TRAINING AND EDUCATION FOR TECHNICAL EXERCISE IN SPEAKING

Ediwarman Ediwarman, John Pahamzah and Syafrizal Syafrizal

ABSTRACT
This research describes technical communication training and education as one part of the specific issues that report throughout the study, this particular research focuses on participants' responses to questions about the education and training of technical communicators, including credentials, skills and competencies, gaps between school and employment, professional development, and technical patterns of communication careers in terms of professional growth. The method in his research used the modified Delphi method. To collect the data, we used two sets of survey questions and two structured interviews. Research results Participants appreciate basic technical writing skills and traditional credentials on top of a technical degree or certification. However, they also suggest that academic programs encourage students to develop strategic thinking and other professional skills and confidence. From this conclusion practitioners will need basic skills and strategic skills to advance intheir careers.

Keywords: Education, Training, Technical Speaking, communication

INTRODUCTION

Training and education for technical professional communicators has long been a concern for academics training new practitioners. Many teacher scholars have focused on this issue, providing advice for what skills, competencies or literacy are most important for the academy to teach beginners. One of the leading academic journals in the field, now Quarterly Technical Communication, was in fact originally named he's Technical Writing Teacher. His importance of good teaching has been a central value of the field, to the point of being the most empirical though empirical studies in technical communication often end with at least a nod to how the findings might affect what and how we teach. Acting on this value, technical communication teachers often take their cues to what knowledge and skills to teach from what they believe the company wants graduates to know and do. his pattern is seen in the scholarship in the field. argues for practical skills in the "layered literacy" including "social" literacy" and "ethical literacy," but the sample curriculum he provides makes it clear that when he or she is a student creating a professional portfolio, their goal is "to" focus on the specific skills that a student an employee wants to market." Conduct studies on the curriculum of technical communication, graduates of the program, and managers to identify what technical skills the communicator should learn. "Do Curriculum According to Managerial Expectations analyze job advertisements to assess what skills technical communicator employers want to bring to the workplace. Similarly, Stevens (2005) surveyed recruiters to determine what technical communication skills employers would like. Another common step is to advocate for some extension or technical refocusing of communicator skills to make the professional a more valuable employee. Among many examples, Carliner (2001) focuses on the growing importance of information design for professional expertise, and Applen (2002) makes similar arguments for XML and knowledge management as skills that students need to learn in technical communication programs.

Perhaps the most obvious sign of the superiority of some tension of thought is the expression of the opposite. In accordance with its form, some researchers and technical teachers of communication have taken the opposite position in this matter, disagreeing with the corporatization of Education and the temptation to turn the university into a training ground for the convenience of the company (Bushnell, 1999; Savage, 2004). Others (see e.g., Hayhoe, 2003) have responded by lamenting the distance between academics and practice, especially in terms of perceptions of what technical communication students need to know how to do. The bridge between schools of learning and professional practice has long been a concern of researchers and teachers, who have spent a lot of time and effort to figure out what the needs and desires of the company are in technical communicators, and to align the curriculum with its requirements and desires. Standing in the middle of the range between this curriculum and the practice used is the technical communication of managers, who supervise technical communicators within the company. These important people not only supervise the work of technical communicator-they also often participate in the recruitment of technical communicators, as well as in their professional development. As a result, these managers can greatly influence the training and education of practitioners, as educators try to meet the needs of the industry and as professionals try to improve expertise and value for the organizations that employ them. Furthermore, these managers are often technically self-communicators who have risen through the ranks to oversee the work of others.

Theoretical Framework

To understand the attitudes and technical ideas of communications managers more fully, we conducted a representative study of leading companies in the technology sector, including Adobe, Boston Scientific, Computer Associates, Google, IBM, Madcap, and Forecasters. these managers served on the Advisory Board for the Society for Technical Communications in 2013–2014. his article reported the results of one part of that study, focusing on Education and Training. That was accompanied by two other articles discussing findings on other related aspects of today's communication technicalities: Products and Processes (Dubinsky, 2015) and Identity and Relationships (Baehr, 2015).

