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ABSTRACT

A study examined the assessment of instructional documents written by undergraduate engineering students in a 300-level technical writing course. The six documents were independently ranked by nine readers--three writing faculty, three engineering faculty, and three technical writing professionals. Besides ranking the documents, the nine readers were also asked to designate levels of success, to write "in-text" comments and, finally, to provide post-text narratives, summarizing each paper's strengths and weaknesses. The greatest consistency across all six papers emerged among the writing faculty. Except for Document 1, all of their rankings were either identical or within one level. For the engineering faculty, only Document 4 was ranked within one level, and for the technical communicators, none of the six documents among the three readers was ranked the same or within one level. Of the three stakeholder communities, only writing faculty undergo long-term socialization and enculturation within their discourse community, and writing assessment is central to their professional day-to-day lives. In-text comments (n=1035) were coded and sorted into five major categories that emerged: content, structure, format, style, and graphics. For the post-text narratives, the same five assessment categories emerged as central. Readers in all three groups placed a high value on accurate, accessible content appropriately targeted for the specified audience, along with a coherent, logical document structure, effective document design, an appropriate and clean style, and effective integration of graphic elements. Lists 5 references. (NKA)

ASSESSING INSTRUCTIONAL DOCUMENTS: A COMPARISON OF WRITING FACULTY, ENGINEERING FACULTY AND WORKPLACE TECHNICAL COMMUNICATOR PRACTICES

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Introduction

This presentation focuses on the assessment of instructional documents written by undergraduate engineering students in a 300-level technical writing course. The documents were independently ranked by nine readers—three writing faculty, three engineering faculty, and three technical writing professionals. Besides ranking the documents, the nine readers were also asked to designate levels of success, to write in-text comments and, finally, to provide post-text narratives, summarizing each paper's strengths and weaknesses. The purpose here was to explore the assessment perspectives of three stakeholder communities that intersect and overlap, and yet have differing professional and disciplinary cultures. I was interested to see whether consensus would emerge both within groups and between groups.

I must say that I began this study with certain expectations. I thought that I would certainly see consistent patterns of assessment, depending on the disciplinary community of the particular readers. Instead, I was surprised to see a high level of inconsistency among the engineering faculty and the workplace professionals in regard to ranking. However, a more consistent pattern emerged within these groups and, indeed, among all nine readers in the success level designations as well as in the in-text and post-text comments.

Assessment Theory

Before further discussing the study, I want to touch briefly on the theoretical underpinnings driving writing assessment today. Historically, writing assessment has not experienced as rich a development as research in composition theory and pedagogy. Clearly, however, the move from indirect to direct assessment has been pervasive. Traditional writing assessment practices, which often centered on indirect assessment, were based on a positivist epistemology that assumed a reality, in the words of Guba, "driven by immutable natural laws" (Guba, 1990, p. 19). The assumption was that student writing ability is a fixed, consistent, and acontextual trait.

With research by Freedman (1984), White (1985), Williamson and Huot (1993), Huot (1996), and others, assessment theory has shifted to reflect our current understanding of writing as a constructivist, situated act. Specifically, the shift is to assessment procedures that are 1) site based; 2) locally controlled; 3) context sensitive, 4) rhetorically based, and 5) accessible (Huot, 1996). The approach in this study is grounded in such an understanding of assessment.

Method

The Papers

Six papers were selected based on similar document length, 5 to 7 pages each, and similar subject matter—software or hardware procedural documentation. Specifically, the six papers focused on the following procedures: 1) building a motor control circuit for a robot, 2) installing al hard drive, 3) using an oscilloscope; 4) using Visual C++, 5) making an animated movie using Flash software, and 6) upgrading RAM on a PC.

But why instructional documents? To begin with, as a genre instructional documents are central to the field of technical communication, and, consequently, are important to all three stakeholder groups that assessed them. In the work environment outside the academy, evaluation focuses on the performance of complex and meaningful tasks that contribute to the well-being of the organization and to the larger community. This was precisely the aim of the instructional documents written by engineering students—to aid target readers to perform meaningful tasks related to real-world contexts.

The Audience

As to the audience and purpose of the documents, the assignment for the student writers read as follows: "Assume that your readers are college peers and that they need to learn the procedure covered in your instructions, but they know almost nothing about the device and its operation or the procedure they must learn to perform."

Instructions for Readers

This, then, was the purpose and the audience for the students' writing task. Now I'd like to shift my discussion to the method underlying the assessment of the six instructional documents. I began by securing three writing faculty, three engineering faculty, and three workplace technical communicators to assess the papers.

I did not provide a specific rubric to the readers because that would necessarily impose my set of criteria and values on the papers. As Huot (1993) notes, a predetermined rubric increases the chance of consensus among readers, but this consensus can come at a price of less authentic assessment. Instead, I asked the readers to consider the papers from their own professional perspectives.

