Teaching Technical Writing at the High School Level in Minnesota

by

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Most of us probably did not become English teachers because we wanted to teach technical writing. A combination of teaching and practicing creative writing and literary analysis is more likely to have been our original motivation for majoring in English. In fact, to some, technical writing and literature use language to such different purposes that the two belong in separate curricula, English as distinct from communication studies, for example.

While it is not my aim to demonstrate the commonalities of technical writing and other kinds of writing traditionally taught in English curricula—though all types of good writing share the requirements of precision, clarity, and critical perception, to name just a few common qualities—I do wish to argue for the incorporation of some technical writing instruction into the English high school writing curriculum.

This article offers and examines answers to three questions: 1. Is technical writing taught at the high school level in Minnesota? 2. If technical writing is not currently being taught, should it be? 3. If students would benefit from increased instruction in technical writing, what is the most effective way of incorporating technical writing into the secondary English curriculum?

Report on survey research

To discover the status of technical writing instruction in Minnesota high schools I conducted a survey. The main objective of the survey was to determine the extent to which technical writing is currently being taught, who is teaching it, and to which students.

A survey questionnaire was sent to the English department chairs of 484 Minnesota high schools, both private and public. A total of 122 usable completed surveys were received, for a response rate of 25%. (See Appendix A for a copy of the questionnaire.)

Based on these survey findings, technical writing is being offered in some Minnesota high schools, but to a limited extent. Six survey respondents said a course titled Technical Writing is offered at their school; 19 indicated that a course in business writing is offered, and 16 responded that their school offers a specialized writing course similar to technical writing. (Respondents identified these similar courses with titles such as Word Information Processing, Practical Writing, and Vocational English.) The majority of these technical writing, business writing, and related writing courses are one

semester long. Respondents also indicated that these courses are most frequently required for "vocational" or "general" track students; they are not designed for the college bound or honors students.

Along with seeking information regarding courses dedicated to technical writing, the survey study also sought to determine the extent to which elements of technical writing were being incorporated into more general writing courses. Figure 1 represents a list of selected technical writing elements that survey respondents were asked to choose from, indicating those that were currently being taught in any writing courses in their schools with which the respondents were familiar (see the "percent teaching" column). Respondents were also asked to indicate the grade level at which such instruction received the most attention (see Figure 1 "most frequent level" column).

Figure 1: Percentage of survey respondents who identified designated elements of technical writing as being taught in writing classes in their schools, and level at which those elements are most frequently taught (n = 122).

T W Element	Percent teaching	Most frequent level
Business letters	75.4	11 & 12
Audience adaptation	71.2	9-12
Collaborative writing	44.3	11 & 12
Procedures & instructions	40.2	11 & 12
Other non-literary reports	30.3	11 & 12
How to use graphics	30.3	11 & 12
Document design/page layout	30.3	11 & 12
Technical oral presentations	26.2	11 & 12
Evaluation reports	22.1	12
Memos	21.3	12
Mechanism descriptions	16.4	11 & 12
Meeting reports	13.1	11 & 12
Proposals	10.7	10, 11 & 12
Progress reports	6.6	11 & 12
Case studies	5.7	11 & 12
Technical bulletins	4.1	11 & 12
Budget reports	4.1	11 & 12
Equipment justifications	2.5	10
Other	1.6	11 & 12

These 18 elements (plus an "other" category) were listed on the questionnaire because they represent a manageable list of the topics currently receiving the most attention in textbooks and published scholarship on technical communication. It is not, however, a list of elements uniquely representing technical writing. For example, audience adaptation and collaborative

writing (both of which receive a significant amount of instruction, according to the respondents; see Figure 1) are writing approaches applicable to various other types of discourse as well as technical writing. Furthermore, it must be clarified that according to survey respondents a number of these elements are taught in writing courses outside of the English department, business departments in particular.

