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SHORT-TERM TRAINING OF COLLEGE COMPOSITION STUDENTS IN THE USE OF FREEWRITING AND PROBLEM-SOLVING HEURISTICS FOR RHETORICAL INVENTION: A COMPARATIVE EVALUATION

University of Hawaii PH.D. 1980

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SHORT-TERM TRAINING OF COLLEGE COMPOSITION STUDENTS IN THE USE OF FREEWRITING AND PROBLEM-SOLVING HEURISTICS FOR RHETORICAL INVENTION: A COMPARATIVE EVALUATION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
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By

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ABSTRACT

After decades of being out of fashion, concern with rhetorical invention is increasingly evident among specialists in written composition. Indeed, techniques for discovering "what to say"--that is, for invention--are often prescribed to students suffering in the currently epidemic "writing crisis." Among such techniques are heuristics for invention--guidelines the would-be writer can employ to improve chances that a written end-product will communicate something of substance. Although heuristics such as Aristotle's "topics" and Pike's tagmemic matrix find exponents, the developing and testing of heuristics has not kept pace with calls for their use.

For purposes of this study, two training-packages involving six hours of training in heuristics for invention were developed and tested. These approaches might be seen as extremes on a continuum of intuition to reason. The freewriting heuristics, basically intuitive, were derived from the ideas of Peter Elbow and called for users to write without censoring, to reflect on the writing, and then to assert the "center" of the writing in a "summing-up" statement; the three steps are then repeated. The communications-awareness/problem-solving heuristics, basically rational, were derived from studies in applied psychology and called for users to "solve" typical problems associated with invention (thesis, audience, voice, etc.) through use of a standard problem-solving strategy (problem definition, generation of alternative solutions, evaluation of alternatives, etc.). Experimentation was used to look

for differential effects of training with these heuristics in the writing and attitudes of college composition students.

Forty-one college composition students were randomly assigned to short-term training in the use of either the freewriting (FW) or the communications-awareness/problem-solving (CAPS) approach to invention. Dependent measures included a "speech" written in class and a "letter" written out of class; both reflected recent research findings on measurement of writing proficiency, although the "letter" stimuli provided greater control over writing variables. Subjects from the FW group demonstrated superior writing proficiency in holistic rankings arrived at by two paid independent raters; on the "letter" measure, the difference in treatment-group scores was statistically significant ($F\ [2, 36] = 4.16$, $p < .05$). Subsequent rankings of the "letter" on component scales revealed that FW subjects included more appropriate materials in their letters ($p = .004$) and more consistently abided by conventions of grammar and mechanics ($p = .01$). FW subjects also reported a greater degree of compliance with heuristics than did CAPS subjects. But there were no group differences on attitudes toward writing.

These results suggest that freewriting should be studied more seriously by those who seek to develop effective training programs in written composition. Just what aspects of the FW training package were responsible for the effects will have to be determined by further research. The relative failure of the problem-solving training suggests that writing may be too complex a behavior for modification via

problem-solving heuristics, or that more training may be required for users to become adept in the use of the heuristics.

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CHAPTER I

HEURISTICS AND THE TEACHING OF WRITTEN COMPOSITION

Ten years ago, Janice Lauer suggested that in order to solve the "composition problem," textmakers and teachers of composition would have to look beyond the fields of English and rhetoric. She pointed in particular to psychology as an area which had much to offer:

> A number of psychologists, interested in the area of creative problem solving, are analyzing the elusive and complex experience of creativity. They have discovered that creative people have developed an effective set of heuristic procedures. Psychologists, therefore, have been trying to identify the general features of these heuristic procedures. Their findings should be invaluable for the teacher who is dealing with the creative process of composition. (1970, pp. 396f)

The term heuristics today probably remains foreign to the professional vocabularies of most composition teachers. Nonetheless, it continues to appear with some frequency in professional journals of composition. And the concept which the term refers to is less esoteric than the word heuristics might suggest. Perhaps the concept is most clearly defined by Polya (1957), who places heuristic procedures on a continuum of approaches to problem solving and decision making. On one end of the continuum is the trial-and-error approach--random "guessing." On the other end is the rule-governed approach--rules being defined as a finite series of steps or operations which, when

carried out, result in a correct solution. (Rules govern, for instance, the solving of some arithmetic problems, and the resolution of problems via syllogistic reasoning.) Between these two extremes is the heuristic approach. "Heuristic reasoning is reasoning not regarded as final and strict but as provisional and plausible only, whose purpose is to discover the solution of the present problem" (p. 113). Heuristic reasoning, then, is of potential use where the nature of a problem precludes its solution by the following of clear rules yet suggests that random trial-and-error behavior is unlikely to lead to the most effective solution. Like the trial-and-error approach, the heuristic approach is open-ended, and requires "guessing"; like the rule-governed approach, the heuristic approach is systematic, in that the "guessing" is guided (Young, 1968b). The term heuristics, then, will generally refer to guidelines--usually a set of questions or operations--the following of which should help the problem-solver to reach a provisionally satisfactory solution with greater economy and assurance than is provided by trial-and-error behavior.

