SUMMARY
♦ **Reports competencies from the 10 largest undergraduate programs and survey ratings of core competencies by 67 technical communication managers**
♦ **Compares managers' opinions with skills that technical communication programs stress**

Do Curricula Correspond to Managerial Expectations?

Core Competencies for Technical Communicators

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INTRODUCTION

This study is part of an ongoing effort to determine the core competencies of technical communicators by looking at a variety of data. We have researched existing skill, vocational, occupational, and curriculum standards from around the world to isolate those competencies that cross-reference through the data (Turner and Rainey 2004). Survey data and interviews with technical communication managers provide another source of data that is authoritative and contemporary. This project is the final component of the study to determine which competencies managers seek in new employees. Our report summarizes the results of both a survey and interviews of technical communication managers that we conducted to determine which competencies managers seek. The survey was based on an analysis of the curricula of the 10 largest (by student enrollment) undergraduate technical communication programs.

In this report, we begin with a summary of our findings and recommendations; we then describe our methodology and present the results in more detail; finally, we discuss some implications of the data and conclude by looking at emerging trends and managerial expectations in the profession, the future roles that technical communicators may be assuming, and knowledge and skills required to fulfill these roles.

FINDINGS AND RECOMMENDATIONS

The main findings of this study are displayed in Table 1. This report reveals that the most important competencies for technical communicators are
♦ Skills in collaborating with both subject-matter experts and coworkers

♦ Ability to write clearly for specific audiences directed by clearly defined purposes
♦ Ability to assess and to learn to use technologies
♦ Ability to take the initiative (be a self-starter) and to evaluate one's own work and the work of others

Secondary competencies include skills in using technologies to accomplish documentation work in various media and the ability to write, edit, and test various technical communication documents.

Tertiary competencies include skills in usability testing, single-sourcing and content management, instructional design, budgeting, oral presentations, research, multimedia, and awareness of cultural differences.

Based on this research and the research of others, we recommend that technical communication programs
♦ Find ways to develop students' interpersonal and collaborative skills; to the extent that this instruction is already included in the curricula, assess the effectiveness of the instruction
♦ Assess the approach to technology instruction so that it focuses on the "complexity of skill building and the depth of cognitive insights" into the use and impact of technology on their work and on the human community (Allen and Benninghoff 2004, p. 169)
♦ Accept the idea that relevant "tools" should include language—and especially foreign language
♦ Increase efforts to internationalize their curricula by including international exchange programs and stud-

TABLE 1. COMPETENCIES RANKED BY MEAN RATINGS (TOP 38 OF 63)

4	The ability to collaborate with subject-matter experts.	**2.75**	Ability to write and field-test a technical manual.
3.96	Ability to collaborate with co-workers.	**2.6**	Ability to observe ethical and legal considerations in writing.
3.8	Ability to provide clear writing for a specific audience directed by clearly defined purposes.	**2.6**	The ability to operate graphic and drawing packages.
3.54	Ability to analyze user's needs.	**2.5**	Ability to prepare a complex documented report.
3.5	The ability to assess and learn new technology.	**2.5**	The ability to use online environments for the learning of content information in both educational and professional contexts.
3.5	The ability to critique one's own work.	**2.5**	The ability to use FrameMaker.
3.5	The ability to operate word-processing and document-design programs.	**2.45**	Ability to use visual elements to communicate a message persuasively to a targeted audience.
3.4	Ability to establish an effective tone in a technical documentation.	**2.42**	Ability to reach new audiences with new technology.
3.3	Ability to achieve a set of expectations and values.	**2.4**	Ability to design and produce various professional communication products such as progress reports, sets of directions, and style sheets.
3.3	Ability to develop production-quality documents.	**2.4**	The ability to conduct secondary research through conventional printed texts as well as electronic texts, including CD-ROM and Internet.
3.25	The ability to conduct informational and problem-solving interviews.	**2.3**	Ability to develop brochures and quick references.
3.2	The ability to apply audience analysis to the design and writing of documents.	**2.3**	The ability to use tools related to applied and basic communication research.
3.2	The ability to write memos, letters, e-mail and other practical communication.	**2.3**	The ability to use Web-design software.
3.1	The ability to address communication conflicts in small groups arising from participant diversity.	**2.2**	The ability to develop research questions and to collect data through primary research.
3	The ability to comprehensively edit a document (using levels of edit, etc).	**2.1**	The ability to create and maintain web sites with static pages (no scripting, programming, or database interactivity).
3	The ability to conduct contextual inquiry (on-site interviews and observations for user and task analysis).	**2.1**	The ability to use technology that may be outdated due to financial constraints.
3	The ability to use desktop publishing software.	**2.1**	The ability to use PowerPoint and other presentation software.
2.9	The ability to critique the work of other technical communicators.	**2.1**	The ability to use commercial software packages such as database management and spreadsheet programs.
2.75	Ability to use page design to attractively present content.	**2**	The ability to use skills of argument identification, analysis, and evaluation.

ies of foreign languages
- ◆ Assure that technical communication majors acquire project management skills
- ◆ Assure that technical communication majors acquire understanding of business operations and their roles within the organization
- ◆ Counsel students not to be intimidated by the language of job descriptions that focus on tools requirements and provide students with instruction in actively learning how to learn new technologies

METHODOLOGY

We used a qualitative content analysis to extract the competencies embedded in 156 course descriptions from the top 10 undergraduate programs in technical and professional communication in the U.S. (based on enrollment numbers; see Appendix A). The resulting list of 141 competencies was filled with overlapping descriptions (*see Appendix B*). With a collaborative close edit, we trimmed the list for the survey to 63 competencies (*see Appendix C*), which we organized with reference to eight non-industry-specific core competencies derived from a series of 17 focus groups conducted by STC in 1996 (*see Appendix D*). With this approach, then, we believe we identified a comprehensive list of competencies valued by academics in the field of technical communication.

Our survey presented these competencies to technical communication managers and asked them to rank the competencies. We included a section in the survey to collect demographic data and data on the types of information products produced by the technical communicators who reported to these managers. We also placed a text box at the beginning of the survey where respondents could describe competencies they most valued before taking the survey and being biased by the list of competencies extracted from course descriptions. (Appendix E presents a complete copy of the survey.)

We did not have access to a large group of technical communication managers from which we could draw a random sample, so we opted to obtain a convenience sample of those managers willing to respond to our invitation to take the survey, which we published on the two listservs mentioned below. We do not know whether the opinions gathered from our convenience sample are truly representative of all technical communication managers.

First, we invited 587 listserv subscribers belonging to the Management Special Interest Group of the Society for Technical Communication to take the survey and received 47 completed forms from that group. Then we invited subscribers of the TECHWR-L listserv who were managers to take the survey and received data from 24 additional respondents, for a total of 71 responses. After eliminating 4 duplicate responses, two from each listserv, we had 67

completed responses. The survey is still available on the site where we published it: http://www.oakhillfarmalpacas.com/Manager's Survey/index.htm. See this link at the end of the survey for summary results: http://www.oakhillfarmalpacas.com/Manager's Survey/results_page.htm.

The survey gathered data on management expectations of skills and competencies required of technical communicators—irrespective of the industry in which they work. Two questions in the survey determined whether the respondent would be attending the 2004 STC Annual Conference in Baltimore and would be willing to participate in a follow-up interview to explore their survey responses in more depth. One of us (Dayton) attended the conference, tape-recorded three interviews, and extracted the high points for this article.

Demographic data

Demographic data from the survey suggests that the respondents represent a diverse and broad range of managers in terms of geographic area, terminology, industries, years of experience, internal/external clients, domestic/international clients, and information product types. Consequently, the data can be assumed to be suggestive for the profession, if not representative because of the small, non-probabilistic sample.