While seeking information regarding technical writing instruction, the survey also attempted to determine what other kinds of writing are being taught in Minnesota high school English curricula. Figure 2 represents five categories of types of writing to which respondents were asked to assign a percentage indicating the relative portion of instruction time devoted to each writing type in their school's curriculum. The percentages in Figure 2 represent the mean frequency counts in each category. Whereas the first four categories (exposition, creative writing, persuasion, and self-expression) were accompanied by parenthetical examples, as shown in figure 2, the "other" category was open-ended; a blank line was provided for the respondent to fill in. The final item in Figure 2 includes in parentheses some of the most frequent examples that respondents provided in that category.

According to survey respondents, exposition receives the most instruction time (mean = 41.3%) . Reaching meaningful conclusions from this is problematic, however, for several reasons, primarily because exposition is such an elastic category. Even so, as the examples of exposition (i.e., lab reports, feasibility studies, diagnoses, research papers, news articles, analysis of literature, proposed problem solutions) provided in the survey question are intended to indicate, there are important similarities in forms of expository writing which might at first seem disparate. That is to say, literary analysis can be viewed as a very specialized type of technical writing.

Figure 2: Breakdown of time spent teaching designated types of writing in respondent's curriculum

Type of writing	Mean percent of time
Exposition (e.g., literary analysis, lab reports, research papers)	41.3
Creative (e.g., stories, plays, poems)	20.9
Persuasion (e.g., advertising, speeches, editorials)	18.3
Self-expression (e.g., journals, diaries, manifestos)	17.0
Other (e.g., resumes, job correspondence, mechanics)	16.7

The survey also asked respondents to list titles of courses they teach and to identify the types of writing they assign. The respondents provided more than 60 courses titles, ranging from unique ones like "Intensive Writing" and "English/Social Projects" to traditional ones like "Composition." The single most frequently listed course was an honors English writing course of some

kind (n = 48), with various titles, such as College Prep English, Advanced Writing, Honors English, and the like. The next most frequently listed titles belong in the creative writing course category (n = 28), with titles like Creative Writing, Short Story, and Poetry. Courses with "Composition" or "Communication" in the title were listed next most often (n = 19).

For the survey item which asked respondents to list the types of writing they assigned, many listed the same types that were given as samples in the survey question itself. Survey question number 4 read: "What types of writing do you assign (e.g. narrative, analysis of literature, reports on content material, etc.)?" Respondents listed analysis of literature most frequently (n = 83), then narrative (n = 68), and reports on content (n = 26). Other types of writing frequently listed for this survey item include research writing (n = 52), creative writing (n = 48), and journals (n = 33).

The purpose of this particular survey question was to determine whether technical writing was likely to receive much interest or attention from the individual respondent given the type of writing he or she typically teaches. The fact that a high number of these respondents teach honors courses and thus most likely do not also teach vocational track students suggests these respondents would not automatically view technical writing of primary importance. Nonetheless, a noteworthy number of them said they thought technical writing in high school should be increased.

Figure 3 represents respondents' views on three related issues: their awareness of plans to increase technical writing instruction in their curricula (Figure 3, part A); their belief that technical writing instruction should be increased (Figure 3, part B); and their choice of the best method by which to accomplish an increase in technical writing instruction (Figure 3, part C). Although a relatively high percentage of respondents were uncertain whether technical writing warrants increased instruction (35.2 %), an impressive number said yes, such instruction should be increased (41.0 %). The question of whether these respondents see themselves as being the teachers responsible for providing such instruction, however, remains unaddressed. Even so, a noteworthy number of survey respondents (28.7%) did choose incorporating technical writing into existing courses (perhaps they had in mind their own courses) as the most feasible way to increase instruction.

Reasons technical writing is not frequently taught at the high school level

A number of arguments can be made against teaching technical writing at the high school level: there is not enough room in the curriculum; there is not enough available teaching material appropriate to the secondary level; or technical writing is not the English teacher's responsibility, and furthermore, English teachers are not qualified to teach it.

Some of these arguments are stronger than others. The weakest arguments hinge on time and space in the curriculum. Expanding the current curricula to include a course dedicated to technical writing is not completely infeasible, but neither is it the only possible approach. Adjusting existing courses to accommodate more of the technical writing elements listed in Figure 1 would not be unduly difficult or problematic.

