A Case Study of the Influences of Audience and Purpose on the Composing Processes of an Engineer

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Introduction

We academics often assume that teachers know best how to write and how to communicate effectively. We prescribe rules and methods and techniques and heuristics for our students and sometimes even test the effectiveness of them. We evaluate what our students write according to some often ill-defined criteria. We perform exploratory studies of what our students do when they write or compose--their composing processes. Although such studies have indeed described and compared composing processes of these writers, they tell us nothing about what goes on outside the classroom or education research laboratory. As a result, we have analyzed only writing that is a product of classroom teaching, classroom assignments, and classroom evaluation, and that's a very narrow perspective on the nature and uses of written communication. We need to find out about what goes on when people write on the job. This paper is a preliminary report on a study I am conducting of composing processes of engineers, managers, and scientists. The paper begins with an overview of the study, then briefly reviews related literature, outlines my research design, and reports on preliminary findings.

Overview of Study

Because lots of effective communication goes on outside the classroom, I have been conducting a study of what these folks do--of their composing processes on the job. I want to find out how audience and purpose influence their composing processes as they write their own letters and memos in their work environment. Specifically, I want to examine their cognitive processes and physical behaviors to find out what factors influence the evolution of a piece of writing, in particular how the factors of audience and purpose enter into the process.

I want to look at the choices a writer makes during composing--in his/her head and on paper. By choices, I mean the

points of decision that arise; thus I include the junctions in the flow of words at which the writer picks one word or sentence order or discourse organization over another. I want to know how the writer's awareness and perception of audience and purpose influence these choices and the relative time, in a linear view of composing, at which their influence occurs.

When people write, they demonstrate the behavior of moving an implement--pen, pencil, typewriter keys, or electric impulse--across a surface--paper or cathode ray screen. While this writing may be purposeful behavior of some sort--doodling or sketching--it may not be purposeful for communication. When communication is the aim, people must transfer cognitive activity--thinking--into physical activity--writing--through a process called composing. The process of transferring information back and forth between brain and paper is highly complex, and, as Flower and Hayes[1] explain, writers review and reshape their goals through the physical activity of writing and rereading what has been written.

Previous Research on Composing Process

Research has shown some general differences in composing processes of skilled and unskilled writers. As Flower and Hayes[2] report, skilled writers are crafty; they represent the writing task differently, put it in their own terms. They approach the writing situation with a great deal of concern for audience and purpose and shape discourse accordingly. Unskilled writers, on the other hand, if they demonstrate audience awareness at all, have difficulty transforming discourse to suit the needs of audience.

Skilled and unskilled writers differ in their views of the process as well. As Lutz has already mentioned, skilled writers are much more likely to view composing as a process through which discourse evolves through several drafts, while unskilled writers see one draft with cosmetic editing as the entire process. As a result, skilled writers demonstrate more inclination to get their ideas down in some form early in the process and to focus on organization with relatively little concern for mechanical and grammatical correctness. This doesn't mean that they ignore the conventions of standard written English, but that they worry about editing for these conventions later. Bechtel[3] found that skilled writers can separate creating discourse from copyediting. But unskilled writers, as Perl[4] points out, usually edit--or error-hunt--from the beginning of composing and do so often at the expense of losing the flow of ideas. This concern with correctness seems to be the guiding principle in their approach to the entire task.

Other researchers have examined how the development of cognitive abilities affects writing skills in different age groups. Much of this research is an outgrowth og the work of Piaget (see Phillips[5]), who theorized that development occurs roughly in stages; for example, children, as they reach adolescence, learn to express their ideas from the perspective of an other. We also find evidence for acquisition of cognitive skills on a more focused level: studies of how children coordinate pieces of information (e.g., Scardamalia[6]) show that abilities may be divided into levels according to complexity of coordination achieved.

This study of the influences of audience and purpose on composing processes of writers in professional situations is designed to build upon existing knowledge of composing in classroom situations. We know with some degree of certainty that skilled writers represent their writing tasks more precisely than unskilled writers. We suspect that they have developed a hierarchically organized system of cognitive processes which helps them to handle the complexities of composing. Using this hierarchy of subsystems, writers may shift their attention from one concern to another as they refine the words and ideas they are trying to communicate. Constraints such as their perceptions of audience and purpose assist writers in channeling their ideas and composing into coherent discourse. In this way they not only respond to the rhetorical situation, as Bitzer[7] suggests, but they use the situation to guide their task, as Consigny[8] suggests. Thus, a writer uses thoughts and words, as Vygotsky[9] says, to work back and forth between paper and mind to establish relationships among ideas. The success with which a writer handles composing, then, may depend on his/her ability to perceive the demands of the rhetorical situation and to manipulate cognitive processes and physical behavior to meet these demands. The characteristic way in which he/she meets the demands of composing is style.