Specifically, in this part of the study we hope to identify what skills govern these managers and those companies value the practitioners they supervise, how much relative importance they give to these skills, and what they value in terms of education and professional development for technical communicators. Our intention was to answer some questions that sounded direct, but that were actually quite complex:

• What training, education and credentials do we do? expect a technical communicator to have before hiring?

• How do we manage their ongoing professional development? Method Summary

For a full description of the methodology for the entire study, please see the introduction to the special edition (Kimball, 2015). But in short, we made modifications to the Delphi Study, which is a methodology intended to assess the ideas and opinions of a group of experts by asking them to answer similar questions through several rounds of surveys, interviews, and focus groups. Specifically, we performed four rounds of data collection:

• **Round 1:** surveys

• **Round 2:** Surveys

• **Round 3:** face-to-face focus group

• **Round 4:** synchronous online focus groups

the population for the study was small, defined by membership of the STC Advisory Board. Nonetheless, the iterative framework provided by the Delphi Study generates 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 used text mining and visualization techniques extensively to encode and identify patterns and contradictions in the attitudes expressed by participants. Statistical information graphs including bubble graphs, sparkline graphs, and radar graphs are created using content analysis themes, categories, and relationships. this graph gives us a more objective perspective than a simple subjective interpretation would allow, and arguably greater reliability than manual content analysis, which relies on subjectively derived code to begin with. His analysis revealed interesting, albeit definitely temporary and exploratory findings. he the following section gives a summary of the results of the four rounds of research. Throughout the following sections I used the results of a sequential round of research to address some of the important topics related to Education and Training. Please note, however, not all of these topics are covered in all rounds. To minimize bias and maintain privacy, we have anonymized individual participants and their alliance of organizations. Credentials As a teacher with students entering the profession, the research team is interested in asking what credentials will signal to managers that potential employees have the appropriate skills to be employed in their company (see Figure 1).

In the survey data from Round 1, fellow academics will be grateful to find that a degree in technical or professional communication is clearly at the top of the list.

Credentials by weighted rank	Rank data (1 high, 10 low) 1	2	3	4	5	6	7	8	9	10	count	weighted
Degree in Technical or Professional Communication	3	2	1	0	0	0	0	0	0	0	6	1.67
Degree in English, Communication, Journalism	2	2	1	0	0	1	0	0	0	0	6	2.50
Technical degree	0	0	2	1	2	0	0	0	0	0	5	4.00
Certificate in TPC from a college or university	0	0	1	2	0	1	0	0	0	0	4	4.25
Other liberal arts degree	0	1	1	3	0	0	0	0	1	0	6	4.33
Scientific degree	0	0	0	0	1	2	0	1	0	0	4	6.25
Industry certifications on skills/software (Microsoft, Adobe, etc.)	1	0	0	0	0	0	2	1	0	1	5	6.60
Training courses from professional organizations	0	1	0	0	0	0	1	0	1	1	4	7.00
Certification from professional organizations	0	0	0	0	1	0	0	2	1	0	4	7.50
Combination of the above	0	0	0	0	0	0	1	0	1	1	3	8.67

Figure 1: Sort the Following Credentials in What Most Signifies Technical Communication Skills and Competencies

Preference, followed by a bachelor's degree, communications or journalism. College degrees in several other technical fields rank lower in desirability than these communication-centric degrees. Degrees in science rank even lower. Even college or university certificates in technical or professional communications are ranked with almost the same weight (4.25) as technical degrees (4.0). At the bottom of the preference list are industry-provided training and certification (i.e., tool-based training) and training provided by professional organizations. its low ranking in technical and science degrees may seem at odds with other research suggesting the importance of domain-specific training for technical communicators (see e.g., Lanier, 2009). Of course, the contradiction could be a function of the tendencies of the small group of participants. But the Delphi method allowed us to ask participants in Round 2 for more specific comments through follow-up questions based on confusing responses to Round 1. Instead of asking what makes technical and science degrees relatively low, however, we decided to ask questions positively.: "Traditional bachelor's degrees in TPC, English, Communication, or Journalism came out as the most desirable credentials. What's with this traditional college degree you value potential employees he replied emphasizing traditional skills in writing and critical thinking often cited as hallmarks of liberal arts education (not all participants answered)."Extensive communication and communication problem-solving skills; special focus on the communication of technical information; it's the ability to analyse and synthesize and communicate that technical information from a user's advocacy position.