Lauer (1970) also noted that a few rhetoricians, in examining the "rhetorical malaise," have "isolated the dead art of invention as a major cause of the writing problem." Invention is (again using Lauer's description) "the art of discovering 'what to say,' of making original judgments on experience, of discovering means of communicating this unique insight with a particular voice to a particular ear, of deciding between nonsynonymous utterances" (p. 396). It takes but little thought to realize that the concerns of invention are the types of concerns with which heuristic approaches to problem solving are

intended to deal.

My primary purpose in this chapter is to describe approaches to the teaching of invention which have been proposed for use or are actually used in the composition classroom today. My review will highlight those approaches which might be described as heuristic approaches, and will summarize research in the area of heuristic approaches to invention. But first I will provide a brief history of rhetoric, in order that we might better understand the place of invention in contemporary approaches to the teaching of composition.

A Brief History of Rhetoric[1]

Definitions of rhetoric have varied across cultures and across time. At one extreme of the pendulum's arc are definitions which emphasize style and eloquence--at their extreme, sophistry. At the other end of the arc are definitions concerned with the discovery of truth--logical argumentation in the service of wisdom.

These two extremes often have held sway at different times, but sometimes both have appeared in the same culture. In Greece, for example, sophistry was developed into an art, and Plato has Socrates lashing out at empty eloquence in the Apologia. Aristotle would seem to prefer a rhetorical art of reasoning, with truth and justice as its goal. But Aristotle knew that reason alone was at times insufficient to persuade. So he defined rhetoric as "the faculty of discovering in the particular case what are the available means of persuasion"

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[1] In general, my sources for this summary are Corbett, 1971; Findlay, 1974; and Young, Becker, and Pike, 1970.

(Aristotle, 1932, p. 7). As Scaglione (1972) put it, for Aristotle the true aim of rhetoric was "to prove, or at least seem to prove, your point. Thus rhetoric as the art of persuasion became, for him, the 'popular' branch of logic" (p. 13).

In order to arrive at probable truth, Aristotle provided a means of discovery: the τοποι, "topics," guidelines or heuristics which can aid man in approaching or viewing a subject. Aristotle provided 28 "topics" in his Rhetoric. These "ways of classifying" form the nucleus of rhetorical invention, the first of the five classical rhetorical arts (invention was followed by arrangement, style, memory, and delivery). Aristotle also stressed the importance of audience and the speaker's knowledge of audience as the informing principle of persuasive discourse. And he outlined three modes in which an audience might be swayed: the appeal to reason (λογοσ), the appeal to emotion (παθοσ), and the appeal to moral beliefs or of the speaker's character (ηθοσ).

We can see, then, that classical rhetoric has an epistemological dimension: it is concerned with how we know. It also has, at least in potential, an ethical dimension insofar as it is concerned with the rightness of what we know, and how we use what we know.

Cicero built upon the Aristotelean notion of rhetoric. For him, there were three ways of knowing, three modes of invention: to rely on innate genius; to work diligently; or to employ a system of discovery. Cicero provided one system of discovery, again by providing "topics." Cicero's topics were, according to Young, Becker, and Pike, "an elaborate checklist of mental acts--for example, comparison,

contrast, definition, and cause and effect--to be used when investigating and developing a subject" (1970, p. 4).