Design of This Study

I want to find out about only a portion of this cognitive processing by examining how audience and purpose influence writers. To find out about this relationship, I have studied subjects who are professionals educated as engineers who have jobs with management responsibilities. To make the situation as realistic as possible, I have asked the subjects to compose aloud as they write two pieces of discourse--each approximately 300 to 500 words long--in the normal course of their work.

I have used a combination of methods to study their composing processes: composing aloud, coding behavior, and follow-up interviews with subjects.

Composing aloud consisted of asking a subject to talk through the composing process while writing. Data thus included a written history of composing from beginning to end of the process--including all changes and drafts of the sample discourse.

Using the writing sample and the tape, I coded behaviors (such as writing, talking, writing and talking, pausing, and changing) on a time line at intervals of 15 seconds and noted choices considered during composing.

Because composing aloud omits some details of composing, I have conducted follow-up interviews to seek further information: description of kinds of writing done on the job, situation of sample discourse, and writer's goals in the samples. Another part of the interview is fashioned after a technique developed by Goswami and Odell working under an NIE grant and described by Odell in a talk given at the 1980 Modern Language Association. Their research method, used to investigate the composing processes of working professionals in public agencies, relies on post facto interviews with writers. After analyzing the writer's previous work to find recurring patterns of words, tone and structure, the investigator prepares a version of the writer's most recent product with options inserted at various points. In the interview, the writer is asked whether he/she would be willing to change what he/she has written to one of the proposed alternatives, all of which are known to be "real" options for that writer since they have appeared in his/her earlier writings. From the writer's responses in the interview, the investigator infers the manner in which he/she represents to him or herself the problem addressed.

Results of Research on RD

The following discussion of one subject in this study is an analysis of the results obtained using the investigative techniques described above. This discussion includes details of his job, writing tasks, and general composing behaviors; his sample discourse; and the influences of rhetorical situation on his composing.

Job, Writing Tasks, and General Composing Behaviors

RD is the Manager of Advanced Electrical Engineering in a major manufacturing firm in the Northeast. During the interview he reported that the writing he does consists of three kinds: (1) memos that report his analysis of technical data on the firm's products to managers in other departments who have asked his assistance; (2) annual employee performance evaluations, to his supervisor, that support his recommendations for firing and

raises; and (3) employee recommendations, to his supervisor, for awards. His writing samples for this study fall into the first category.

According to the tapes, RD begins his composing with comments about the situation he is writing for and quickly begins talking and writing. He works through an entire draft pausing for only five to ten seconds at a time and making only a few diction changes. The pauses usually come between sentences when he is deciding how to proceed. When he does have trouble getting his thoughts focused and clear within a paragraph, he usually rereads the previous phrase once or twice and then moves valiantly forward.

Between drafts he went through the processes of rereading and rethinking without recording these processes. When he begins a second draft, he usually refines the word choice and condenses the information in the first paragraph. The other changes are primarily organizational: he adds or reworks topic sentences and rearranges facts for greater coherence. He also elaborates central points in the body of the discourse.

Sample 1

Rhetorical Situation

The rhetorical situation in this memo is a typical example of a technical memo reporting data analysis to a manager in another department. The exigence involves the reader, a manager from Design Engineering, who had been asked a technical question by a marketing representative fielding a customer inquiry. Because the design department did not have the expertise to perform the analysis, the reader asked RD to help.

The reader is a manager on the same level as RD, one whom RD communicates with approximately two to three times per week orally and twice a month in writing. Noteworthy results of tests RD has run warrant a routine written report to the inquirer in another department or subsection. Ordinarily, the reader uses RD's memo to form a response to the customer. When asked during the interview whether the customer receives his memo directly, RD replied, "If I knew it was going to the customer, I'd have said it in a different way--twisted around the facts."

RD's goal in this memo, which also provides a constraint, was to pass on the results as quickly as possible. Because the reader's question was spurred more by curiosity than necessity, RD primarily wanted to "get the memo out of the in-basket!"

Composing Process

As is typical for him, RD begins talking and writing with very little recorded planning and, according to his interview comments, no unrecorded planning. After writing the opening two paragraphs, he comments about his audience: "I want to let Chris [reader] make sense out of what I want to talk about." He writes the entire first draft in 16 1/2 minutes. He then explains that he will approach the second draft in this way: "I will cut pieces out and regroup the comments I've made to make it [draft] flow more naturally. I will say the same thing but in different words."