The survey asked respondents to list the geographical area from which they responded. There were respondents from California (11) and Texas (7), plus Arizona, GA, MA, MN, NY, and North Carolina (3 each)—in all, 21 states were represented. Internationally, there were respondents from Canada (11), the U.K. (2), and Australia (1).

During our analysis of the course descriptions from the top 10 programs, the wide disparity of department titles used for technical communication programs gained our interest; we found the same disparity holds true for the titles of the managers. Among the prevailing titles were five *senior managers* and *documentation managers*, four *technical publications managers*, and three *managers*, but beyond those titles, hardly any two were the same. There were 16 variants of *manager of. . .*, including *information development, technical services*, and *documentation*, to name a few. *Literature manager, publications supervisor*, and *technical communications administrator* were other titles listed.

Thirteen respondents listed "software" as their industry (19%); while the same number listed "computers," "hardware," or "information technology," along with less typical identifiers such as "microprocessor" or "semiconductors." Seven of the respondents listed the telecom field as their industry (10%). The financial sector was represented with four respondents (7.4%) as was the manufacturing industry. Laboratory equipment, entertainment, energy, and healthcare industries were represented to a lesser degree.

TABLE 2. INFORMATION PRODUCTS RANKED BY PERCENT OF MANAGERS REPORTING THEM

93%	PDF documentation	**22%**	Web/Internet-Based Training Products
85%	Hard-copy documentation (manuals)	**22%**	Usability reports
82%	Online help	**19%**	XML content
73%	Style guides	**18%**	Interactive electronic manuals
70%	Online reference material	**15%**	Periodic reports
64%	HTML documents (web pages)	**13%**	ISO 9000 documentation
49%	Training materials	**13%**	Quality reports
39%	Company intranet sites	**10%**	Interactive electronic training products
37%	Internal publications	**10%**	Web-based marketing products
31%	Marketing materials	**7%**	Verification reports
30%	Books	**7%**	Catalogs
27%	Newsletters	**4%**	SGML content
27%	Proposals	**4%**	Video training products
25%	Company Web sites on WWW	**4%**	Magazines
24%	Performance evaluations	**4%**	Annual reports
22%	Audio-visual scripts		

Respondents had an average of 9.5 years of managerial experience, although the responses on this question ranged from 6 months to 30 years. Because the numbers at both ends skewed the average, we implemented a trimmed mean (5% off the top and bottom) and found that the trimmed mean years of managerial experience was 8.3. The average number of employees that the respondents supervised was 5.5, although the responses ranged from 32 employees to 1; the trimmed mean was 4 employees per manager. The average number of independent consultants supervised was below 1 per manager at .84; the trimmed mean was .5.

The good news is that 40 of 67 respondents reported that they will be hiring employees in the next year or two, and to validate the trend, only 1 respondent out of 67 planned on decreasing the number of employees he or she managed.

Managers reported that an average of 26% of their information products were translated into another language; 73% of their information products were created for external clients and 27% for internal clients. Domestic customers made up 56% of the demand for their information products, and international customers accounted for 44% of the demand.

Table 2 lists the information products that the technical communication departments of the survey respondents produce (arranged from highest to lowest percentage of responses).

Responses from unbiased reflection

Before they responded to the list of competencies derived from the course descriptions we analyzed, we asked respondents to provide an "unbiased reflection" about the skills that they seek in new hires for their company by

TABLE 3. COMPETENCIES MENTIONED IN MANAGERS' OPEN-ENDED RESPONSES

Personal Skills	No.
Excellent communication skills (writing, editing, organizing, etc.)	54
Collaborative skills (ability to work in a team, etc.)	32
Interviewing/people skills	28
Understanding of/affinity for technology	26

Personal Qualities	No.
Self-motivation/self-management/self-starter/initiator	23
Ability to continue to learn quickly	12
Analytical skills tied with ability to adapt	10
Customer-orientation	9

asking, "If you were hiring a technical communicator, what skills and competencies would he or she have to possess to succeed at your company?"

Analyzing the content of these open-ended responses, we grouped the competencies mentioned into three categories (see Table 3):

◆ Personal skills
◆ Personal qualities
◆ Technical skills

Four primary *personal skills* emerged from these comments (based on the number of times mentioned):

◆ Excellent communication skills (writing, editing, organizing, and similar skills) (54)
◆ Collaborative skills (ability to work in a team and similar skills) (32)
◆ Interviewing/people skills (28)
◆ Understanding of/affinity for technology (26)

Personal qualities (ranked by number of times mentioned) are as follow:

◆ Self-motivation/self-management/self-starter/initiator (23)
◆ Ability to continue to learn quickly (12)
◆ Analytical skills tied with ability to adapt (10)
◆ Customer-orientation (9)

Additional qualities mentioned were creativity, professional demeanor, positive attitude, accountability, commitment to quality, ability to set priorities, and awareness of project urgency.

Other personal qualities mentioned were ability to get work done well and on time; ability to organize work/projects; ability to solve problems/make decisions; understanding of the business process; and understanding of content management and single sourcing.

Technical skills focused on being familiar with the "basic tools of the trade" (the most frequently used phrasing), especially the Microsoft Office suite (five responses), FrameMaker (six responses), and HTML/XML (five responses).

Many stated their expectations that a person need not know all of the specific applications but should have a general familiarity with how the tools work and an ability to learn new tools quickly.

In the discussion section, we will present some quotations of interest about the expectations of these managers.

RESPONSES TO THE SURVEY

Part 3 of the survey asked respondents to "rate the following competencies according to their importance to the day-to-day job of technical communications as you've experienced it." Respondents rated each of the 63 competencies on a Likert scale from 0 (irrelevant) to 4 (essential). Mean responses were then calculated. We will present the results to the survey arranged in three categories, from most to least important.

Results: Most important competencies

Competencies that received a mean ranking of 2.9 or above (on the 4-point scale) we classify as most important competencies; these may be grouped into four categories (see Table 4):

◆ Collaborative competencies
◆ Writing competencies
◆ Technical competencies
◆ Self-activation/evaluation competencies

Collaborative skills In overall ranking, the two most important competencies for technical communicators emerging from this survey are both collaborative skills. All respondents ranked the ability to collaborate with subject-matter experts as the most essential skill for technical communicators (4.0). The second most important skill, in overall ranking, is the ability to collaborate with coworkers (3.96). Other important collaborative competencies are the ability to conduct problem-solving interviews, to address communication conflicts in groups, and to conduct on-site interviews and observations for user and task analysis (contextual inquiry).