Figure 3: Responses regarding increasing teaching of technical writing at high school level

Part A: Respondents' awareness of plans to increase the teaching of technical writing in their curricula in the near future

No plans	92	75.4 %
Yes, there are plans	21	17.2 %
Did not answer	9	7.4 %

Part B: Respondents' belief that the teaching of technical writing *should* be increased

Yes, it should	50	41.0 %
Uncertain	43	35.2 %
No, it should not	23	18.9 %
Did not answer	6	4.9 %

Part C: Respondents' choice of best manner in which to increase technical writing instruction

Did not answer	65	53.3%
Incorporate elements of technical writing into existing courses	35	28.7 %
Add a course in technical writing	20	16.4 %
Other method	2	01.6 %

The argument concerning availability of material is not as easy to discount. A review of secondary English textbooks (primarily for grades 11 and 12) published by Harcourt Brace, Heath, and Prentice Hall revealed that none included a section on technical writing. Each did include a unit on the business letter, but the focus tended to be on format rather than rhetorical stance. For example, in one text one-third of a twenty-page chapter on the business letter was devoted to placement of the parts of the letter (i. e., salutation, complementary close, signature, and so on).

Even so, material, ideas, and approaches are available from other sources. Ten percent of the survey respondents indicated that faculty at their schools do corporate or community training and consulting in technical and/or business writing; these individuals represent a potential source of insights and first hand examples of on-the-job writing. Furthermore, Jerine Berndt discovered in her survey research of two hundred manufacturing employers in the Twin Cities Metropolitan area that a surprisingly high number of managers volunteered to serve as resources on technical writing, some offering to visit schools and talk to students and teachers about the technical writing they and their coworkers do. Scholarly materials are also becoming more available. A recent issue of *English Journal* (February 1992) devoted a section to teaching technical writing in high school; articles were

written by high school English teachers from Minnetonka, Minnesota, and Houston, Texas. Another useful source for beginning technical writing teachers is *Teaching Technical Writing in the Secondary School* by B. E. Fearing and J. Allen, available from NCTE/ERIC.

But there are additional arguments against teaching technical writing in English classes which are more philosophical than situational and thus not easily dismissed. The issue of responsibility is an example. Persuasive arguments can be made that teaching corporate communication survival skills is not the English teacher's mission. In the first place, some believe that English teachers ought to be teaching that which no one else is equipped or inclined to teach, an appreciation of literature or creative writing, for example. One can assert that those who want to climb the corporate ladder will figure out a way on their own to obtain the communication skills to do so, and furthermore, this kind of communication training is the financial obligation of companies, not tax-paid high school English teachers.

On another level the issue of responsibility is also not clear cut because the distinction between technical and business writing is not obvious. Whereas 49 of the 122 survey respondents provided no answer to a question asking whether their curricula defined technical and business writing differently, 56.2% of those answering the question said that there is no significant difference between the two. Some of these respondents may represent that portion of English teachers who believe technical writing to be a part of the business teacher's domain.

The issue of the instructor's qualifications to teach technical writing warrants examination. Survey responses to a question regarding the educational background of teachers of technical writing indicated that only six respondents (from the total of 122) identified teachers of technical writing in their schools as having taken coursework in technical writing. Even so, a remedy for this lack of educational training is not difficult to come by; graduate level courses in technical writing are currently offered at a number of colleges and universities within the Twin Cities area, as well as outside of it (Mankato State University, for example).

The most serious consequence of high school English teachers' lack of coursework in technical writing is not the fact that they have inadequate preparation and confidence in doing technical writing. After all, English teachers all produce technical writing themselves: budget justifications, multi-media equipment descriptions and requests, course proposals, student and colleague evaluations, conference reports, word processing program directions for their students, professional development plans and reports, and the like. All English teachers know enough about this sort of technical writing to produce it because doing so is a professional requirement. Instead, the more far-reaching consequence of the typical high school teacher's lack of training in technical writing is the failure to appreciate its intellectual challenge. The practical value of technical writing is not often refuted. Indeed, the essential practicality of technical writing is the basis of some high school English teachers' disdain for it.