The second draft takes 12 minutes. He pauses more frequently to reread clauses and phrases to change word choice. At the end of this draft he says he "has most of the pieces. Now I will look at the words and find gross errors and have it typed." He records none of this changing on tape.

Sample 2

Rhetorical Situation

RD describes the rhetorical situation of this memo as "political." It is a typical example of a written confirmation of an oral agreement. The reader is ranked one level higher than RD and works in a different sub-section of the same department. The reader has complained to RD about stringent quality control requirements and has asked that they be relaxed. RD has agreed to conduct tests on the problem to determine whether his group can justify relaxing the requirements. The memo responds to this exigence by explaining the plan for testing and analyzing data.

During the interview RD reported that he wanted to accomplish three things in this memo: (1) try to get along with the reader; (2) provide his view of the background of the problem; and (3) explain what RD's sub-section cares about and how far they can bend their priorities. Although this memo is routine, it does include an additional constraint related to audience. RD explained that because the reader is new to his job RD provided more detail on background of the problem than he would have done with a similar request from more experienced section managers.

Composing Process

RD begins composing aloud by briefly explaining that this memo is primarily political; everyone involved knows the agreement, but the memo will function to record that agreement

when RD has moved to his new job. After 30 seconds he starts talking and writing and continues through two-thirds of the memo hardly pausing to catch his breath. After 7 minutes 45 seconds, he stops to tell me again that this memo is political and that the results of the testing will determine action on the requirements. The first draft takes 19 minutes 20 seconds to write.

RD chose not to record comments while reworking the draft. His plan is to "correct sentence by sentence or add a comment or make it more intelligible." He will explain changes in the margin if they "aren't intuitively obvious."

Influence of Rhetorical Situation on Composing

For RD, audience and purpose are extremely important factors in composing. He seems to have stored in memory a general problem representation for handling writing tasks like those in these samples. The range of complexity in these situations varies only a little--the reader is different in personality or experience, but the role of the reader remains virtually the same. The exigence and constraints also offer little variation. As a result, RD can use this well-developed schema as a mechanism for discovering what information from the data he needs to report and for controlling the way in which he reports it.

His representation of audience and purpose do not change noticeably during composing. The one exception is in the first draft because of new information acquired during composing. One of the changes he made between drafts was to remove a sentence after conversing with someone on the telephone; he said the change was for political reasons. Although he referred only infrequently to audience and purpose while composing aloud, he repeatedly commented on their influence during our interview, both as he answered questions about the nature of his writing tasks and as he responded to the alternative words and phrases I supplied for his memos.

He clearly uses his perception of his reader and his purpose in combination to guide his selection of details, arrangement of details, his tone setting in the opening and closing, and the extent of his reworking. In both memos, arrangement was very direct; he reported results and procedures in sequence because he was communicating technical information to readers knowledgable in the field. To some extent the purpose dictated choice of details--select details of results that answer the reader's questions. But especially in the second memo, audience was a factor--a new man on the job needs extra specified background about what questions the tests will

help answer.

The influence of audience and purpose on tone is particularly interesting. RD's finished version of the first memo begins

> This note is in response to your letter of February 11, 1981 asking me to analyze the combustible gas-in-oil results taken on three of your EW1175 potential transformers.

Because the memo reports that results show nothing "unusual or alarming," I offered this alternative:

> I am glad to report that I see nothing of major concern in the combustible gas-in-oil results as reported in your letter of February 11, 1981.

RD was quick to reject that alternative because his reader "wouldn't have read the rest of the memo!" Since RD feels that the reader asked for the analysis out of curiosity, he certainly wants the reader to read his report!

The close of this memo also demonstrates awareness of audience:

> I would like to see the data on the next several units as it becomes available.

The alternative:

> Please send me the data on the next several units. . .

Again RD was quick to reject the alternative because it is not appropriate for the reader: "He has a big ego and doesn't like for anyone to tell him what to do. So I just say that I'd be interested."

Purpose more than audience seems to guide his decisions about reworking drafts. He reports that the process of draft-quickly, clean-up-and-clarify, and send-to-typist is his usual procedure for technical memos. When offered alternative verbs that suggested more precise and less colloquial choices, he was willing to make the changes: "That's me, the Missouri farm boy. You can see that I don't worry too much about some details of language." But he is less willing to change adjectives because they were apparently chosen with greater care: the tapes show that he stops to consider them while composing. He rejected the alternatives because they did not capture the meaning he intended.