"A deep understanding of English and language is necessary to simplify content and make it (a) more accessible and (b) more economical." "Good writers can be found in other fields, but having the scrutiny experience that teaches the draft-edit-edit-publish cycle is invaluable. I've seen a number of candidates who have tech experience stars but don't understand the amount of work that goes into writing." "The level of trust in the traditional college curriculum is high. With accreditations/certifications and online degrees, the level of confidence in their course results is low."

So, while the analysis of Lanier's (2009) work advertising may indicate that human resources personnel, subject matter experts, and perhaps top-level managers think that technical communicators should bring domain knowledge to work with them, these direct supervisors of technical communicators seem to think that extensive, common skills in writing and communication best suit their needs. hat said, we are also curious to know what difference participants might express between a specialized degree in technical and professional communication, versus a degree in a more general liberal subject of art or other areas of communication. These credentials all come out high in the rankings, but TPC-focused Degrees are definitely at the top of the list. In Round 2 we asked, "What are you seeing? as the difference between a degree in Professional Engineering or Communication and a degree in English/Communication/Journalism?" the response was as follows (not all participants answered).

"The TPC degree is more practical and focuses on the specific rhetorical devices necessary for the communication of technical information. English degrees are often more focused on literature and communication styles in Eng./comm/journalism not a particular field and technical information." "A degree in Technology or Professional Communication is more focused on our needs..." "Writing technology is documenting the work of others for specific and known materials." "Not much." Two participants used the word "focus" and the other use of the word "special" revealed, indicating that this participant valued credentials indicating that the student had acquired a facility with certain skills and concerns of this profession, upon the general communication of the skill or facility with the skills of another profession (Again, the last participant seemed to suggest that we might split the hair).

Skills and Competencies Regardless of the credentials we offer, however, a central question is what do students have to learn in order to get those credentials? Or in other words, what skills and competencies we should teach as researchers and teachers, we want to convey the research of others (Bryans North & Worth, 2000; Stevens, 2005; Whiteside, 2004) in

inquiring about the relative importance of technical communication skills from the perspective of managers and the companies they represent. Figure 2 shows the results of Round 1 for this basic question, in which we ask participants to mark the skill as "mission critical", "important", "useful, but not essential", "unnecessary", or "undesirable". The responses show that for the most part, traditional content skills and application wise they come to the fore. Content development and writing generally receive the most weight and most "mission critical" responses, followed by critical thinking, audience analysis, and communication strategies. Design-oriented skills form a second level, including document design and design information (ranked 7th and 9th) and more away from visualization (13th). Visualization, in fact, is distinguished by being completely marked "undesirable" by one participant.

Interestingly, working in a team gets a high rating (3), while managing distributed work gets a higher rating (11). the split may indicate that not seeing geographically distributed team management as the responsibility of team members, or that they see such work as so normal today that it is not worth emphasizing. Expertise with information architecture, XML, and DITA followed by knowledge management, shows that participants recognize these skills as related and important, but not urgent compared to more traditional technical writing skills. The bottom of the list there are some very dear academic researcher skills: field research and usability research. its rankings reinforce evidence suggesting that usability testing and field research may be ideal skills, but not skills that practice professionals have plenty of time to apply (Kimball, 2013). Participants volunteered a variety of other desirable qualities, which seemed to form three categories:

1. General business skills: presentation skills, "management time", "assertiveness"

2. Knowledge of the subject matter: "Information Engineers [technical communicators] and

3. Architects are expected to actively develop Subject Matter Expertise for the products they create and deliver content"; "understand product uses and features"; "technical ability."

