of these topics were discussed in all rounds. To minimize bias and preserve privacy, we have anonymized individual participants and their organizational affiliations.

Credentials

As teachers with students entering the profession, the research team was keen to ask what credentials would signal to the managers that potential employees had the appropriate skills to be hired in their companies (see Figure 1).

In the survey data from Round 1, fellow academics will be gratified to find that a degree in technical or professional communication clearly tops the list of analysis and comparison, including survey data, written comments, textual transcripts, and observational notes.
preferences, followed closely by a college degree in English, communication or journalism. A college degree in some other technical field ranked noticeably lower in desirability than these communication-centric degrees. A degree in science ranked even lower. Even a college or university certificate in technical or professional communication ranked at nearly the same weighting (4.25) as a technical degree (4.0). Filling in the bottom of the list of preferences were industry-provided training and certifications (that is, tool-based training) and training provided by professional organizations.

This low ranking of technical and science degrees might seem to contradict other studies that suggested the importance of domain-specific training for technical communicators (see for example Lanier, 2009). Of course, the contradiction could be a function of the predispositions of the small group of participants. But the Delphi method allowed us to ask participants in Round 2 to comment more specifically through followup questions grounded in the puzzling response to Round 1. Rather than asking what made technical and science degrees come out relatively low, however, we decided to ask the question positively: “Traditional college degrees in TPC, English, Communication, or Journalism came out as the most desirable credentials. What is it about these traditional college degrees that you value in potential employees?” The responses emphasized the traditional skills in writing and critical thinking often remarked upon as the hallmarks of a liberal arts education (not all participants responded):

“The level of confidence in the curriculum of traditional colleges is high. With accreditations / certifications [sic] and online degrees, the level of confidence in the outcomes of their coursework is low.”

So while Lanier’s (2009) analysis of job advertisements may indicate that human resources personnel, subject-matter experts, and perhaps upper-level managers think technical communicators should bring domain knowledge to work with them, these direct supervisors of technical communicators seem to think that broad, general skills in writing and communication suit their needs best.

That said, we were also curious to find what distinctions the participants might express between degrees specifically in technical and professional communication, versus degrees in more general liberal arts subjects or other communication fields. These credentials all came out high in the rankings, but TPC-focused degrees clearly came in at the top of the list. So in Round 2 we asked, “What do you see as the differences between a degree in Technical or Professional Communication and a degree in English/Communication/Journalism?” The responses were as follows (not all participants responded):

“TPC degrees are more practical and focus on the specific rhetorical devices needed to communicate technical information. English degrees are often more literature focused and the style of communication in eng/comm/journalism is not specific technical fields and information.”

“Degree in Tech or Professional Communication is more focused towards our needs...”

“Tech writing is documenting the work of others for a specific, known audience.”

“Not much.”

Two participants’ use of the word “focus” and another’s use of “specific” is revealing, suggesting that these participants valued credentials showing that students had gained facility with the particular skills and concerns of this profession, over general communication skills or facility with skills from another profession.
(Then again, the last participant seemed to suggest that we may be splitting hairs.)

Skills and Competencies

Regardless of the credentials we offer, however, a central question is exactly what should students learn in order to gain those credentials? Or put another way, what skills and competencies should we be teaching?

As researchers and teachers, we wanted to extend the research of others (Bryans North & Worth, 2000; Stevens, 2005; Whiteside, 2004) in asking about the relative importance of technical communication skills from the perspective of managers and the companies they represent. Figure 2 shows the Round 1 results for this basic question, in which we asked participants to mark skills as “mission critical,” “important,” “useful, but not essential,” “not necessary,” or “not desirable.”

Responses showed that for the most part, traditional content skills and their thoughtful application came to the fore. Content development and writing generally received the most weight and the most “mission critical” responses, followed closely by critical thinking, audience analysis, and communication strategy. Design-oriented skills formed a second tier, including information design and document design (ranked 7 and 9) and more distantly by visualization (13). Visualization, in fact, was distinguished by actually being marked “not desirable” by one participant.

Interestingly, working in teams ranked highly (3), while managing distributed work ranked considerably lower (11). This split might suggest either that managers do not see managing geographically distributed teams as the responsibility of the team members, or that they see such work as so normal today that it’s not worth emphasizing.

Skills with information architecture, XML, and DITA were followed closely by knowledge management, suggesting that participants recognized these skills as related and important, but not as urgent compared to more traditional technical writing skills.

At the bottom of the list were some of the skills academic researchers hold most dear: field research and usability research. This ranking reinforces evidence suggesting that usability testing and field research may be ideal skills, but not ones that practicing professionals have much time to apply (Kimball, 2013).