TABLE 4. MOST IMPORTANT COMPETENCIES

Most Important Competencies: Overall Ranking	Mean
Collaborative Skill: Ability to collaborate with subject-matter experts	**4.0**
Collaborative Skill: Ability to collaborate with co-workers	**3.96**
Writing Skill: Ability to write clearly for a specific audience directed by clearly defined purposes	**3.8**
Writing Skill: Ability to analyze users' needs	**3.54**
Technical Skill: Ability to assess and to learn to use technology	**3.5**
Technical Skill: Ability to operate word-processing and document-design applications	**3.5**
Self-Activation/Evaluation Skill: Ability for self motivation and evaluation	**3.5**
Self-Activation/Evaluation Skill: Ability to critique one's own work	**3.5**

Group: Collaborative Competencies

Ability to collaborate with subject-matter experts	**4.0**
Ability to collaborate with co-workers	**3.96**
Ability to conduct problem-solving interviews	**3.25**
Ability to address communication conflicts in groups	**3.1**
Ability to conduct contextual inquiry (on-site interviews and observations for user and task analysis)	**3.0**

Group: Writing Competencies

Ability to write clearly for a specific audience directed by clearly defined purposes	**3.8**
Ability to analyze users' needs	**3.54**
Ability to establish an effective tone in technical documentation	**3.4**
Ability to write such practical communications as memoranda, letters, email	**3.2**
Ability to apply audience analysis to documentation	**3.2**

Group: Technical Competencies

Ability to assess and to learn to use technology	**3.5**
Ability to operate word-processing and document-design applications	**3.5**
Ability to develop production-quality documents	**3.3**
Ability to use desktop publishing software	**3.0**

Group: Self-Activation/Evaluation Competencies

Ability for self motivation and evaluation	**3.5**
Ability to critique one's own work	**3.5**
Ability to achieve a set of expectations and values	**3.3**
Ability to critique the work of others	**2.9**

TABLE 5. OTHER IMPORTANT COMPETENCIES

	Mean
Group: Writing/Editing/Testing Competencies	
Write and field test a technical manual	**2.75**
Prepare a complex documented report	**2.5**
Use visuals to communicate a message persuasively to a targeted audience	**2.45**
Design and produce various professional communication products such as progress reports, sets of directions, and style sheets	**2.4**
Conduct secondary research	**2.4**
Produce brochures and quick reference guides	**2.3**
Group: Technology Competencies	
Use of page design software	**2.75**
Ability to operate graphic and drawing applications	**2.6**
Ability to use online writing environments	**2.5**
Ability to address new audiences with new technologies	**2.42**

Writing skills The ability to write clearly for a specific audience directed by clearly defined purposes is one of the two skills for technical communicators in third place in overall ranking (ranked 3.8, ranked almost equally with the skill for collaborating with coworkers). This group includes also the competency ranked fourth in overall importance, the ability to analyze users' needs (3.54, slightly ahead of the two technical skills and the two self-activation skills ranked 3.5). This group includes also the ability to establish an effective tone in documents; to write practical communications, such as letters, memoranda, and e-mail messages; and to apply audience analysis to documentation.

Technical skills Two skills were ranked fifth in overall importance: the ability to assess and to learn to use technology, and the ability to operate word processing and document design software programs (3.5). Other technical skills are ability to develop production quality documents and to use desktop publishing software.

Self-activation/evaluation skills Two skills in this group were ranked fifth in overall importance, along with the two technical skills mentioned above: the ability for self-motivation and ability to critique one's own work (3.5). Other self-activation/evaluation skills are the ability to achieve a set of expectations and values, and the ability to critique the work of others.

Results: Other important competencies
Other competencies rated as important by the survey respondents may be grouped into two main categories (see Table 5):
♦ Writing/editing/testing competencies
♦ Technology competencies
Other **technical skills** receiving high enough ratings by these managers to be considered somewhat important include such skills as the ability to use Web software (2.3); create Web sites (2.1); use outdated technology because of budget constraints (2.1); use PowerPoint (2.1); and use database management software and spreadsheets (2.1).

Important skills that are not easily categorized in the above groups are the ability to observe ethical and legal obligations (2.6), and the ability to identify, analyze, and evaluate arguments (2.0).

TABLE 6. LOWER-RANKED COMPETENCIES (<2.0)

	Mean
Personal Competencies	
Ability to conduct laboratory or field usability tests	**1.9**
Ability to employ instructional design	**1.8**
Ability to make oral presentations	**1.8**
Ability to identify clients' needs	**1.75**
Ability to recognize and adapt to project constraints	**1.75**
Ability to understand and be aware of cultural differences	**1.7**
Ability to evaluate and communicate risk	**1.5**
Ability to identify evidence from surveys of descriptive statistics and ability to analyze its relevance and its validity	**1.5**
Technical Competencies	
Ability to use single-sourcing	**1.8**
Ability to use content management	**1.75**
Ability to use multimedia design software	**1.6**
Ability to evaluate hardware	**1.4**
Ability to create web sites using scripting and interactivity	**1.3**
Ability to prepare budgets	**1.3**
Ability to use Microsoft Project	**1.25**
Ability to build advanced multimedia systems to communicate technical and workplace information	**1.2**
Ability to design an effective interface integrating color, sound, and graphics	**1.2**
Ability to use a digital camera	**1.05**

Results: Lower-ranked competencies

The managers gave a diverse list of other competencies a mean rating of 1.0 to 1.9 (see Table 6). The ability to conduct laboratory or field usability tests received a rating of 1.9; two related skills, the ability to identify clients' needs and the ability to recognize and adapt to project constraints, received a rating of 1.75. And the ability to evaluate and communicate risk received a rating of 1.5.

Skills on the survey that did not receive a ranking above 1.0 are listed in Table 7.

TABLE 7. LOWEST-RANKED TECHNICAL COMPETENCIES

	Mean
Write business proposals	1.0
Operate video-capture technologies	0.9
Use software programs to analyze qualitative/quantitative data	0.8
Write proposals for grants (nonprofits or research)	0.66
Write government documents	0.66
Write clear and concise documentation about medical practices for non-technical audiences such as patients and their families	0.375
Conduct film camera and darkroom work	0.16

Corroboration from in-depth interviews

At the 2004 STC conference in Baltimore, Dayton tape-recorded semi-structured interviews with three respondents who had provided their contact information on the survey. Table 8 below describes the current positions and relevant experience of the three managers he interviewed.

When he evaluates a job candidate, John Minniti says that the most important factor—beyond the person's writing skills and experience—is whether he thinks that he can work harmoniously and effectively with the person. He also wants to see evidence that a job candidate can collaborate well with subject matter experts, asking good questions to get needed information. Ideally, job candidates should have experience with tools similar to the ones they will need to use in the new job, but the ability to learn new things quickly is more important than having experience with a particular software application. The impression a candidate makes during the interview is crucial, but Minniti also tries to find out information from people he knows who worked with or managed that person at another company.

Kit Brown also depends on the job interview to get a direct sense of a candidate's personal qualities and skills. "I listen for enthusiasm, willingness to go the extra mile. I look for their ability to solve problems." She stresses that technical communicators have to learn to take suggestions and criticism, revise accordingly, and not take it personally. They need emotional maturity. "People skills are really

TABLE 8. MANAGERS INTERVIEWED

Informant	Current Position	Experience
John Minniti	Manager of information development in startup company developing software for doctor's offices	38 years in technical communication, about 30 as manager
Kit Brown	Principal, Comgenesis, a communication services and consulting company	15 years in technical communication, past 4 as owner/manager; MS in technical communication from Colorado State University
Barbara Giammona	Vice President, Morgan Stanley, in charge of IT documentation	22 years in technical communication, 17 as manager, recently completed MS in technology management from Polytechnic University (Brooklyn, NY)

important." If she were devising a curriculum for technical communicators, besides covering basic writing and editing skills, information design, and usability, Brown would require courses in organizational psychology and business to demonstrate to students the fit between technical communication and business goals. She would also make visual communication a required course and emphasize online communication and multimedia.

Whiteside (2003) recently found support for Brown's view; 57% of the technical communication managers in the Midwest that she surveyed felt that technical communication graduates were deficient in "understanding their role within an organization and understanding day-to-day business operations" (p. 313). Also supporting this view is Giammona (2004), who reports some significant new trends in skills desired by the managers whom she surveyed. These managers placed a high priority on project management skills and business acumen.

Brown advises technical communication educators to require majors to specialize in some area of science and technology, and to gain a basic understanding of statistics and empirical research methods. Asked about that advice, Barbara Giammona amends the suggestion: have students specialize in a secondary area, though not necessarily a technical one. For instance, she thinks that in today's economy a student with a minor in a foreign language would have an edge in qualifications for certain jobs.