4. Iterative project management skills: "Agile scrum competence, ""work in a repetitive environment" all said, the results of this survey show that despite many comments about how different technical communication is today than it used to be, technical communication still values traditional technical writing skills and general business and project management skills over technical skills.

RESEARCH FINDINGS
Technical Communication: Scope and Skills However, further examination of this topic later round reveals the tension between the three skills that entering the profession must 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-ended question: "If you could give the director's academic program one piece of advice to ensure their program meets the needs of the field, what is It Four out of five respondents focused on expanding or expanding students' skills beyond technical writing itself. One is driving a focus on new approaches and technologies, such as mobile delivery and content cloud. he suggested the other three curricula would encourage students to develop "system thinking" skills, "interpersonal skills" such as "assertiveness" and independence," and technical skills or domains of knowledge in other professions, such as engineering or project management.
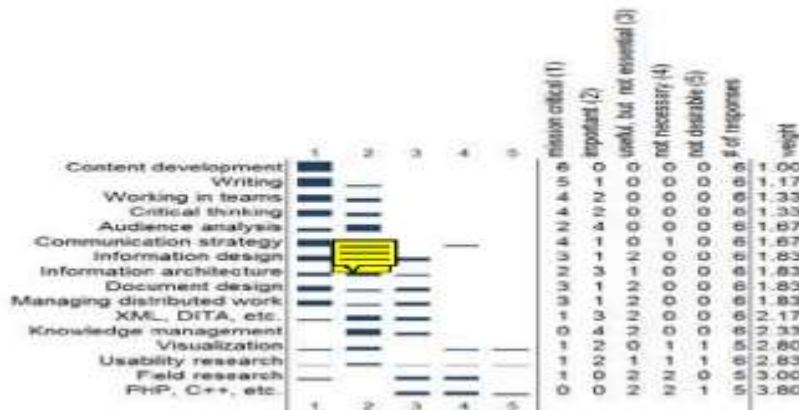
Similarly, in the Round 3 focus group, one participant commented that "I think the focus on writing in the past will again bite us to have industry people who are the authors they want to write this is not a collection of characteristic personalities

suitable for design for example." the difference between writing and design suggests that participants see writing as more passive skill than designing problems writing down things that others say, rather than engaging in it more strategic decisions about product development.

When we asked participants to elaborate later in the focus group, the same participant replied, "I think it's a content experience," which may seem to be lying the results of skill questions in steps 1 and 2. But participants then define the "content experience" as "Content, presentation, navigation, and delivery. Presentations are forms, media, formats, design information in pages for example, tables, lists and media. Navigation is organization, structure, access. And delivery is when, where." its broad definition suggests that despite claiming the importance of content, even technical communication expertise is seen as part of the presentation level, not the "content" level itself. Seemingly agreed, another participant responded with a story about setting up a technical group of communicators at one of his European voices, describing them as "highly motivated, very good" communicators with excellent English proficiency," which despite their lack of training as technical communicators or as technical experts had been "a great success for us." But the first participant replied that "people are hiring" technical writers who can write and who have a very strong technical background. Technical skills and good grammar are the main keys to getting a job." However, he argues that hiring such people is unwise, and that "We need to educate the people who hire these people."

In other words, participants seemed to suggest that we need to train people beyond writing and content skills, to be competent in the entire communication process: content, presentation, and strategy. The exchange shows that opinions differ about whether technical communicators should be intelligent writers, trained, experts in broader communications, or participants in setting the organization's overall strategic goals. The hurdle from writer to communicator may be more daunting than we think to some practitioners, and the hurdle from communicator to "symbolic analytic worker" even more so. Technical Communication and Corporate Strategy he difficulties may be that the relationship between content and corporate strategy is perceived as stronger than the relationship between communication skills and corporate strategy. A concept map from the 3rd round Transcript produced at Leximancer seems to bear this out. As described in the special introduction to the problem, Leximancer processes transcripts to identify important concepts, then groups those concepts into more or less coherent themes, which are heat mapped to match connectivity ratings. he most connected theme is always rated 100%. Please note that the circles do not form a Venn diagram any overlap is simply an artifact of the three-dimensional nature of the graph, which can be rotated to view from multiple angles.