Kinds of writing high school English teachers enjoy teaching

A review of selected NCTE *English Journal* articles provides some insight into the kinds of writing instruction that excite high school English teachers. One teacher discusses how she works toward "empowering students to use their own voices, to plumb their lives for stories, poems, essays, to engage them in a dialogue with their peers about their writing (Christenson, 14). Another writing teacher asserts that "repeated, prolonged translation of experience nourished the power of a growing writer" (Sullivan, 55). And a third teacher believes that "the most important thing you can teach your students about letter writing—any writing—is to write in a way that reflects their personalities, their ideas, their visions, their uniqueness" (Mayer, 63). Clearly, teaching writing as a means of self-expression, an outlet for one's feelings, a way of finding one's own voice, and a means to empowerment is exciting, rewarding, and truly important for both instructor and student. As I shall show shortly, this view is not incompatible with teaching technical writing.

English teachers, like all teachers to some degree, like to teach what they have been taught. William Zinsser points out that for many English teachers "their real subject is literature—not how to write, but how to read; how to extract meaning from a written text. . . . Inevitably, much of the writing that English teachers assign is based on literature—on what somebody else has already written—and therefore has little reality" (13). My survey findings support Zinsser's assertion regarding English teachers' preference to teach literary analysis: 83 of the 122 respondents listed literary analysis as a type of writing they taught. Teaching literary analysis is not in itself a mistake; but when we overemphasize it at the high school level we promote a "literary style" of writing that some students are intimidated by, a style many students do not see the relevance of to their own areas of interest and expertise.

It is important to note that most of the arguments against teaching technical writing in the high school which have been discussed here represent difficulties faced—not reasoned proofs demonstrating the lack of need or value in teaching technical writing to high school students. Furthermore, many of the difficulties connected with teaching technical writing that have been discussed here represent a teacher-centered approach to curriculum development—that is, relating to teachers' preferences, qualifications and, in some cases, biases—rather than a student-centered approach.

Reasons for teaching technical writing in high school

Student-centered arguments in favor of teaching technical writing at the high school level are plentiful and varied. A feature characterizing all of the best arguments in favor of technical writing instruction in high school is not the one related to survival skills—although the practicality of technical writing is not to be dismissed lightly—but rather that students stand to benefit most from the critical thinking strategies demanded by technical writing. For example, even a relatively simple technical report calls on the writer's powers of accurate and close observation, classification, analysis,

and synthesis. Furthermore, the writer of a technical document is seldom able to confine himself or herself strictly to interaction with a single text, as the writer of literary analysis may; the author of technical writing must know the audience, consider the context, and deal with both primary and secondary data. The student writers of technical assignments may not be encouraged to convey their personal feelings or emotional responses, but they are usually expected to express their opinions and beliefs about the advantages, validity, merits, and ramifications of their own findings and observations, as well as those of their peers. Such reasoned and substantiated expression offers the writer significant opportunity for self-knowledge, empowerment, and creativity.

Hesitancy among high school English teachers to commit to teaching elements of technical writing may be grounded in a too-limited definition of what constitutes technical writing. Definitions of technical writing provided by some of the survey respondents illustrate the lack of consensus about definition and the limited view of technical writing held by some high school English teachers. Respondents provided the following definitions: " technical writing is manuals and instructions for assembly," "technical writing includes reports and instructions," "technical writing involves technology," "technical writing defines some technical aspect of equipment," "technical writing is for science and engineering areas," " technical writing is the explanation of how to use products," "technical writing is aimed at high-tech industry . . . ."

While these definitions are not misguided or inaccurate, they are extremely limited (a consequence of the fact the survey did not provide much space for writing a definition, perhaps). Furthermore, these definitions, with their emphasis on specialization, overlook the more general applicability of technical writing.