Giammona recently earned a Master of Science in Technology Management from Polytechnic University (Brooklyn, NY). For her capstone project in that program, she interviewed 25 technical communication leaders—consultants, academics, and managers from a broad spectrum of organizations. She was excited to receive the preliminary results of our survey because they validate one of the key conclusions of her study: core competencies for technical communicators are more about real-world personal skill sets and not about one set of tools (see Giammona 2004).

Echoing the consensus of those she interviewed for her master's project, Giammona told us that writing as a basic skill is treated as a prerequisite in hiring technical communicators. She collects an impromptu, on-site writing sample from job applicants. "If the writing is bad, they get discarded immediately." She assesses candidates' soft skills by studying their resumes for evidence of problems or success working well with others and by directly evaluating their poise, confidence, articulateness, and professionalism during the job interview. "You have to have the right professional persona." She expects all job candidates, even those fresh out of school, to have some type of professional portfolio.

The ability to learn new software quickly, as needed, is another personal quality that she considers important but secondary. "The thing about tools," she commented, "is you need to know families of tools, so probably if I were an educator I would want to have seminars to teach tools, not classes, so that the basic skill set is implanted."

DO CURRICULA CORRESPOND TO MANAGERS' EXPECTATIONS?

It is not surprising that managers seek in their new hires many of the skills that have long been associated with the work that most technical communicators do. We have long known that technical communication expertise revolves around two nuclei—the ability to work with others, including subject-matter experts and colleagues, and the ability to focus on the needs of end users. Writing clearly for specific audiences may be taken as a given by most (and here *writing* should be taken to mean communication in any medium or combination of media).

Collaborative competencies

What is interesting from our survey results is the emphasis that the respondents place on collaboration as an essential competency, even slightly ahead of clear and competent writing in their mean rankings. In his interview, Minniti said he wanted "to see evidence that a job candidate can collaborate well with subject matter experts, asking good questions to get needed information." Allen and Benninghoff (2004) corroborate the views of the managers we surveyed in their study of technical and professional communication (TPC) undergraduate programs. They found that audience analysis, rhetorical analysis, collaboration, document design, and genres in TPC, along with gender awareness and cultural differences, are emphasized in all of the 42 programs that responded to their survey (p. 162). They comment,

> An interesting . . . feature of both these sets is the combination of concepts, skills, and professional activities represented. Working with others, whether team members or clients, received serious and direct attention in many of today's programs right along with theoretical approaches and basic skills. (p. 171)

Allen and Benninghoff's finding runs contrary, however, to one of Whiteside's findings (2003). A few managers that Whiteside interviewed expressed the view that new technical communicators are "not very good in people skills" or need "interpersonal skills" (p. 311). Given this view and the findings of both Allen and Benninghoff and our survey, technical communication programs should find ways to develop students' interpersonal and collaborative skills. If these skills are already included in the curriculum, program faculty should consider whether their treatment of these skills is adequate.

Technology competencies

Likewise, the emphasis that managers place on technology skills is no real surprise; the surprise is both the pervasiveness of these skills among the responses and the awareness of many managers that the ability to adapt to new situations and to learn new software quickly is far more important than knowledge of specific software packages. As one respondent put it, "Basically, if I can find a superb writer who understands technology and works well with others, I am willing to provide training for all the other skills I need the person to have." This statement puts a significantly different light on the many job advertisements that specify experience with specific software packages as a requisite. Based on such data, program advisers would do well to counsel their students not to be intimidated by the language of these advertisements. At the same time, we should make students aware that they also must not be intimidated by technology and must acquire the ability to learn new technologies quickly. The answer to the question "How much technical knowledge should I have?" is always "More than you have now."

Whiteside's survey (2003) found that some managers felt that undergraduates from technical communication programs have a solid foundation in software tools, as well as written and oral communication, although some managers listed "hands-on training on industry tools" as a deficiency (p. 311).

Giammona's observations that "tools" mean more than technology—that they also include such tools as foreign languages—is a prophetic suggestion that academic programs will do well to consider. With universities worldwide seeking more and more international opportunities for their students, it behooves U.S. universities to increase their efforts to internationalize their programs (see Stärke-Meyerring and Duin 2004; Mikelonis 2004).

Allen and Benninghoff (2004) report on use of software tools in TPC programs: "The programs in this study included a wide range of software tools, but they were seldom reported as the topic of a course, and often they aren't formally taught" (p. 167). They conclude that this approach to technology learning "carries with it the potential for losses in complexity of skill building and depth of cognitive insights" (p. 169). In their survey, only one program includes "learning how to learn software" in the skills and procedures of their programs (p. 163). Academic programs may need to reassess their approach to technology instruction in light of this data.

An interesting tension re-emerges from the discussion about technical skills, particularly knowledge and use of tools. Many managers respond as the respondent does above that, first, they want competent writers with collaborative and people skills whom they can train in specific software tools. Others, however, note, as Whiteside's survey found, that "hands-on training on industry tools" is

deficient in the TPC graduates they hire (p. 311). This dichotomy in expectations about tools will likely continue, and academic programs will have to arrive at their own resolutions between these divergent expectations.

In our curricula at Southern Polytechnic State University, for example, we have sought to resolve this tension by requiring our tools courses to be project driven—that is, the instructor assigns specific projects to be developed with specific tools that the students must learn to succeed. Recently, moreover, we revised our BS curriculum to include a required tools course and to offer an advanced tools course as an elective.

People skills

An enlightening insight into the world view of managers is provided by their "unbiased reflections," which the survey asked them to provide before they read and rated our list of competencies. What emerges from these spontaneous comments about competencies is a profile of managers who are acutely aware of both the challenge of technical communicators' work and the need to have personnel who are professional and human, as well as competent. Some fragmentary comments:

> . . . *Cope with stress and frustration, laugh lots, and don't take yourself too seriously.*

> . . . *[Demonstrate] ability to work within our corporate value system, self-motivation, and drive.*

> . . . *Be able to switch from one task to another without undue stress and without negatively impacting other team members.*

And two other thoughtful comments:

> *Successful writers must be able to grasp the concept of a complex application and then break out conceptual and procedural information so that our end-users can successfully use our products.*

> *Here are two attributes that . . . are keys in making a good technical communicator. The first is curiosity. If a person is a continuous learner who seeks out information, this person will probably succeed in our field. The second is the ability to work with many different personalities. Subject matter experts can be very difficult people to work with, and a good technical communicator must be adaptable.*

Brown's observations in her interview about the humane qualities necessary for successful work in technical communication bring another firsthand corroboration to these survey comments. (See Harner 2004 for additional analyses

of undergraduate technical communication curricula.)

TRENDS FOR THE 21ST CENTURY

In keeping with the purpose of this special issue, we conclude this report with some observations about some trends affecting the profession and about the roles—and the skills required to fulfill these roles—of technical communicators as the discipline evolves. This is a difficult and inherently risky task, for trends are difficult to predict, and change seems to appear without warning.

Telecommuting, outsourcing, technology

Recent trends seem to suggest that two major changes already in place are, themselves, undergoing transformation, and technology, by its very nature, is constantly changing.

Telecommuting Telecommuting, for example, seems to be discouraged by managers who have found that effective project management and team building are more difficult to achieve because some telecommuters had difficulty balancing work responsibilities with personal responsibilities (see Rainey 2005).