Participants volunteered a variety of other desirable qualities, which seemed to form three categories:

- General business skills: presentation skills, “time management,” “assertiveness”
- Subject-matter knowledge: “Information Engineers [technical communicators] and Architects are expected to actively develop Subject Matter Expertise for the products for which they author and deliver content”; “understanding product usability and features”; “technical aptitude.”
- Iterative project management skills: “Agile scrum competency,” “working in an iterative environment”

All told, these survey results suggest that despite many comments about how different technical communication is today than it used to be, technical communication managers still valued traditional technical writing skills and general business and project management skills over technical skills.

Technical Communication: Scope and Skills

However, further examination of this topic in later rounds revealed a tension between three skillsets those entering the profession should learn: basic writing skills,
technical communication skills, or strategic skills based on domain knowledge.

**Writing Versus Communicating**

At the end of the Round 2 survey, we asked participants an open question: “If you could give academic program directors one piece of advice to make sure their programs were meeting the needs of field, what would it be?” Four of the five respondents focused on expanding or broadening students’ skills beyond technical writing per se. One encouraged a focus on new approaches and technologies, such as mobile and cloud delivery of content. The other three suggested curricula that would encourage students to develop “systems thinking” skills, “interpersonal skills” such as “assertiveness and independence,” and technical skills or domain knowledge in other professions, such as engineering or project management.

Similarly, in the focus group of Round 3, one participant commented that “I think the focus on writing in the past is coming back to bite us... we have an industry of people who are writers—they want to write—this is not a collection of personality characteristics that lend themselves well to design for example.” This distinction between writing and design suggests that the participant saw writing as a more passive skillset than design—a matter of writing down things other people say, rather than of being involved in more strategic decisions about product development.

When we asked participants to elaborate later in the focus group, the same participant responded “I think it's content experience,” which might seem to put the lie to the results of the skills questions in Rounds 1 and 2. But the participant then defined “content experience” as “Content, presentation, navigation and delivery. Presentation is form, medium, format, information design within a page for example, tables, lists ... And media. Navigation is organization, structure, access. And delivery is when, where.”

This broad definition suggests that despite claiming the importance of content, even technical communication expertise is seen as part of the presentation level, rather than the “content” level per se.

Seeming to agree, another participant responded with a story about setting up a group of technical communicators in one of her company’s European offices, describing them as “highly motivated, really good communicators with excellent English skills,” who despite their lack of training as technical communicators or as technical experts have been “a huge success for a for us.” But the first participant countered that “people are hiring technical writers who can write and who have a very strong technical background. Technical expertise and good grammar are the linchpins to getting a job.” However, she argued that hiring such people was ill-advised, and that “we need to educate the people hiring these people.” In other words, the participant seemed to suggest that we need to train people beyond writing and content expertise, to be competent in the entire communication process: content, presentation, and strategy.

This exchange suggests that opinions differ on whether technical communicators should simply be smart, well-trained writers, experts in communication more broadly, or participants in determining the entire organization’s strategic goals. The hurdle from writer to communicator may be more daunting than we thought for some practitioners, and the hurdle from communicator to “symbolic analytic worker” even more so (Johnson-Eilola, 1996).

**Technical Communication and Corporate Strategy**

The difficulty may be that the relationship between content and corporate strategy is perceived as being stronger than the relationship between communication skills and corporate strategy. A concept map of the Round 3 transcript generated in Leximancer appears to bear this out (see Figure 3).

As described in the introduction to the special issue, Leximancer processes a transcript to identify significant concepts, then groups the concepts into more- or less-coherent themes, which are heat-mapped to correspond to a connectivity rating. The most connected theme is always rated 100%. Please note that the circles do not form Venn diagrams—any overlap is simply an artifact of the three-dimensional nature of the graphics, which can be rotated for viewing from various angles. In addition, the size of the circle for each theme carries no significance—the software simply sizes the theme circles big enough to make room for the concepts they contain. However, the distance between concepts in the diagrams is significant, as is the number and length of paths necessary to get from one concept to another. Closely related concepts are visualized as close to one another on direct paths, while distantly related concepts are visualized as far apart, linked by multiple steps.
This map shows how related concepts from the focus group transcript cluster together into themes. Leximancer has labeled the most coherent theme (100%) “technical,” holding the following concepts: technical, skills, communicators, writer, people, write, and process. Clearly, this reflects the fact that the conversation in Round 3 focused on technical communicators and writers. The smaller bubble above, however, which Leximancer labeled “information,” is less coherent, with a connectivity rating of 88%. It holds more design-centered concepts, including information, design, user, and people. The theme at the top, labeled “content,” is a further step less coherent, with a connectivity rating of 86%, including concepts such as content, customers, and product. How do these themes connect? If we trace the path from “writer” to “customer” (the bold line), we see that it passes through “technical,” “design,” and “product.” In other words, this conversation seemed to bear out the idea that writing is in the participants’ minds tied to the central mission of an organization through design, producing things that meet the needs of users and customers. As a result, as one participant commented, “technical writers should be part of the [product] design process.”