The "topics" dominated rhetorical invention from antiquity to the dawn of the modern era, although the actual importance assigned to invention varied across time. For example, during the middle ages rhetoric had become primarily a study of letter-writing (ars dictaminis) and sermon-delivery (ars praedicandi) (Corbett, 1971). According to Findlay, "The Middle Ages, feeling secure in the possession of truth, saw rhetoric as a means not of discovering judgments but embellishing them. Invention, therefore, was not a concern of their rhetoric" (1974, p. 12). With the rediscovery of the classics during the Renaissance, rhetoric again expanded its scope. Erasmus's De Copia and Thomas Wilson's The Arte of Rhetorique, popular sixteenth-century texts, both treated invention; both were used in England. But invention soon was "taken" from rhetoric, as the ideas of French scholar Peter Ramus took hold. According to Ramus, the classical rhetorical arts of discovery and arrangement more properly belonged to logic--to the intellect; style and delivery, products of imagination, alone were left for rhetoric. According to Corbett (1971, p. 611), this dichotomy was introduced into the Cambridge University curriculum in 1574. Francis Bacon, in the seventeenth century, maintained this dichotomy, but in a hierarchy: imagination was to be subject to reason, as form (verba) was to be subject to content (res). In general, rhetoric remained a practical rather than a speculative art throughout the eighteenth century (Corbett, 1971).

During the eighteenth century, invention came to be regarded,

romantically, more as the workings of "genius" than as an exercise of systematic thought-processes. The study of classical rhetoric gradually gave way to the study of "composition" in institutions of higher learning. And the study of composition became the study of word, sentence, topic sentence, paragraph, and paragraph development, as well as of unity, coherence, and emphasis. According to Findlay, this pattern dominated the first half of the twentieth century:

> The rhetoric texts of the early twentieth century with their repetitious pattern of description, narration, exposition, and argumentation as well as unity, coherence, and emphasis were products of an era of enlarged freshman composition classes taught by less-experienced teachers who had little academic preparation in rhetoric, classical or otherwise. . . . Neither the epistemological problems entailed in the formation of theories of contemporary invention nor the pedagogical problems involved in the departure from the sphere of the clearcut if somewhat mechanical divisions and principles of rhetoric were grappled with by the majority of textbook writers. (1974, pp. 15-16)

In 1936, I. A. Richards wrote that what remained of rhetoric was "the dreariest and least profitable part of the waste that the unfortunate travel through in Freshman English" (p. 3).

In a 1963 survey of college composition courses, Kitzhaber found that concern with invention and the teaching of heuristics had all but disappeared, at least if composition "handbooks" (which had replaced "rhetorics") were an indication. And,

> As for rhetoric, the majority of handbooks present a desicated rhetorical doctrine that has probably done a good deal more over the years to hinder good writing than to foster it--the position of the topic sentence and mechanical rules for developing expository paragraphs, sets of critical abstractions which the student is urged to apply to his paragraphs and themes like a foot rule to a piece of lumber, injunctions about length of sentences (not too long, not too short), and the importance of figures of speech. (p. 16)

The rule had replaced the heuristic, and "following the rule" often seemed, in practice, more important than having something of substance to say. Young sums it up very well:

> Vitalist assumptions, which have dominated our thinking about the composing process since Coleridge, appear to be inconsistent with the rational processes and formal procedures required by an art of invention. Vitalism leads to a view of writing ability as a knack and to a repudiation of the possibility of teaching the composing process; composition tends to dwindle into an art of editing. (1976, p. 21)

Whether or not concern with invention will rise again, as it did during the Renaissance, and become an important part of composition teaching is an open question. There are at least two rather strong indications that it may.

The first is an increasing awareness of, and attention to, writing as process among teachers and researchers in writing (see, as the most-often-cited example, Emig, 1971). After decades of focusing on the product of writing, teachers today seem willing, if not always able, to attend more carefully to the processes by which that product is produced. Whether there is a single paradigmatic writing process or several different processes is open to debate. But it is difficult to conceive of any possible process which does not include what has traditionally been treated as "invention," in one or another form. Thus, it seems to me that as concern for process-centered teaching grows, so too will grow interest in invention.

The second indication is the popularity of the term new rhetoric in today's journals on composition. This "new rhetoric" seems to be a syndrome rather than a discrete entity: it is a concern with effective communication, verbal and non-verbal, addressed to the masses

or addressed only the self; and it is, or seeks to be, informed by research and theory in psychology, communications, linguistics, marketing, sociology, and logic (though this list is not exclusive). As we shall see in the next section of this chapter, advocates of the "new rhetoric" are in general concerned with both how we know and how we communicate what we know. Thus, the "new rhetoric" is concerned with ideas and with guidelines for their discovery, evaluation, and communication. In short, contemporary rhetorical theorists, if not writing teachers, are rediscovering invention.