Outsourcing Outsourcing has become a major issue in technical communication as in all information technology sectors. But as Rainey (2005) notes:

> *A major trend early in the new century saw companies outsourcing information technology services, including documentation, to India and other lower-wage countries. With a sagging economy after the catastrophe of September 11, 2001, technical communicators lost thousands of jobs because of outsourcing and layoffs throughout the industry. (p. 217)*

Throughout 2004 and into 2005, it appears that the economy has begun to grow, and the number of jobs added to the workforce is slowly improving. Differences of opinion exist on the negative and positive effects of outsourcing on the U.S. economy, however. Kalakota and Robinson (2004), for example, argue that the initial surge in outsourcing will be followed by a sharp decline, and then by a levelling off of the process to situations that are clearly beneficial to specific companies. Thus, we can expect that the mostly mediocre English translations that technical documents receive in third world countries will eventually moderate the trend to outsourcing.

Technology Trends in technology are easy to predict if we remain general: Technology will continue to pervade our everyday lives in increasingly diverse and complex ways (see Charles 2004). As Rainey (2005) notes, "Emerging technologies will demand supporting documentation that will lead technical communicators to continue doing what they already do but with new products; and they will lead to new opportunities in commercial marketing in which technical communicators are already experts (p. 216)."

New roles for technical communicators

In general, we can predict that competencies for technical communicators will undergo transformations as the field expands into new areas demanding new knowledge and skills. These will challenge both students and curriculum developers to keep abreast of these developments and to respond with curricula adaptations that build on the core of competencies that are already in place. This is good news for a field that draws competencies from such diverse areas as rhetoric and composition, user analysis, team work, information design, document design, graphic design, documentation development, instructional design, web development, and so on. We offer the following as examples of emerging areas for which technical communicators already possess critical core competencies.

Sarbanes-Oxley Act Harkness (2004) feels that technical communicators are in a strategic position to provide the documentation required by the Sarbanes-Oxley Act, which was passed in the wake of recent corporate financial scandals. Technical communicators possess interviewing, writing, editing, and document design skills that equip them "to document and evaluate the effectiveness of [corporations'] internal controls and their procedures for financial reporting" (p. 17).

Single sourcing Single sourcing—that is, building modular documentation that can be re-used in different formats and media—pervades current technical documentation discussion and practices. As noted elsewhere, "Technical communicators are uniquely qualified as experts in designing documents in a variety of user-focused formats and media" (Rainey 2005, p. 217).

Content management/knowledge management "Technical communicators are also uniquely positioned to provide both content management and knowledge management for companies. A content management system—based on single sourcing—that reduces production schedules and shortens time to market can make technical communicators valuable assets to companies" (Rainey 2005, p. 217; see also Applen 2002).

Web accessibility/interactive design According to Gillen (2004), companies will turn to technical communicators to help them comply with the Web Content Accessibility Guidelines to make their web content accessible to people with

disabilities. Gillen also states that it is good business for companies to assure that their Web sites comply with the Web Accessibility Initiative (WAI) of the World Wide Web Consortium.

According to Leonard-Wilkinson and Square (2004), technical communicators possess the experience, knowledge, and skills in user analysis and Web design that enable them to assume the responsibilities of designing Web sites for users with specific needs. Also, they assert that technical communicators should market themselves as interactive Web designers. If they focus on a return on investment, know the business process, and understand usability and interaction design principles, technical communicators can sell themselves as experts in this new field in Web design.

Requirements analysis David Altman (2005), in a paper presented at the STC Atlanta chapter Currents Conference, argues that requirements analysis is perfectly suited to the technical communicators skill set (p. 1). Requirements analysis is a business process that

♦ elicits information about the requirements (needs) for product development;

♦ analyzes the findings and determines which requirements remain and which should be discarded (triage);

♦ disseminates requirements about what the product must do to meet users' needs;

♦ establishes a systematic management of change control during product development;

♦ and, finally, verifies that the product meets the requirements established by the requirements analysis.

Altman argues that requirements analysis "falls at the intersection of the technical communicators' education/skills, environment, and paradigm" (p. 9). In education and skills, technical communicators know interviewing, information design, content management, and desktop publishing. In their environment, technical communicators are known as communications experts, are stakeholders in the end-result of requirements analysis, and frequently function in cross disciplinary roles—all of which are essential to requirements analysis. The paradigm for technical communicators' work involves critical thinking, minimalism, and user-focused analyses. Altman then defines the role of technical communicators as requirements analysts (pp. 10–11).

CONCLUSION

The data from this survey can guide technical communication programs in preparing new courses and in revising curricula to meet emerging trends in the profession. Managerial advice regarding curriculum planning is an accepted dimension for many academic programs

that have technical advisory boards composed of managers and professional communicators. The results of this survey provide technical communication program directors and curriculum planners with additional advice from a broad-based sample of technical communication managers.

In considering needs for curriculum revision, a recommendation by Whiteside (2003) is worth repeating here: We should develop regional and national panels consisting of undergraduate directors of technical communication programs to review the available data and make recommendations about technical communication curricula. Although Whiteside suggests that these panels consider the views of recent graduates and managers, we recommend that these groups be included in the memberships of the panels.

Whiteside (2003) also suggests that the panels discuss the plausibility of "standardizing the technical communication curricula of undergraduate programs to ensure that students in all programs receive the foundation they need to transition with ease into business and industry" (p. 316). She then asks, "What is the best way to evaluate undergraduate technical communication curricula?" (p. 315).

These topics have concerned us for a number of years. As two of us have argued elsewhere, evaluating curricula will be possible (or at least effective) only when the bodies of knowledge essential to the discipline are codified and subsequently incorporated into a certification program (see Turner and Rainey 2004). Admittedly, Whiteside uses the term *evaluation* and not *certification* or *accreditation*. Evaluation without a fair and reasonable certification (which can only occur when we have a codified body of knowledge as the basis for certification) would remain unverifiable and confined to only a specific academic program or group of programs, and would lack the validation of a broad consensus of stakeholders in the discipline and profession. Only with a process of codification and certification will the profession be in a position to establish "accreditation" of academic programs which will be a credible and fair program of evaluation (for it is impossible to accredit or evaluate a program until we know what it is that we are accrediting or evaluating).

The Council for Programs in Technical and Scientific Communication is the logical—and we would say "perfect"—vehicle for promoting the regional and national panels that Whiteside calls for. We support that effort. We also endorse Spilka's call for a broad-based, democratically elected consortium of stakeholders to deal with the issues of professionalization (Spilka 2002). **TC**

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APPENDIX A.   TOP TEN UNDERGRADUATE PROGRAMS IN TECHNICAL AND PROFESSIONAL COMMUNICATION AS DETERMINED BY ENROLLMENT REPORTED IN SPRING 2004

School	No. of Students
Bentley College (Massachusetts)	156
University of Arkansas-Little Rock	155
Metropolitan State University (Minneapolis)	120
Michigan Tech	101
University of Minnesota	100
James Madison University (Virginia)	100
Utah State University	100
University of Wisconsin-Stout	85
University of Washington	80
Miami University of Ohio	80
Total Number of Students Enrolled	1,082

APPENDIX B.   141 COMPETENCIES EXTRACTED FROM 156 COURSE DESCRIPTIONS USING QUALITATIVE CONTENT ANALYSIS

1. Ability to deliver intended message to audience.

2. Ability to use visual elements to communicate persuasively a given message, emotion, or feeling to a targeted audience.

3. Ability to communicate with the public.

4. Ability to analyze user's needs.

5. Ability to reach new audiences with new technology.

6. Ability to use high tech to provide a means of dialogue and persuasion among companies and their audiences, both internal and external.