School to Work

This perceived dissociation between technical writers/communicators and corporate content strategy is echoed in the common perception of a gap between the education schools provide and the skills employers need. A visualization of the education-focused portions of Round 4’s online focus group gives a good sense of this persistent division (see Figure 4).

Clearly, the activities in the theme “technical” focus on larger corporate strategies, with a high level of connectivity (100%). The “education” theme is much less coherent (39%). It is also connected to the “technical” theme only through the concept “skills,” which is the central question educators want to answer: what skills should we teach?

In keeping with this dynamic, participants did not always have a positive view of technical communication academic programs:

“My perception is that many traditional institutions appear to be teaching technical communication using outdated methods that are not always
Training and Education in Technical Communication

synchronized with how tech comm professions are actually working in the 'real world'."

“We’re still, from an education standpoint, still in the days of Henry Ford producing T model.”

One participant elaborated,

“I think one of the problems with education and training is it’s usually based on the products, not about how the customers use the products. … So I feel like, in order to write good content, you have to be able to personalize the customer’s experience with that content, and the only way to do that is to make sure that our technical communicators actually have contact with real live customers.”

In other words, rather than simply documenting products or writing down what engineers say they should, technical communicators need to be able to meet the needs of customers directly—and educators need to find ways to teach students how to do that. Others made similar points:

“A lot of technical writers may have some domain expertise, a lot of product expertise, but I think for me the missing link is usually that the technical communicator doesn’t often understand how their products are used by customers.”

The managers also took some of that responsibility on their own shoulders. One commented,

“Industry professionals should get more involved in education and training to help develop the skills and knowledge of the next generation of technical communicators. More corporate support for internships and related programs would be beneficial for them and technical communicators—perhaps STC could a catalyst and facilitator of such partnerships.”

Another concurred, suggesting that what new technical communicators need most is contextualized training: “And I think that’s where the training and education needs to come, and not necessarily from a high level of education perspective.” The participant continued,

“We no longer can teach people how to be technical communicators through a book. It has to be done through our writers getting experience with the product or service that our company is selling. They have to understand what that customer is going through, …—how your product is involved in their daily life, and the business problems they’re trying to solve.”

Professional Development and Training

Accordingly, our study also took up the topic of professional development and training on the job. Much of the conversation regarding professional development in technical communication has centered upon two issues; learning new skills (see for example Applen, 2002; Carliner, 2001; Selber, 1994) and certification (among many others Hayhoe, 2000; Rainey et al., 2005; Savage, 2003). We wanted to know more specifically what kind of professional development opportunities technical communicators currently have available to them through their employers, as well as the perspective of technical communication managers on this subject.

First, we asked what kind of training employers provided. The results suggested that among this select group of prominent companies, at least, in-house training, including informal training, formal training, and mentorship programs, was more common than external training (see Table 1).

Table 1. What Kinds of Training or Training Support Does Your Company Provide Technical Communicators?

<table>
<thead>
<tr>
<th>Answer</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal in-house training</td>
<td>5</td>
</tr>
<tr>
<td>Mentorship program</td>
<td>5</td>
</tr>
<tr>
<td>Formal in-house training</td>
<td>4</td>
</tr>
<tr>
<td>Support for external self-paced training</td>
<td>4</td>
</tr>
<tr>
<td>Support for external formal training</td>
<td>3</td>
</tr>
<tr>
<td>Support for traditional education (college degrees)</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
</tbody>
</table>

This result fits with the result of the credentialing questions, which showed managers preferring preparation in technical communication skills over preparation in domain knowledge or tools. For this
group, at least, tools and domain knowledge seem best taught in context.

Then we asked what support companies offer for professional development. All reported that their companies provided at least some support for professional development activities. But the most common response (chosen by all participants) was “on a case by case business,” which suggests that support for professional development is ad hoc at these companies, rather than systematic. Five participants reported that companies were willing to give technical communicators time for professional organizations and activities, and four participants reported that their companies provided support for professional licensing and certification. However, only half gave support for travel to conferences and conventions, perhaps the most expensive of the options. The picture here seems to be a general openness to professional development, as long as companies aren’t obligated to support it and it’s economical.