Current Practices in the Teaching of Writing and Invention

Despite an undeniable resurgence of interest in the theory and teaching of composition, some indicators suggest that interest has not yet been translated into more effective classroom practices. Journalists continue to refer to Kitzhaber's (1963) description of what any investigator would find if he or she were to visit composition classes and investigate course syllabuses:

> First, he would be impressed by the confusion exhibited in the course--a widespread uncertainty about aims, a bewildering variety of content, a frequent lack of progression within the course. Second, he would notice a variety of administrative adjustments and precautions that indicate little confidence in the expertness of those who teach it. And finally, he would notice that the textbooks for this course are for the most part less rigorous and less scholarly than those for other college freshman courses. (p. 10)

A more empirical indicator is what Stewart (1978) found when he examined 34 current composition texts (readers, handbooks, and rhetorics), each of which had sold over 100,000 copies.

> I carefully searched appropriate sections of each book for indications that their authors were at least aware of the new approaches to the composing process, writing behavior, and stylistic options . . . . Regretably, only seven of the 34 contained any appreciable awareness of the work of people like Corbett, Rohman, Burke, Pike [persons whose work we will consider below] . . . . The other 27, and some are the products of people with enormous reputations as literary scholars, were strictly current-traditional in their discussions of invention, arrangement, and style. (p. 174)

What I will review in this section are current practices in the teaching of writing which do--some more, one or two only potentially --take invention into account. The heuristic nature of the approaches will become increasingly pronounced as I proceed through the review.

The "Reader" and "Discussion." "Invention has become largely a matter of assigning a book of readings, presumably to provoke thought and stimulate ideas for writing" (Gorrell, 1965, p. 139). Although Gorrell's statement was meant to apply to the writing classroom of 1965, it remains largely true in 1980. The "Reader," along with a handbook of usage, is the staple text in many composition courses. Scores of Readers and Reader-rhetorics are published, many in both "standard" and "shorter" editions; few freshly minted English Ph.D.s would think of entering the composition classroom without one of them. From the length of most of the essays in most Readers, it is clear that the essays are to "provoke thought and stimulate ideas" rather than serve as models for the type of writing ordinarily done in a composition class. Alternatively, the reader's essays may serve as a source of information to be used in student essays.

I begin with the Reader not only because I suspect that its essays are the most common stimulus for composition-student writing,

but also because I suspect that its use stimulates some, usually indirect, teaching of invention--often the only teaching of invention today's students receive. A teacher may assign the reading of an essay, and at the same time assign a topic derived from the essay for student writing. But I have more often seen the teacher assign the reading of an essay and then use class-time for discussion of the essay before assigning any writing based on it. The classroom discussion can be a model of invention, with the teacher's discussion questions and procedures servings as heuristics. How fully and frequently these heuristics are learned, how much the process generalizes to what students do on their own, how aware teachers are of guided discussion as a way of teaching invention--these are questions I cannot answer. Then too, classroom discussions may become exercises in empathy, or exchanges of feelings, or unfocused chatter--heuristically guided explorations, perhaps, but unlikely to provide the student with an awareness of the invention process. Finally, I have seen what began as a discussion of essays in a writing class end with the teacher modeling a process of literary analysis. This should come as no surprise, since literary analysis is one of the primary skills in which English graduate students are trained.

I suspect that the Reader is about as good as anything else as a source of verbal stimuli. And the classroom discussion of an essay can be a valuable exercise in invention. Unfortunately, using the Reader by itself is unlikely to call attention to the process of invention, and what is actually done with the Reader may sometimes hit, and other times miss.

Freewriting. A common composition-class exercise is the ten-minute freewriting period, during which students are instructed simply to write anything that comes to mind, the only rule being never to stop writing. Variations on this exercise are quite commonly suggested in those composition textbooks which contain sections on invention or "pre-writing."

Insofar as heuristics for invention involve systematic examination of a topic, freewriting, as practiced in such classroom exercises, would seem their antithesis. But freewriting as an approach to invention has been elaborated on by both Macrorie (1970) and Elbow (1973); it is with Elbow's fuller treatment of the subject that I am most concerned here, although few textbooks give Elbow credit when they treat freewriting.

Contrary to first-glance impressions, Elbow's treatment of freewriting seems amenable to study as a heuristic. "Write freely" would seem to be the beginning of the heuristic, although how the following of such a heuristic is supposed to lead the writer to a clearer understanding of anything is not specified--perhaps hidden vitalistic assumptions underlie the directive. Nonetheless, "write freely" is followed by another instruction: after doing one or two freewritings, Elbow tells his reader, you should "look to see what words or passages seemed important--attracted energy or strength. Here is your cue what to write" (1973, p. 9).