The wide range of situations, contexts, and audiences connected with technical writing—both in and outside of academia—justify teaching it to high school students to help them prepare for college as well as for the workplace. But an even more compelling reason to include technical writing assignments is motivation; technical writing provides an avenue for students to explore their own aptitudes. People of high school age need an opportunity to experience writing as a mode of learning—not just about themselves and their feelings, as expressive and narrative writing allow them to do, and not just about other people's texts, as literary analysis enables them to do, but also about the material world around them.

If writing in high school English courses is limited to personal experience narratives and literary analysis, the student will not be encouraged to develop written problem solving skills. College instructors and employers expect students and employees to organize and analyze data and then reason inductively to a conclusion. This conclusion is to be presented with varying degrees of persuasiveness or objectivity, depending on the context. Thus by doing some technical writing students practice using analytical

skills, problem solving strategies, and organizational techniques which are necessary to master, interpret, and convey information to a reader who has a need to know.

The teaching of various kinds of writing calls for attention to the role of the audience. But a key difference between the audience's role in imaginative writing, personal narrative, or literary analysis that distinguishes these from technical writing is the element of accountability. Readers of technical writing typically need the information for their own purposes. Often there is a good deal at stake when they turn to a technical document, whether it be society's general welfare, employee safety, environmental impact, or company profits. Another reason for teaching technical writing is to offset a possible overemphasis on the process approach. For example, teaching various invention strategies assists students in finding something to say. However, in both academic and work world writing, inventing content or material is not the main task. More important and challenging to the writer is the selection, organization, and effective presentation of data, findings, observation, and the like. In the so-called college "content" courses, the content is not *found* or *invented* but arranged. Furthermore, the arrangement is not expected to reflect personal preference or the writer's expression of an inner self. Therefore, technical writing affords an opportunity for teaching students some common forms and formats for meeting certain audience expectations.

Thomas Dukes points out that many technical writing texts have been criticized for their tendency to be quite product oriented, with their samples of forms and formats and bulletted lists of do's and don'ts. But Dukes goes on to emphasize that there is a benefit in learning some formulas; they provide guidance that—if presented carefully—need not become prescriptive. In fact, it is not uncommon for college professors in the content disciplines to require students to follow rather rigid forms for lab reports and term projects, for example. Furthermore, a good deal of corporate writing is formulaic and form oriented. Using and reusing "boilerplate writing" is considered economically efficient in business; thus students need to be taught to see its benefits and taught how to conform to company practice with critical awareness.

High school students will benefit from practice in what Janice Redish describes as "reading and writing to learn to do" (223). Redish describes the typical textbook reading assignment followed by a test and/or written essay assignment as reading and writing to learn. However, Redish asserts, it is only in school that we read simply to learn, whereas in daily life most people read to learn how to do something. Redish points out that "the documents that are critical to people in the course of their lives are action documents" (224), documents which provide the necessary directions for processes and activities the readers must complete successfully.

Finally, a strong student-centered reason for teaching technical writing in high school is that its qualities of "clarity, conciseness, precision, and logic"

(Macintosh, 28) are applicable to all types and contexts of writing. W. Earl Britton argues the value of teaching technical writing because it "requires the exploitation of all the rhetorical devices of focus, logical partitioning and classification, and illuminating sequence, to name a few of the features appropriate to all writing" (73). Furthermore, as Carolyn Miller argues, training in technical writing becomes a kind of "enculturation" into a community (617). That community is one to which virtually all high school students seek acceptance—whether they are college, vocational school, or job bound. All high school students are in the process of entering the discourse communities of those who write about their work (which includes academic work as well).

How to teach technical writing in high school

Two methods of expanding the high school English curriculum to include technical writing are worth consideration: offer a course in technical writing, or incorporate technical writing into courses which have a more general focus. Some combination of these two is also potentially workable.