7. Ability to engage Web site users by designing sites that require interactivity.

8. Ability to distribute both information and ideas.

9. Ability to use persuasive strategies in technical documentation.

10. Ability to use both the visual image and the written copy for a combined effect on the message.

11. Ability to use page design to attractively present content and communicate ideas visually.

12. Ability to choose and present visual images by mastering principles such as rhythm and balance.

13. Ability to set clear goals for a communication product.

14. Ability to integrate typography, color, layout, images, and symbols and apply them to complex communication projects.

15. Ability to develop a visual identity.

16. Ability to design coherent, portable, navigable, and interactive pages and employ the fundamental principles of color theory, typography, layout and graphic design.

17. Ability to apply knowledge of page layout and design, navigation systems, interface design, Web graphics and multimedia, interactivity, writing for the Web, site architecture, management, and maintenance.

18. Ability to achieve a set of expectations and values.

19. Ability to appropriate and prepare a substantial documented report.

20. Ability to project oneself and one's message effectively by delivering a strong oral presentation.

21. Ability to develop how-to articles intended for publication on the Web

22. Ability to redesign pages and screens, prepare corporate identities, and develop brochures and quick references.

23. Ability to produce camera-ready copy suitable for publication.

24. Ability to design and create a fully functional Web site.

APPENDIX B.   Continued

25.   Ability to develop, organize, and deliver a variety of strong presentations.

26.   Ability to address communication conflicts in small groups arising from participant diversity.

27.   Ability to address communication conflicts in small groups arising from participant diversity.

28.   Ability to manipulate the cumulative effect of typography, color, photographic images and layout in the best style to facilitate the creation of an effective technical communication product.

29.   Ability to redesign pages and screens, prepare corporate identities, and develop brochures and quick references.

30.   Ability to develop research questions and objectives.

31.   Ability to undertake both bibliographical and field research, as appropriate, and prepare a substantial documented report.

32.   Ability to analyze survey results.

33.   Ability to develop, organize, and deliver a variety of strong oral presentations.

34.   Ability to use PowerPoint and other visual aids.

35.   Ability to use tools in applied and basic communication research.

36.   Ability to conduct computerized literature searches.

37.   Ability to use page design to attractively present content, and communicate ideas visually.

38.   Ability to use high-end Web authoring tools.

39.   Ability to analyze survey results.

40.   Ability to assess the effectiveness of your work through usability testing.

41.   Ability to use design methodology to identify client's needs and project constraints.

42.   Ability to integrate the principles of information architecture, human factors, and usability in creating and managing Web sites.

43.   Ability to convey specialized information using effective design of layout and information.

44.   Ability to effectively write and design for online environments.

45.   Ability to design projects that feature thematic presentation, application of sound, and the construction of images.

46.   Ability to use word processing, presentation software, the Internet and desktop publishing.

47.   Ability to edit for organization, format, style, grammar, punctuation, usage, consistency and accuracy.

48.   Ability to use media in education and training programs.

49.   Ability to design for online environments.

APPENDIX B.   Continued

50.   Ability to use word processing and presentation software the Internet and desktop publishing.

51.   Ability to use desktop publishing, multimedia design and Web design software.

52.   Ability to gain intended effect from document or Web users by using graphic and information design techniques.

53.   Ability to edit in such a way that takes into account the social and political implications of the edit.

54.   Ability to create TCOM products in a socially responsible manner.

55.   Ability to be critically aware of the common assumptions about interpersonal interactions.

56.   Ability to communicate risks associated with environmental, safety, and health hazards.

57.   Ability to ensure that risks are communicated fairly, honestly, and accurately.

58.   Ability to integrate social, cultural, and cognitive theories of reading processes in TCOM products.

59.   Ability to observe ethical and legal considerations in writing.

60.   Ability to take into account nationalism, culture and communication, communication and development, international relations and media, the rise of global culture, cultural autonomy and globalization when creating TCOM products.

61.   Ability to create clear, effective graphic communication.

62.   Ability to balance technical and aesthetic knowledge.

63.   Ability to apply concepts of logic.

64.   Ability to demonstrate skills in argument identification, analysis, and evaluation.

65.   Ability to collaborate with co-workers.

66.   Ability to design technical documentation that takes into account the theoretical, industrial, cultural, and aesthetic challenges posed by particular visual media.

67.   Ability to schedule a budget and produce various print and digital publications by applying principles of information selection, editing, layout, and graphics.

68.   Ability to design an effective interface integrating color, sound, and graphics.

69.   Ability to design and produce various communication products such as sets of procedures, proposals, progress reports, sets of directions, and style sheets.

70.   Ability to produce a client-involved project such as a brochure, newsletter, web site, technical training module, etc.

71.   Ability to quickly learn current technologies such as digital photography, advanced multimedia development, advanced graphic design, color theory, or three-dimensional modeling and rendering.

72.   Ability to write documentation for computer software.

APPENDIX B. *Continued*

73.   Ability to develop websites and new media.

74.   Ability to write manuals for cars and appliances.

75.   Ability to produce print and online document design, online documents, digital libraries or databases, multimedia, or software.

76.   Ability to use online environments to improve communication skills and the learning of content information in both educational and professional contexts.

77.   Ability to analyze and evaluate hardware and software systems.

78.   Ability to critique the work of other designers in terms of the work's audience and intended effect.

79.   Ability to critique your own design project.

80.   Ability to use skills of argument identification, analysis, and evaluation.

81.   Ability to conduct camera and darkroom work.

82.   Ability to operate network operations, network information systems, capture technologies, word-processing, graphic and drawing packages, and document-design programs.

83.   Ability to apply readability and usability testing techniques to typical print materials as well as online documents, digital libraries or databases, multimedia, or software.

84.   Ability to maximize audience participation in websites and other hypertext documents.

85.   Ability to provide clear writing for a specific audience

86.   Ability to plan and create multimedia.

87.   Ability to plan a procedure, collect information, analyze an audience, and then write and field-test a technical manual.

88.   Ability to proofread technical documentation.

89.   Ability to create multimedia documents containing text, movie clips, sound clips, and still images.

90.   Ability to follow trends in the technical communication field.

91.   Ability to write memos, letters, electronic correspondence, reports and other practical communication.

92.   Ability to show skills in evaluation and judgment.

93.   Ability to create a multimedia project by demonstrating proficiency in hardware and software of multimedia creation and researching, producing and testing an original project.

94.   Ability to develop production-quality documents.

95.   Ability to conduct action research in scientific and/or technical settings.

96.   Ability to take and edit digital images.

APPENDIX B.   Continued

97.   Ability to present complex material.

98.   Ability to conduct usability tests in lab, field, and virtual environments.

99.   Ability to write proposals and grants for nonprofits or research/business proposals and letters of intent.

100.   Ability to perform research such as face-to-face and phone interviews, focus group interviewing, questionnaire development, and contextual inquiry.

101.   Ability to write learning objectives and outcomes, set the conditions for learning, complete a comprehensive course outline, and training modules.

102.   Ability to produce 35mm color transparencies.

103.   Ability to produce corporate video.

104.   Ability to use software programs to analyze qualitative/quantitative data.

105.   Ability to use scripts, budgets, treatments, project-design plans and interactive screens.

106.   Ability to plan, research, design, and develop technical communication print documents.

107.   Ability to conduct informational, employment-cycle, and problem-solving interviews.

108.   Ability to analyze descriptive statistics.

109.   Ability to use Microsoft Project.

110.   Ability to conduct usability testing and contextual inquiry as a means to study the effectiveness of technical documentation.