Also, the size of the circle for each theme has no significance the software only measures the circle of the theme large enough to make room for the concepts it contains. However, the distance between concepts in the diagram is significant, as is the number and length of paths required to move from one concept to another. Related concept meetings are visualized as being close to each other on a direct path, while far related concepts are visualized far apart, linked by multiple Steps. The map shows how related concepts from the focus group transcripts group together into a theme. Leximancer has labelled the most coherent (100%) themes "technical", holding the following concepts: technical, skills, communicator, writer, people, writing, and process. Obviously, this reflects the fact that the conversation in Round 3 focuses on the technicalities of communicators and writers. he's a smaller bubble at the top, however, which Leximancer labels "information", less coherent, with an 88% connectivity rating. It holds more design-cantered concepts, including information, design, users, and people. The theme at the top, labelled "content," is a slightly more coherent next step, with an 86% connectivity rating, including concepts like content, customers, and products. How are these themes connected? If we trace the path from "author" to "customer" (bold line), we see that it goes through "technical," "design," and "product." In other words, this conversation seems to embody the idea that writing is in the hands of the participant's mind tied to the main mission of the organization through design, producing things that meet the needs of users and customers. As a result, as one participant commented, "technical writers have to be part of the [product] design process.

DISCUSSION
The perceived dissociation between technical writers/communicators and corporate content strategists is echoed in the general perception of the gap between the education schools provide and the skills employers need. A visualization of the education-focused section of the Round 4 online focus group provides a good understanding of this persistent division. Clearly, activities within the "technical" theme focus on the strategy of the larger company, with a degree of connectivity (100%). The theme of "education" is much less coherent (39%). It is also connected to the "technical" theme only through the concept of "skills," which is the central question that educators seek to answer: what skills should we teach According to this dynamic, participants do not always have a positive view of technical communication in academic programs: My point is that many indigenous institutions seem to be teaching technical communication using outdated methods that are not always in sync with how the communications technology profession actually works in the 'real world'." "We are still, from an educational point of view, still in the Henry Ford days of producing model T." One participant explained "I think one of

the problems with education and training is that it's usually based on the product, not how the customer uses the product. … So I feel like, to write good content, you have to be able to personalize the customer experience with that content, and the only way to do that is to make sure that our technical communicators actually have real customer contact."

In other words, rather than just documenting the product or writing down what engineers are saying it should be, the technical communicator should be able to meet the customer's needs directly and educators need to find ways to teach students how to do that. Another makes a similar point: "Many technical writers may have some domain of expertise, a lot of product expertise, but I think for me the links that are missing are usually technical communicators often don't understand how their products are used by customers." he managers also take some of that responsibility on their own shoulders. One commented,"Industry professionals need to be more involved."

In education and training to help develop the skills and knowledge of the next generation of technical communicators. More support companies for internships and related programs will be beneficial to them and technical communicators perhaps STC could be a catalyst and facilitator of such partnerships." Others agree, suggesting that what is new technical communicator most needs contextualized training: "And I think that's where training and education need to come in, and not necessarily from the perspective of higher-level education." He continued participants

"We can no longer teach people how to be technical communicators through books. Having to do it through aim writers gaining experience with the product or service that our company is selling. They got to understand what it's going through, how your product gets involved in their daily lives, and the business problems they're trying to solve." Professional Development and Training Therefore, our research also takes the topic of professional development and training in the workplace. Many of the conversations about professional development in technical communication have centered on two issues; learning new skills (see e.g., Applen, 2002; Carliner, 2001; Silber, 1994) and certification (among many others Hayhoe, 2000; Rainey et al., 2005; Savage, 2003). We want to know more specifically what kind of professional development opportunities? Technical communicators today have become available to them through their employers, as well as the perspective of technical communication managers on this subject. First, we ask what kind of training employers are provided. the results suggest that among these options a group of reputable companies, at the very least, in-house training, including informal training, formal training, and mentorship programs, is more common thanexternal training (see Table 1).