A course focusing strictly on technical writing would have the advantage of offering sustained study and practice but would risk the disadvantage of implied selectivity. It is all too likely that at the high school level such a course would be perceived as targetting the skills-deficient student rather than the academically advanced. This need not be the case, however; an inspiring description of a high school technical writing course is given by Marvin Hoffman, who explains that his course is not intended to train students for the profession of technical writing. Such "specialization is inappropriate for young people just beginning to explore broader avenues" (59). Hoffman goes on to describe the goals of his course, which needed to be broad, "to reach out for the virtues common to writing in any profession, whether the result was a report of an NCAA championship basketball game, a case history of a teenager suffering from bulimia, or a naturalist's account of the life of a termite community"(59).

The other method of adding technical writing to the high school English curriculum, that of incorporating elements of technical writing into other courses, would require selecting, at the very least, particular assignments which foreground such characteristics as audience adaptation, collaboration, rhetorical complexity, and visual effectiveness. Two assignments which would provide opportunity to accomplish these objectives are the resume and letter of application package, and a proposal. These assignments are pertinent regardless of the student's academic track. Indeed some high school instructors already include these assignments.

Hardly anyone would wish to argue against teaching students to write resumes and application letters; nonetheless, there are stronger arguments for doing so than straightforward practicality. Of course, everyone who wishes to acquire employment must consider how best to call upon his or her communication skills. However, the resume and application letter

assignment offer the added opportunity of satisfying requirements such as audience adaptation, selection of most relevant information, accuracy and conciseness in presentation, demonstration of knowledge of conventional forms, and format which achieves visual appeal, to name just the main features.

The other type of technical writing assignment that would benefit all high school students is a proposal—which need not revolve around a technological subject. A proposal represents a writing activity which enables students to sharpen their awareness of both process and product requirements. The experience can be enhanced by allowing students to work in writing groups to produce a more extensive project than would be feasible for a student individually. By producing a single document which has multiple authors, students have an opportunity to mature through collaborating with their peers. Students engage in active learning because they are encouraged to consider multiple perspectives. This exploration is accompanied by reduced reliance on the knowledge and authority of the teacher, thus transferring responsibility for and control of learning to the students. By taking part in this process of intellectual negotiation and collective decision-making, students prepare themselves for the collaboration that characterizes much of the activity in the workplace and increasingly has come to characterize some college course work. Even so, providing practice for students in the type of collaborative writing they will be expected to do in the future is not the most pedagogically sound of the arguments in favor of it. An even better argument for collaborative writing is that it assists students in coming to view written texts as "interpretive events constructed by communities of readers and writers out of their shared assumptions and on-going negotiations over discursive practices" (Lay and Karis, 123), according to collaboration researchers.

Collaboration in some form is likely to characterize the proposal even if students end up producing single-author documents. Each writer will be called upon to do some form of primary research, such as interviewing, which constitutes a form of collaboration. In addition, the proposal calling for both secondary and primary research allows the writers an opportunity to incorporate visuals from the beginning stages of the writing process. John Harris points out that English teachers tend to "think of graphics as 'aids' or even worse as decorative illustrations" (17.1). We need to keep in mind that visuals—tables, formulas, x-rays, tracings, photographs, blueprints, and the like—are integral to numerous and various disciplines. It is a disservice to students to deny them the opportunity to design, produce, and integrate their own visuals with their written texts.

Finally, the main advantage of the proposal is that it requires audience awareness. If the proposals address a real problem of significance to the writer (e. g., community issues, school policies, regulations or practices associated with their part-time student jobs), then these proposals will be directed to actual audiences. Reporting on a six-year study of writing curricula, Richard Larson says that a major omission in current writing

courses is the opportunity to write to a real audience, "a reader interested in the writer's subject and whose respect the writer needs to earn" (NCTE *Council Chronicle*, April, 1992, 9).

Furthermore, proposals all follow a format convention. These formats are not identical, but there are certain elements common to virtually all proposals: statement of the problem, background, identification of scope, needs statement, feasibility, qualification of personnel, costs, recommendations, and so on. Learning to shape their own findings, interpretations, and recommendations to a pre-established format can be valuable practice for student writers at a variety of levels.