111.   Ability to write documentation attuned to specific audiences and directed by clearly defined purposes.

112.   Ability to establish the need, purpose, and scope of a document.

113.   Ability to examine the role of ethics in the field, the nexus of ethics and the law, ethical theories and critical thinking in moral reasoning, falsification of information or data, ownership of information, confidentiality, copyright and trademark laws, conflicts of interest, and causes of unethical behavior.

114.   Ability to write a technical summary, definition, mechanism description, process or procedure description, and proposal.

115.   Ability to integrate visual aids and evaluation techniques into instructional design products.

116.   Ability to write a user's guide for computer software.

117.   Ability to develop levels-of-edit; copyedit; conduct substantive edits; determine document design; edit graphic aids; collaborate with authors; and proofread.

118.   Ability to apply principles of effective rhetoric to the design and writing of documents in the field of technical communication.

119.   Ability to write original and edit existing government documents.

APPENDIX B.   *Continued*

120.   Ability to write clear and concise documentation about medical practices for nontechnical audiences such as patients and their families.

121.   Ability to evaluate, revise, maintain, and sustain web sites.

122.   Ability to learn the advantages and disadvantages of various technological tools technical communicators use on the job.

123.   Ability to write a proposal.

124.   Ability to collect information or data through primary and secondary research.

125.   Ability to conduct extended bibliographic research through projects that employ conventional bound texts as well as electronic texts, including CD-ROM and Internet.

126.   Ability to analyze, organize, adapt, and deliver ideas effectively in public contexts.

127.   Ability to produce documents using desktop publishing software.

128.   Ability to use commercial software packages such as word processing, database management, graphics, and spreadsheet programs.

129.   Ability to use information retrieval tools.

130.   Ability to communicate scientific and technical information to a variety of readers, including the expert, scientific and technical reader, manager, and general public.

131.   Ability to establish an effective tone in a technical documentation.

132.   Ability to use technical writing conventions such as headings, illustrations, style, and tone.

133.   Ability to assess and learn new technology.

134.   Ability to produce computer-aided instruction programs using authoring systems for computers.

135.   Ability to build advanced multimedia systems to communicate technical and workplace information.

136.   Ability to build, manage, and use content management systems in the technical communication workplace.

137.   Ability to use a variety of sentence structures for appropriate emphasis, handling details, and establishing effective tone.

138.   Ability to prepare online help systems, performance-support systems, print manuals, and other forms of computer documentation.

139.   Ability to use FrameMaker.

140.   Ability to conduct usability testing of documentation.

141.   Ability to prioritize the reader's needs as important in technical documentation.

APPENDIX C.   63 COMPETENCIES DERIVED BY EDITING THE ORIGINAL LIST OF 141

1.   Ability to collaborate with subject-matter experts.

2.   Ability to collaborate with co-workers.

3.   Ability to provide clear writing for a specific audience directed by clearly defined purposes.

4.   Ability to analyze user's needs.

5.   Ability to assess and learn new technology.

6.   Ability to critique his or her own work.

7.   Ability to operate word-processing and document-design programs.

8.   Ability to establish an effective tone in a technical documentation.

9.   Ability to achieve a set of expectations and values.

10.   Ability to develop production-quality documents.

11.   Ability to conduct informational and problem-solving interviews.

12.   Ability to apply audience analysis to the design and writing of documents.

13.   Ability to write memos, letters, email and other practical communication.

14.   Ability to address communication conflicts in small groups arising from participant diversity.

15.   Ability to comprehensively edit a document (using levels of edit, etc).

16.   Ability to conduct contextual inquiry (on-site interviews and observations for user and task analysis).

17.   Ability to use desktop publishing software.

18.   Ability to critique the work of other technical communicators.

19.   Ability to use page design to attractively present content.

20.   Ability to write and field-test a technical manual.

21.   Ability to observe ethical and legal considerations in writing.

22.   Ability to operate graphic and drawing packages.

23.   Ability to prepare a complex documented report.

24.   Ability to use online environments for the learning of content information in both educational and professional contexts.

25.   Ability to use FrameMaker.

APPENDIX C.   *Continued*

26.   Ability to use visual elements to communicate a message persuasively to a targeted audience.

27.   Ability to reach new audiences with new technology.

28.   Ability to design and produce various professional communication products such as progress reports, sets of directions, and style sheets.

29.   Ability to conduct secondary research through conventional printed texts as well as electronic texts, including CD-ROM and Internet.

30.   Ability to develop brochures and quick references.

31.   Ability to use tools related to applied and basic communication research.

32.   Ability to use Web-design software.

33.   Ability to develop research questions and to collect data through primary research.

34.   Ability to create and maintain web sites with static pages (no scripting, programming, or database interactivity).

35.   Ability to use technology that may be outdated due to financial constraints.

36.   Ability to use PowerPoint and other presentation software.

37.   Ability to use commercial software packages such as database management and spreadsheet programs.

38.   Ability to use skills of argument identification, analysis, and evaluation.

39.   Ability to conduct lab or field usability tests on print or online documentation and other products requiring human-computer interaction.

40.   Ability to deliver a strong oral presentation.

41.   Ability to negotiate single-source documentation of a technical document.

42.   Ability to create instructional design products.

43.   Ability to build, manage and use content management systems.

44.   Ability to use design methodology to identify client's needs and project constraints.

45.   Ability to consider cultural and linguistic differences to prepare information for globalization or localization projects.

46.   Ability to use multimedia design software.

47.   Ability to communicate risks associated with environmental, safety, and health hazards.

48.   Ability to identify evidence from surveys or descriptive statistics and analyze its relevance and its validity.

APPENDIX C. Continued

49. Ability to analyze and evaluate hardware.

50. Ability to conduct computerized literature searches.

51. Ability to create and maintain web sites with pages requiring scripting, programming, or database interactivity.

52. Ability to schedule a budget for various projects.

53. Ability to use Microsoft Project.

54. Ability to build advanced multimedia systems to communicate technical and workplace information.

55. Ability to design an effective interface integrating color, sound, and graphics.

56. Ability to use a digital camera.

57. Ability to write business proposals.

58. Ability to operate video-capture technologies.

59. Ability to use software programs to analyze qualitative/quantitative data.

60. Ability to write proposals for grants (nonprofits or research).

61. Ability to write government documents.

62. Ability to write clear and concise documentation about medical practices for nontechnical audiences such as patients and their families.

63. Ability to conduct film camera and darkroom work.

APPENDIX D. NON-INDUSTRY-SPECIFIC CORE COMPETENCIES DERIVED FROM 17 STC FOCUS GROUPS IN 1996 (SEE TURNER AND RAINEY 2004)

Competency	Description
Advocacy	Ability and willingness to be an advocate for the user.
Design	Knowledge of information design, presentation of data, language conventions, communication principles and theory.
Execution	Ability and willingness to apply information design, language, and communication models, theories, rules, and standards.
Innovation	Ability and willingness to be open to new ideas without sacrificing usability or accuracy.
Use of Media	Ability and willingness to understand the requirements and uses of different media and to apply them appropriately.
Research Skills	Ability and willingness to gather relevant and accurate information and analyze it for appropriateness.
Use of Support Tools	Ability and willingness to use appropriate support tools, including computer application software.
Usability	Understanding of usability, skill in user and task analysis, and the ability and willingness to provide value to the user of the information.

APPENDIX E. SURVEY QUESTIONS FOR MANAGERS OF TECHNICAL COMMUNICATORS

What is this survey about?

We are asking you to help us identify core competencies for technical communicators.

Why should you participate?

We have invited you to this survey because you are a manager of technical communicators. We believe that your job qualifies you to be a great source for input on the competencies that technical communicators need to succeed in the profession.

Who is doing the survey?