Answer	Count
Informal in-house training	5
Mentorship program	5
Formal in-house training	4
Support for external self-paced training	4
Support for external formal training	3
Support for traditional education (college degrees)	3
Other	0

Table 1: What Kind of Training or Training Support Your Company Provides Technical Communicators

The result is with the results of the question credentials, which indicates the manager prefers the preparation in technical communication skills more preparation in the knowledge of the domain or tool. For this group, at least, the tools and knowledge of the domain seem to be the best taught in context. when we asked what support companies are offered for professional development. All report that their company provides at least some support for professional development activities. But the most

The general response (selected by all participants) is "on a case-by-case basis," which indicates that support for professional development is ad hoc in this case the company, not systematic. Five participants reported that the company was willing to provide technical time communicators for professional organizations and activities, and four participants reported that the company provided support for professional licensing and certification. However, only half provide support for traveling to

conferences and conventions, perhaps the most expensive option. he pictured here seems to be a general openness to professional development, as long as the company is not obliged to support him and it is economical.

Technical communication is ambivalent about recommending certain options to the people they supervise, however. No more than two mark any of the following options (see Table 2).

Answer	Count
Advanced degree in TPC	2
Academic certificate program	2
STC sponsored webinars	2
Other trade webinars	2
Other Professional association certificates or courses	2
STC sponsored certificates	1
Other: in-house courses	1

Table 2: If Your Employees Need Professional Development, Which of These Options Would You Recommend

Finally, we ask, "How is training, education, and professional development for technical communicators valued or recognized in your organization?" he commented in that response as ambivalent. Three respondents suggested it was important: "It's part of our annual goal as far as professional development"; "highly appreciated"; "Training, education, and professional development are highly valued for all employees in my organization." But two are less positive: "Not worthwhile"; "It's seen as a great supplement to experience but not necessary for career growth." Because of this ambivalence, we asked for a follow-up question in Round 2, asking participants to comment on this dissent: "Responses about professional development are split, with some companies putting high marks on it, and others not so much (see responses below). What do you think of causing this difference? And if it's not through professional development, how do employees stay current with broader trends in the field?" Round 2 of responses went to be much more in-depth, especially those that criticized the lack of support of some organizations for professional development: "The company expects, needs and rewards people to develop professionally."

"The perceived value of professional development has been eroded as the workforce has become increasingly 'small in size' and as many companies have been foolishly pushed to unrealistic "productivity per employee" ratios.In short, today's workload and >50-hour schedule leaves little or no time for development professionals.Ironically, we need PD more than ever;top management has lost sight of its value to company productivity and profitability."I think some organizations consider document writing a necessary evil and writers accept that perspective.Training and development can inspire writers to go beyond what is "expected" and contribute in unexpected ways."

"For technical writers, not much infrastructure investment from a professional development point of view. This is a career that seems to level up and then people who aspire to better things are required to move into other roles and functions. Technical writers are expected to stay current through community internal and external collaboration (STC being one of them). So according to these managers, few companies could do more to support technical communicators in their professional development. Without that kind of support, technical communication can become a "career." Comments in Round 4 reaffirm this understanding of career levels. One participant noted that "Technical" Communication as a career has a glass ceiling." Another responded to our Round 4 open survey questions about the three biggest issues facing technical communications today by highlighting these: "lack of career paths due to early plateaus in traditional roles. participants mentioned several potential solutions to this problem. First, good basic writing skills can go a long way, though not all the way. Second, technical communicators need to learn "how to be."