Real world considerations become more apparent to the students as they come face to face with the fact that proposals elicit the desired action when they answer a perceived need of the person or entity being addressed. Students learn that it is not enough to identify a problem (especially if it is a problem with limited consequences or one which affects a disenfranchised group) and then recommend a solution. Students come to realize they must present their solution in a rhetorically persuasive manner, illustrating its feasibility as well as its advantages not only to the requester but also to those whose response and assistance is being solicited.

Conclusion

The three questions with which this article began can be answered as follows. Yes, technical writing is being taught at the high school level in Minnesota, but to a limited extent. In a handful of schools technical writing instruction is provided in courses specifically devoted to that purpose, but in a greater number of instances selected elements of technical writing are being incorporated into more general writing courses, not all of which are within English departments.

The answer to the second question regarding the need for technical writing instruction at the high school level in Minnesota is also affirmative. Of the survey respondents, 41.0% indicated they believed such instruction should be increased (35.2% were uncertain, 18.9% were opposed, and 4.9% did not answer the question).

There are a few reasons not to teach technical writing in the high school, namely that there is not enough room in the curriculum nor enough good specialized instructionmaterial available, and that high school English teachers are neither qualified nor particularly inclined toward teaching technical writing. It should be noted that these difficulties are not only teacher-centered rather than student-centered, but they can also be overcome with sufficient motivation.

The students' benefits from receiving instruction in technical writing are both numerous and varied. Technical writing assignments enable students to develop their own interests and aptitudes while learning how to convey useful information to readers who hold the writer accountable. The careful

observation and recording of empirical data, thoughtful interpretation and analysis, commitment to clarity and accuracy, and attention to conventional forms that characterize good technical writing also characterize the best writing of any type or genre. Thus training and practice in technical writing will benefit both the students destined for hourly wage employment directly after high school and the college bound honors students as well.

The third question forming a basis for the discussion addresses the method of how best to incorporate technical writing instruction into existing English curricula. Designing an effective curriculum which includes increased technical writing instruction must consider the context: students' needs and plans, teachers' training and areas of interest, and existing curriculum emphases. The technical writing instruction continuum might stretch from assigning a few specialized assignments, such as a proposal, in English classes and in some of the content courses as well, to devoting semester, or even year-long, courses exclusively to technical writing. The opportunities for enriched curriculum designs in this area are diverse and exciting.

But two recommendations are especially important. Technical writing instruction should be offered—even required—of *all* upper level high school students because job bound, vocational track, and honors students stand to benefit equally, though perhaps in different ways. And technical writing should not be taught merely as a survival skills course, with the limited status of practical techniques like map-reading. But rather, technical writing must be taught as a rigorous intellectual endeavor, a rhetorically diverse challenge, and a personally satisfying opportunity for creativity.

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Appendix A: Copy of questionnaire sent to English Department Chairs in Minnesota high schools

Survey to Discover the Status of Technical Writing Instruction at the High School Level in Minnesota

1. Which of the following elements of technical writing are taught in writing classes at your school? Check all that apply and circle the grade level(s) at which each is taught.

_____(1) Audience adaptation	9	10	11	12
_____(2) Collaborative (team) writing	9	10	11	12
_____(3) Case studies tailored to organizational settings	9	10	11	12
_____(4) Business letters	9	10	11	12
_____(5) Memoranda	9	10	11	12
_____(6) Proposals	9	10	11	12
_____(7) Progress reports	9	10	11	12
_____(8) Meeting reports (or minutes)	9	10	11	12
_____(9) Evaluation reports	9	10	11	12
_____(10) Budget reports	9	10	11	12
_____(11) Other non-literary reports	9	10	11	12
_____(12) Mechanism descriptions	9	10	11	12
_____(13) Procedures or instructions	9	10	11	12
_____(14) Technical bulletins	9	10	11	12
_____(15) Equipment justifications	9	10	11	12
_____(16) Oral presentations of technical and scientific information	9	10	11	12
_____(17) How to use graphics and other visuals	9	10	11	12
_____(18) Instruction in document design (page layout)	9	10	11	12
_____(19) Other (specify):_____	9	10	11	12

2. Approximately what percentage of time is spent on the following types of writing instruction in the writing curriculum at your school? Total of all percentages should be 100%.