Roy K. Turner, a graduate student at Southern Polytechnic State University, designed this survey with guidance from Dr. David Dayton of the Humanities and Technical Communication Department and Dr. Kenneth T. Rainey, the Chair of the department.

What should you do?

We request that you compete the survey as soon as possible. And if you plan to attend the 51st STC conference in Baltimore and can meet with Dr. Dayton for a brief follow-up interview, we have provided a box where you can give us your contact information.

Part 1: Unbiased Reflection

We would appreciate it if you would take a moment as the survey begins and reflect on the skills and competencies that your employees must possess to succeed in the field of technical communication. We want to ask you now before you take the 2nd part of the survey so that our questions don't bias your thoughts in any way.

You might think of it this way: if you were hiring a technical communicator, what skills and competencies would he or she have to possess in order to succeed at your company?

Part 2: Demographic Data

Your job title:

Your city:

Your state/province:

Your country:

Please identify what industry your company is associated with:

How many employees do you directly supervise?

How long have you been in your present position?

How long have you worked in managerial positions?

APPENDIX E. *Continued*

Check those information products you use technical communicators to develop (Check all that apply).

hard-copy documentation (manuals)

Portable Document Format (PDF) documentation (manuals)

online help

online reference material

training materials

audio-visual scripts

books

marketing materials

HTML documents (web pages)

SGML content

XML content

ISO 9000 documentation

interactive electronic technical manuals

interactive electronic training products

video training products

web or internet-based training products

web or internet-based marketing products

company Web sites published on WWW

company intranet sites (internal Web sites)

proposals

style guides

magazines

newsletters

annual reports

periodic reports

performance evaluations

usability reports

APPENDIX E. Continued

verification reports

quality reports

catalogues

internal publications

Please list any other information products you use technical communicators to develop:

What percent of your information products are developed for internal clients? For external clients?

What percent of your information products are prepared for translation into another language?

What percent of your information products are prepared for

   Domestic customers? International customers?

How many full-time personnel write and/or produce information products under your supervision?

How many independent consultants or contractors write and/or produce information products under your supervision?

Do you plan on increasing or decreasing the number of technical communicators you use in the next one or two years?

   Increase   Decrease   Don't know

In your organization to what person or office do technical communicators report?

Are there career paths for technical communicators in your company?

   Yes   No   Unsure

Part 3: Rating Competencies

We ask you to rate the following competencies according to their importance to the day-to-day job of technical communications as you've experienced it. Technical communications can be different things to different people, but we are interested in your unique experience.

The rating scale ranges upward in importance from '0' to '4.' So if a competency rates '0,' that means that the competency is irrelevant to the technical communicators' jobs. But if a competency rates '4,' that means the competency is so crucial that if technical communicators lack that competency, they cannot do their jobs.

In addition, we hope that each section of this survey will help spur your thoughts concerning competencies. As a result, we have added a box at the end of each section where you may add your thoughts and ideas. We would very much like to see what competencies your experiences in TCOM might cause you to add to our competencies. First we would appreciate if you would provide demographic information that will help us to stratify the data.

0 = irrelevant >>> 4 = essential

1. Advocacy-Related Competencies

1. Ability to use visual elements to communicate a message persuasively to a targeted audience.

2. Ability to analyze user's needs.

APPENDIX E.   Continued

3. Ability to reach new audiences with new technology.

4. Ability to communicate risks associated with environmental, safety, and health hazards.

5. Ability to observe ethical and legal considerations in writing.

6. Ability to consider cultural and linguistic differences to prepare information for globalization or localization projects.

7. Ability to provide clear writing for a specific audience directed by clearly defined purposes.

8. Ability to establish an effective tone in a technical documentation.

Is there anything else that you would like to add to this competency group?

2. Design, Innovation and Execution-Related Competencies—Part 1

9. Ability to meet a set of expectations and values.

10. Ability to prepare a complex documented report.

11. Ability to deliver a strong oral presentation.

12. Ability to develop brochures and quick references.

13. Ability to comprehensively edit a document (using levels of edit, etc).

14. Ability to write proposals for grants (nonprofits or research).

15. Ability to write business proposals.

16. Ability to single-source a technical document.

17. Ability to build, manage and use content management systems.

18. Ability to collaborate with subject-matter experts.

19. Ability to apply audience analysis to the design and writing of documents.

20. Ability to write government documents.

21. Ability to write clear and concise documentation about medical practices for nontechnical audiences such as patients and their families.

22. Ability to create and maintain Web sites with static pages (no scripting, programming, or database interactivity).

23. Ability to create and maintain Web sites with pages requiring scripting, programming, or database interactivity.

24. Ability to assess and learn new technology.

25. Ability to build advanced multimedia systems to communicate technical and workplace information.

26. Ability to use online environments for the learning of content information in both educational and professional contexts.

APPENDIX E. *Continued*

Is there anything else that you would like to add to this competency group?

3. Design, Innovation and Execution-Related Competencies—Part 2

27. Ability to use page design to attractively present content.

28. Ability to collaborate with co-workers.

29. Ability to address communication conflicts in small groups arising from participant diversity.

30. Ability to schedule a budget for various projects.

31. Ability to design an effective interface integrating color, sound, and graphics.

32. Ability to design and produce various professional communication products such as progress reports, sets of directions, and style sheets.

33. Ability to write memos, letters, email and other practical communication.

34. Ability to write and field-test a technical manual.

35. Ability to develop production-quality documents.

36. Ability to create instructional design products.

37. Ability to use technology that may be outdated due to financial constraints.

Is there anything else that you would like to add to this competency group?

4. Research-Related Competencies

38. Ability to develop research questions and to collect data through primary research.

39. Ability to identify evidence from surveys or descriptive statistics and analyze its relevance and its validity.

40. Ability to conduct lab or field usability tests on print or online documentation and other products requiring human-computer interaction.

41. Ability to analyze and evaluate hardware.

42. Ability to critique the work of other technical communicators.

43. Ability to critique his or her own work.

44. Ability to conduct contextual inquiry (on-site interviews and observations for user and task analysis).

45. Ability to use skills of argument identification, analysis, and evaluation.

46. Ability to conduct informational and problem-solving interviews.

47. Ability to use design methodology to identify client's needs and project constraints.

48. Ability to conduct secondary research through conventional printed texts as well as electronic texts, including CD-ROM and Internet.

APPENDIX E. *Continued*

Is there anything else that you would like to add to this competency group?

5. Tools Competencies

49. Ability to use PowerPoint and other presentation software.

50. Ability to use tools related to applied and basic communication research.

51. Ability to conduct computerized literature searches.

52. Ability to use desktop-publishing software.

53. Ability to use multimedia-design software.

54. Ability to use Web-design software.

55. Ability to conduct film camera and darkroom work.

56. Ability to use a digital camera.

57. Ability to operate video-capture technologies.

58. Ability to operate word-processing and document-design programs.

59. Ability to operate graphic and drawing packages.

60. Ability to use Microsoft Project.

61. Ability to use commercial software packages such as database management and spreadsheet programs.

62. Ability to use software programs to analyze qualitative/quantitative data.

63. Ability to use FrameMaker.

Is there anything else that you would like to add to this competency group?

If you would like to meet with Dr. Dayton at the STC's 51st Annual Conference in Baltimore May 9–12 to discuss your response in an informational interview lasting 15–30 minutes, please enter your name and email address here:

When we are done with the analysis of the data, we will post the survey results at this Web address: http://www.oakhillfarmalpacas.com/Manager's%20Survey/results_page.htm

If you indicated that you would like to meet with Dr. Dayton, we will be contacting you soon. Thank you for your cooperation and help!