The Readers

A few more words about the readers: Two of the three writing faculty have master's degrees and one has a Ph.D., each with over 15 years of teaching experience. All three engineering faculty have Ph.D.s, each with over 20 years' of teaching experience. Of the three workplace professionals, one is a technical writer with a bachelor's degree and 8 years' experience, the second is a usability specialist with a master's degree and 6 years' experience; and the third is a documentation manager with a master's degree and 18 years' experience. Two of the writing faculty are female as is one of the technical professionals. All three engineering faculty are male.

Findings

I'd now like to speak to my findings—that is, 1) the ranking outcomes, 2) the level of success designations, 3) the extent and nature of in-text comments, and 4) the nature of the post-text narratives made by the nine readers.

Readers' Ranking of the six papers

The greatest consistency across all six papers emerged among the writing faculty. Except for Document #1, all of their rankings were either identical or within one level. For the engineering faculty, only Document #4 was ranked within one level, and for the technical communicators, none of the six documents among the three readers was ranked the same or within one level.

Consistency of Ranking of Six Instructional Documents within Groups

Rank	Writing Faculty Document Choices				Engineering Faculty Document Choices				Technical Comm Document Choices		
1	Upgrad e RAM Doc 6	Upgrade RAM Doc 6	Build Robot Doc 1		Build Robot Doc 1	Build Robot Doc 1	Make Flash Movie doc 5		Use oscillis. Doc 3	Build Robot Doc 1	Build Robot Doc 1

2	Make Flash Movie doc 5	Build Robot Doc 1	Upgrade RAM doc 6		Upgrade RAM Doc 6	Upgrade RAM Doc 6	Use oscillis Doc 3		Upgrade RAM doc 6	Run C/C++ doc 4	Run C/C++ doc 4
3	Use oscillis. Doc 3	Make Flash Movie doc 5	Make Flash Movie doc 5		Run C/C++ doc 4	Make Flash Movie doc 5	Install hard drive doc 2		Build Robot Doc 1	Use oscillis. Doc 3	Make Flash Movie Doc 5
4	Build Robot Doc 1	Use oscillis. Doc 3	Use oscillis. Doc 3		Use oscillis. Doc 3	Run C/C++ doc 4	Run C/C++ doc 4		Install hard drive doc 2	Upgrade RAM Doc 6	Use oscillis. Doc 3
5	Run C/C++ doc 4	Run C/C++ doc 4	Run C/C++ doc 4		Make Flash Movie doc 5	Install hard drive doc 2	Build Robot Doc 1		Make Flash Movie doc 5	Make Flash Movie Doc 5	Install hard drive doc 2
6	Install hard drive doc 2	Install hard drive doc 2	Install hard drive doc 2		Install hard drive doc 2	Use oscillis Doc 3	Upgrade RAM Doc 6		Run C/C++ doc 4	Install hard drive doc 2	Upgrade RAM Doc 6

Reasons for ranking variability

What might be the reasons for the ranking variability among the engineering faculty and the technical communicators? One might assume that members of the same discourse community would rank papers similarly, that their training and growth in their particular professions would result in a similar ranking order of instructional documents. However, only the writing faculty had a community of colleagues with whom they regularly interacted in regard to evaluative measures, scoring, and writing assessment issues. The three groups clearly had different levels of experience with writing assessment. Writing faculty undergo long-term socialization and enculturation within their discourse community, and writing assessment is central to their professional day-to-day lives. For engineering faculty and technical communicators in the workplace, while they too are stakeholders in what defines a good instructional document, they do not discuss assessment issues among themselves in the direct and central way that writing faculty do. Furthermore, the papers had not been pre-selected based on writing quality

levels. That is, the ranking was made doubly difficult because the quality range was not as wide as it might have been with a pre-selected group of very weak papers and very strong papers.

Readers' Assessment of the Documents as highly successful, successful, marginally successful, or unsuccessful

This is evidenced by the way readers responded to the second task, designating each document as highly successful, successful, marginally successful, or unsuccessful. These terms correspond roughly to the traditional grading paradigm scheme of A, B, C and D, where A is equal to a 4.0, B to a 3.0, and so on. [OVERHEAD]

Readers' Rating of Documents According to Levels of Success

	Writing Faculty	Engineering Faculty	Technical Communicators
# of papers judged highly successful	4	2	2
# of papers judged successful	6	11	9
# of papers judged marginally successful	7	5	6
# of papers judged unsuccessful	1	0	1
Level of success translated into a 4.0=A scale	2.72	2.83	2.66

In this framework, the highest average score for the six papers came from the three engineering faculty (2.83), and the lowest came from the technical communicators (2.66), with the writing faculty in the middle (2.72), all, however, in the B-/C+ range.