Technical communication managers were ambivalent about recommending any particular option to the people they supervise, however. No more than two marked any of the following options (see Table 2).

<table>
<thead>
<tr>
<th>Answer</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced degree in TPC</td>
<td>2</td>
</tr>
<tr>
<td>Academic certificate program</td>
<td>2</td>
</tr>
<tr>
<td>STC sponsored webinars</td>
<td>2</td>
</tr>
<tr>
<td>Other trade webinars</td>
<td>2</td>
</tr>
<tr>
<td>Other Professional association certificates or courses</td>
<td>2</td>
</tr>
<tr>
<td>STC sponsored certificates</td>
<td>1</td>
</tr>
<tr>
<td>Other: in-house courses</td>
<td>1</td>
</tr>
</tbody>
</table>

Finally, we asked, “How is training, education, and professional development for technical communicators valued or recognized in your organization?” The commentary in the responses was ambivalent. Three respondents suggested it was important: “It’s part of our yearly goals as far as professional development”; “very valued”; “Training, education, and professional development are highly valued for all employees in my organization.” Yet two were less positive: “It is not valued”; “It’s viewed as a nice supplement to experience but not necessary for career growth.”

Because of this ambivalence, we asked a followup question in Round 2, asking participants to comment on this difference of opinion: “Responses about professional development were split, with some companies placing a high value on it, and others not so much (see responses below). What do you think causes this difference? And if not through professional development, how do employees stay current with broader trends in the field?” Round 2 responses went into considerably more depth, particularly those criticizing some organizations’ lack of support for professional development:

“The company expects, requires, and rewards people to develop professionally.”

“Perceived value of professional development has eroded as the workforce has been progressively ‘down sized’ and as many companies have foolishly pushed for unrealistic “productivity per employee” ratios. In short, today’s workload and >50 hour schedule leaves little or no time for professional development. Ironically, we need PD more than ever; upper management has lost sight of its value to company productivity and profitability.”

“I think some orgs think of doc writing as a necessary evil and the writers accept that perspective. Training and development can inspire writers to go beyond what is “expected” and contribute in unexpected ways.”

“For technical writers, there is not much infrastructure investment from professional development standpoint. It is a career that seems to level off and then folks aspiring bigger better things are required to move into other roles and functions. Technical writers are expected to stay current through internal and external collaboration communities (STC being one of them).”

So according to these managers, some companies could do more to support technical communicators in their professional development. Without that kind of support, technical communication can become “a career that seems to level off.”
Technical Communication Careers

Comments in Round 4 reiterated this sense that the career levels off. One participant noted that “Technical Communications as a career has a glass ceiling.” Another responded to our Round 4 open survey question about the three biggest problems facing technical communication today by putting this first: “lack of career path due to early plateau-ing in traditional roles.”

The participants mentioned several potential solutions to this problem. First, good basic writing skills can go a long way, although not all the way. Second, technical communicators need to learn “how to be flexible in how to use the resources and how to develop professionally on their own and keep the career fresh and learn those new skills that they need to learn even though they’re not in school anymore.”

Finally, participants suggested that the ultimate solution might lie in promotion beyond the profession into management—a step that several of the participants had already taken. In this regard, they seem to suggest that technical communication may not be a lifelong career for most professionals today. Instead, technical communicators might find the best career path takes them beyond the profession per se.

Conclusion

So in sum, responses to questions about Education and Training are somewhat troubling. Participants emphasized the importance of basic technical writing skills and traditional credentialing (such as degrees in TPC) over more technical skills or degrees. Yet they also advised that academic programs push students beyond this traditional role, by teaching strategic thinking, general professional skills, and confidence. Otherwise, the sense seemed to be that students might be stuck in relatively low-level positions, unable to rise past the “glass door” of technical writing. Moreover, some of these respondents felt their companies were not invested in providing a path for advancement for technical communicators through professional development.

It sounds as though the participants saw a conflict between an ideal and the real path to and through the profession. Ideally, academic programs should provide basic skills, both in technical communication and in professionalism (project management, clear interpersonal communication, professional confidence, and so forth). Companies then ideally provide the situated development—tool training and domain knowledge, in particular—that new employees need to maximize their value to the organization. In real terms, however, if professional development and training are seen as costs rather than investments, the entire preparation of new professionals rests on academics, and their continued development depends on the technical communicators’ own motivations to learn and rise throughout their careers.

Difficult challenges to face, indeed.

References


**About the Author**

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