This concern for a particular part of speech does not occur with any subject except RD. An explanation for this phenomenon may lie in the notion that technical writing tends toward nominalization--a large proportion of meaning is carried in nouns while verbs tend to be weak. If such were the case, then adjectives modifying nouns would be more central to meaning than adverbs modifying verbs. RD's commitment could be interpreted as evidence for that notion.

Using his stored problem representations, RD begins composing with many choices related to both audience and purpose already made. Many of the detailed choices that remain occur as he is generating the first draft. The adjectives, which he considers so important, get attention immediately at the time of generating. Other changes--related to syntax and conventions of language--take place during subsequent drafts and final editing.

These results suggest that a strong sense of audience and purpose are essential for planning and producing effective discourse. In the case of this writer, these factors are what he uses to guide composing from beginning to end, and without them--as in the situation of handling his new job--he says, "I don't know what to write!" If further research supports this evidence, then we must adapt our teaching accordingly by helping our students learn to represent their rhetorical problems to guide composing. When we find out more about how people accomplish writing tasks to transact the day-to-day affairs outside classrooms, we should have a better idea of what makes for effective composing processes that do more than simply get one through a classroom assignment or a required course. Then we will be able to design methods and assignments that lead cognitive development in the direction of skills demonstrated by effective writers.

References

1. Linda Flower and John R. Hayes, "A Cognitive Process Theory of Writing," working paper, NIE grant, 1980.

2._____, "The Cognition of Discovery: Defining a Rhetorical Problem," College Composition and Communication, 31 (February 1980), 21-32.

3. A.B. Bechtel, The Composing Processes of Six Male College Freshmen Enrolled in Technical Programs, Dissertation Abstracts International, 39 (1979), 5371-A.

4. Sondra Perl, "The Composing Processes of Unskilled College Writers," Research in the Teaching of English, 13 (December 1979), 317-336.

5. J.L. Phillips, The Origins of Intellect: Piaget's Theory, (San Francisco: W.H. Freeman, 1969).

6. Marlene Scardamalia, "How Children Cope With the Cognitive Demands of Writing." In C. H. Frederiksen, M. F. Whiteman, and J. F. Dominic, eds., Writing: The Nature, Development and Teaching of Written Communication (Hillsdale, N. J.: Lawrence Erlbaum Associates, in press).

7. Lloyd Bitzer, "The Rhetorical Situation," Philosophy and Rhetoric, 1, (Winter 1968), 1-14.

8. Scott Consigny, "Rhetoric and Its Situations," Philosophy and Rhetoric, 7 (Summer 1974), 175-186.

9. L.S. Vygotsky, Thought and Language (Cambridge, Mass.: MIT Press, 1962).

The work of Jean in theory and Bonny in her specific study suggests several implications for technical communication teaching and research. Carol Hughes, who teaches organizational and business communication at State University of New York, Buffalo, will provide you with some of those implications for our teaching and researching.

ABSTRACT FOR CAROL HUGHES' "PROCESS-BASED PEDAGOGY AND PROCESS RESEARCH: IMPLICATIONS OF THE COMPOSING PROCESS IN TECHNICAL COMMUNICATION"

Applying theories of composing to technical communication, Carol Hughes of State University of New York--Buffalo discusses pedagogical activities for using the composing process in the classroom and topics for researching the composing process in technical communication. Hughes explains teaching guidelines for applying composing processes in the classroom. Under contextualization, she suggests specification of rhetorical situations in writing assignments by requiring students to provide statements of topic, audience, and purpose. Under translation, she suggests using Bradford and Whitburn's idea of having students discover intended audiences by examining several documents prepared on one topic and written by the same author. She suggests also having students write for a specific audience through choosing and arranging facts to suit that audience. Under revision, she suggests requiring students to review each other's writing to evaluate the extent to which the writing satisfies the needs of audience and purpose and thus to make students do more in revision than just edit. In the second half of her paper, Hughes explains the need for theory to guide research in the composing processes of technical communicators. After explaining the dangers of narrative studies and sequential models, Hughes suggests uncovering basic composing processes in terms of who writers in technical communication are and what writers are doing in technical communication. Using Odell, Cooper, and Courts' approach to research on composing, Hughes then indicates that researchers need to examine what writer characteristics matter to persons communicating technical information, what relationship purpose has to audience in technical communication, how writers approach the different forms of technical communication, when composing skills in technical communication can be taught, how writers of the same genre can be evaluated, and how a writer's work in different forms can be assessed. (RM)