Ultimately, the distinctions between groups as to the level of success of the papers were minimal.

Readers' In-Text Comments

In addition to ranking the documents and assigning levels of success to them, the nine readers also provided in-text comments on each of the papers. I first completed a count of all the comments made—some 1035, or an average of 23 comments per paper, ranging from surface error notations to extended queries and suggestions. What was interesting is that only 25 of these comments included praise or positive feedback, while 1010 comprised questions, corrections, and concerns. I then coded the comments, sorting them into five major categories that emerged: Content, structure, format, style, and graphics.

NATURE OF NARRATIVE ASSESSMENT COMMENTS	
Praise Comments Questions/Concerns Total	25 Comments 1010 Comments 1035 Comments
1. Content (content questions; unclear , incomplete or incorrect info	
2. **Structure**(sequencing, order of document parts)	
3. Format/Layout/Design Non-parallel terms for headings, numbering of lists, lack of sufficient lists, bullets vs. numbers; general layout, spacing	

4. **Style**
   - Usage/diction/telegraphic prose, Inconsistent nomenclature
   - Mechanics (punctuation, capitals, spelling)
   - Syntax/predication/redundancies, lack of sentence-level clarity
   - Sentence boundaries

5. ***Graphics***
   - Unclear, weak graphics
   - Inconsistent labeling of graphics/unlabeled graphic elements, unnamed figures
   - Missing graphics

Content included any reader comment that asked a question about the subject matter of the document or pointed out unclear procedural steps. It also included comments about incomplete or missing information, and general procedural accuracy. The structure category included comments on logical sequencing; proper placement of cautions and warnings, and orderly progression of document parts. The format category included comments about layout and document design—for example, sufficient use of lists, and good use of white space. The fourth category, style, encompassed any comment on usage, mechanics; syntax; or sentence boundary issues. And the final area that emerged was the effective use of graphics to facilitate clarity in the instructions.

What was interesting was the distribution of in-text comments among the three groups of readers. [TRANSPARENCY]

Percent of comments in each of six categories

	WF (360 in-text comments)	**EG (285 in-text comments)**	**TC (390 in-text comments)**
Praise %	3%	1%	1%
Content %	24%	16%	40%
Structure %	4%	3%	4%

Format %	15%	6%	9%
Style %	46%	71%	36%
Graphics %	8%	3%	10%
Total %	100%	100%	100%

Writing faculty and technical communicators made approximately the same number of comments on the six documents (360 and 390 comments respectively), and their distributions were similar, although the writing faculty made fewer remarks on content and more on format and style. The engineering faculty made fewer in-text comments as a group—a total of 285, and of those comments, a surprisingly high 71% reflected a concern with elements of style. Perhaps this group had fewer comments on content since they were familiar with the content and thus had fewer questions about this central element of the documents. But while the distribution varied between groups, all nine readers included in-text comments on the five assessment elements that emerged—content, structure, format, style, and graphics.

Post-Text Narratives across All Three Reader Groups

This was further supported by the readers' post-text narratives on each paper. Here, as with the in-text comments, the same five assessment criteria emerged as central. First, all nine readers valued accessible, purposeful content delivered at an appropriate level for a specific, target audience. The readers judged papers as weak and ranked them low when the stipulated audience did not match the level of the instructions. Second, all nine readers valued a coherent structure—a clear introduction, with a statement of purpose, a preview of major steps, and lucid sequencing of information. Third, all nine readers admired a good format with subdivided sections and procedures and effective use

of white space. In regard to visually dense, unpacked information, one reader wrote, "My eyes ache trying to chunk the information." Fourth, all nine readers valued a clear, readable prose style and objected to first draft quality text. In response to one such document, one reader commented, "Looks like a hastily prepared, corrupted Word file. Some parts are so badly written that I know they weren't proofread." And fifth, all nine readers alluded to the visual impact of each document and applauded the liberal use of illustrations and graphics.

Conclusion

In summary, while the ranking of the six documents was inconsistent among two of the three groups, the level of success designations, the in-text comments, and the post-text narratives suggest that the nine readers did use similar criteria in assessing the instructional documents: In addition, while Huot (1996) found that writing faculty tend to ignore the communicative elements of writing and focus on its structural aspects, I did not find this to be borne out in this study. Indeed, for all three groups, the structural aspects played a role, but nonetheless a subordinate role to the "communicative aspects," that is, the accessibility and relevance of the message for the audience, the content itself. Readers in all three groups placed a high value on accurate, accessible content appropriately targeted for the specified audience, along with a coherent, logical document structure; effective document design; an appropriate and clean style, and effective integration of graphic elements.. The differences that did emerge suggest that these three stakeholder communities that intersect and overlap in their professional interests—writing faculty, engineering faculty, and technical communicators in the workplace—can continue to learn from each other about the assessment of instructional documents.

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