_____% (1) Self-expression (journals, diaries, manifestos, declarations)
_____% (2) Creative writing (stories, plays, poems, songs)
_____% (3) Persuasion (advertising, speeches, editorials)
_____% (4) Exposition (lab reports, feasibility studies, diagnoses, research papers, news articles, analysis of literature, proposed problem solutions)
_____% (5) Other (specify)_____

3. What are the titles of the writing courses you teach? _____
_____
_____
_____

4. What types of writing do you assign (e.g. narrative, analyses of literature, reports on content material, etc.? _____
_____
_____

5. Does your secondary school offer courses with the following titles? (Check all that apply.)

(1) Technical Writing ___
Brief summary of topics covered _____
_____
_____

Length of course (i. e. quarter, semester, year, etc.) _____
Number of years this course has been offered _____

(2) Business Writing ___
Brief summary of topics covered _____
_____
_____

Length of course (i. e. quarter, semester, year, etc.) _____
Number of years this course has been offered ___

(3) Other (of the same type as listed above) ___
Exact course title at your school _____
Length of course _____
Number of years course has been offered ___

6. Complete this question only if you checked one or more of the categories in question 5 above. To your knowledge have the faculty who teach the specialized courses listed in the previous question taken coursework in the teaching of technical and/or business writing? (Check all that apply)

_____(1) Have taken technical writing coursework
_____(2) Have taken business writing coursework
_____(3) Other (please specify type of coursework) _____

7. If either technical writing or business writing is offered at your school, what is the teacher's area of specialty?

_____(1) Neither course is offered
_____(2) English
_____(3) Language Arts

_____(4) Speech
_____(5) Business
_____(6) Other
(specify): _____

8. Do you (or does your department) define technical writing and business writing differently?
(1) Yes ___ Please explain the difference between the two as you see it _____
_____

(2) No, there is no significant difference ___

9. Are technical writing courses required of any students?
_____(1) yes _____(2) no

If you answered "Yes"above, which students take the technical writing courses?
_____(1) College preparation track
_____(2) Vocational track (e.g. industrial or mechanical arts)
_____(3) General
_____(4) Other (specify) _____

10. Are business writing courses required of any students ?
_____(1) Yes _____(2) No

If you answered "Yes"above, which students take the business writing courses?
_____(1) College preparation track
_____(2) Vocational track (e.g. secretarial or business school)
_____(3) General
_____(4) Other (specify) _____

11. Are there plans to increase the current amount of technical writing instruction at your school in the near future?
____(1) Yes _____(2) No

12. Do you believe instruction in technical writing should be increased (or introduced if not currently included) in your school?
_____(1) Yes _____(2) No _____(3) Uncertain

13. If you answered yes to the previous question, select the one you consider to be the most feasible way of increasing technical writing instruction at your school.

_____(1) Add a course in technical writing
_____(2) Incorporate elements of technical writing to a greater degree in current writing courses
_____(3) Other (specify) _____

14. Do faculty at your school do corporate or community training and consulting in the area of technical and/or business writing ?

    _____(1) Yes _____(2) No

15. Are your students aware of technical writing as a career field which requires an undergraduate degree in Technical Communication or Technical Writing ?

    _____(1) Yes _____(2) No

16. Would you be interested in receiving information regarding Mankato State University's graduate coursework in the teaching of technical writing and editing ?

    _____(1) Yes. Please provide name and address

    _____

    _____(2) No

    _____

    _____

17. How many students are enrolled in the school where you teach ? (Provide number) ____

18. What grade levels are included in your secondary school ? (Check one) _____(1) grades 9-12 _____(2) grades 10-12 _____(3) other please specify _____

19. In what town or city is your school located ?_____

20. How many English teachers in your school ?_____

21. What is the average number of years of experience teaching English of your faculty ?_____

If you would like a copy of the findings of this survey, please provide your name and address:_____

_____

_____