Flexibility in how to use resources and how to develop them professionally on their own and keep careers fresh and learn new skills they need to learn even if they are not in school anymore."Finally, participants suggested that a final solution might lie in promotion outside the profession into management a step that some participants had already taken.In this regard, they seem to suggest that technical communication may not last a lifetime for most professionals today.On the other hand, technical communicators may find the best career paths to take them outside of the profession itself.

CONCLUSION

In conclusion, the responses to questions about Education and Training are somewhat troubling. Participants emphasize the importance of basic technical writing skills and traditional credentials (such as degrees) over more technical skills or degrees. But they also suggest that academic programs push students beyond these traditional roles, by teaching strategic thinking, general professional skills, and self-confidence. Otherwise, the feeling seems to be that the student may be stuck in a relatively low-level position, unable to rise through the "glass door" of technical writing. In addition, some of these respondents felt that their companies were not invested in providing avenues for the technical advancement of communicators through professional development. It sounded as if the participants saw a conflict between ideal and real paths 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 trust and so on). The company then ideally provides the development of training tools and domains of knowledge, in particular-those new employees need to maximize their value to the organization. In fact, however, if professional development and training is seen as a cost rather than an investment, the entire preparation of new professionals' rests on academia, and their continued development depends on the technical motivation of communicators themselves to learn and thrive throughout their careers. A difficult challenge to face.

REFERENCES

Baehr, C. (2015). Complexities in hybridization: Professional identities and relationships intechnical communication. Technical Communication, 62(2), xx–xx.

Brady, A. (2007). What we teach and what they use: Teaching and learning in scientific andtechnical communication programs and beyond. Journal of Business and Technical Communication, 21(1), 37–61. http://doi.org/10.1177/1050651906293529

Bryans North, A., & Worth, W. E. (2000). Trends in entry-level technology, interpersonal, andbasic communication job skills: 1992–1998. Journal of Technical Writing and Communication, 30(2), 143–154.

Bushnell, J. (1999). A contrary view of the technical writing classroom: Notes toward futurediscussion. Technical Communication Quarterly, 8(2), 175–188.

Cargile Cook, K. (2002). Layered literacies: A theoretical frame for technical communication pedagogy. Technical Communication Quarterly, 11(1), 5–29.

Carliner, S. (2001). Emerging skills in technical communication: he information designer's placein a new career path for technical communicators. Technical Communication, 48(2), 156–175.

Dubinsky, J. (2015). Products and processes: Transition from "product documentation to integrattechnical content." Technical Communication, 62(2), xx–xx.

Hayhoe, G. F. (2000). What do technical communicators need to know? TechnicalCommunication, 47(2), 151–153.

Hayhoe, G. F. (2003). Inside out/outside in: Transcending the boundaries that divide the academyand industry. In T. Kynell-Hunt & G.

J. Savage (Eds.), Power and legitimacy in technical communication: Strategies for professional

status (Vol. 1, pp. 101–114). Amityville, NY: Baywood.

Johnson-Eilola, J. (1996). Relocating the value of work: Technical communication in a post-

industrial age. Technical Communication Quarterly, 5(3), 245–270.

Kimball, M. A. (2013). Visual design principles: An empirical study of design lore. Journal ofTechnical Writing and Communication, 43(1), 3–41.

Kimball, M. A. (2015). Special issue introduction: Technical communication: How a few greatcompanies get it done.Technical Communication, 62(2), xx–xx.

Lanier, C. R. (2009). Analysis of the skills called for by technical communication employers inrecruitment postings. Technical Communication, 56(1), 51–61.

Rainey, K. T., Turner, R. K., & Dayton, D. (2005). Do curricula correspond to managerial

expectations? Core competencies for technical communicators. Technical Communication, 52(3), 323–352.

Savage, G. J. (2003). The process and prospects for professionalizing technical communication.

T. Kynell-Hunt & G. J. Savage (Eds.), Power and legitimacy in technical communication:

Strategies for professional status (Vol. 1, pp. 137–165). Amityville, NY: Baywood.