A careful reading of Elbow indicates that these instructions contain parts of the basic freewriting heuristic, one that is followed again and again until the writer is satisfied that he or she has a clear

understanding of the topic, has something to say about the topic, and is ready to begin to adapt his or her ideas to an audience in the editing process. This basic heuristic has three steps. The first is to write--continuously, without censoring, without editing, without worrying--for a set number of minutes. Then, the writer reads over what he or she has written, looking for--as we have already noted--sections which seem to have "attracted energy or strength." Through reflection on the "energized" sections, the writer is to try to locate the "emergence of a focus or a theme . . . a center of gravity" (p. 35). Finally, after writing and reading/reflecting, the writer is to force the center of gravity into a "summing-up" (p. 36), a statement which seems akin to a thesis-statement in the process of emerging. The writer then repeats the three steps again (and again, and perhaps even again), the only difference being that each successive freewriting begins with the writer's chosen "summing-up" statement.

That Elbow is presenting heuristics for writing becomes most clear when he offers guidelines which can help the writer who has followed the basic three steps and is still not satisfied with the results. The language Elbow uses is typical of his entire treatment of writing--e.g., "Allow the cards to find their own piles with each other by feel, by drift, by intuition, by mindlessness" (p. 63). But behind the language lurks a system of invention which involves extracting "summing-up" statements, placing them on cards, sorting the cards, creating new "summing-up" statements for each pile of cards, and asserting a relationship between or among various piles.[1]

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[1] After this was written, and after the experimental portion of

The first treatment of freewriting as a heuristic appeared at the end of 1979 in an article by Kinney which classified heuristics as empirical, rational, or intuitive. (The thought of treating freewriting as a heuristic, however, came earlier at least to Odell [1978], who more or less rejected the notion of freewriting as a heuristic in that it is not a "systematic inquiry" process.) Although he classifies freewriting as an intuitive heuristic, Kinney recognizes the rational elements in the guidelines which Elbow offers. He sees Elbow as suggesting "an alternating between right-brain and left-brain approaches" (p. 355). "I suggest that freewriting is a way of transferring right-brain thinking into left-brain terms--that it is a way of making available the riches hidden in the dark mine of the right cerebral cortex. Freewriting is not just something other than conscious inquiry but a way of inquiry into the fullness of consciousness" (p. 356).

It is not only its appeal to the "intuitive" which distinguishes Elbow's freewriting heuristic (and Rohman's "pre-writing" heuristic,

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this study had been run, I was given by one of my colleagues a draft of a chapter by Elbow, some version of which will appear in his next book, likely to be published by Oxford University Press in 1981. In that chapter, Elbow offers a variety of heuristics which the writer can use to deal with different problems of invention. Since these heuristics were not used in the present study, and since they have not yet been published, it would be inappropriate to go into them at length here. But I do want to note that Elbow seems clearly to be moving toward a conscious heuristic approach to invention. The heuristics he offers are sometimes conventional, sometimes novel; many are discussed in the metaphoric language of a person who does not want to appear <u>too</u> rational, but they are quite clearly explained. And many of them strike me as potentially of great use. Utility seems, in Elbow's draft chapter, a primary goal: he is writing, he notes in his introductory comments, for those persons who found his earlier (1973) book "very nice," but not very useful for getting "an essay written on the causes of the French Revolution that's due next Monday morning."

below) from some of the other heuristics to be considered in this chapter. Classical heuristics were devised to help the orator to persuade his audience; and even in the "new" rhetoric, communication seems an important, if not the only, goal. The concern of classical invention is to discover what is known, what one knows, what one holds--in order to have something to communicate. Freewriting and pre-writing, on the other hand, offer heuristics intended to help the writer to know him/herself better, to become better at "self-actualization" (Rohman and Wlecke, 1964, p. 7). As Elbow puts it, writing is "an organic, developmental process . . . . Meaning is not what you start out with, but what you end up with. Control, coherence, and knowing your mind are not what you start out with but what you end up with. Think of writing then not as a way to transmit a message but as a way to grow and cook a message" (1973, p. 15).

Although references to "freewriting" are common in both textbooks and published articles, a real understanding of Elbow's freewriting heuristics is probably far less common. His ideas have evidently generated no serious research, perhaps because they are so often expressed in language which suggests resistance to scientific or experimental inquiry.

One who is kindly inclined toward Elbow's freewriting heuristics might see them as helping the writer to discover and strengthen the persona through which he or she, as writer, speaks. One who is less kindly inclined may view Elbow's guidelines not as heuristics at all, but rather as "pleasant thoughts." The basic freewriting heuristic which I have delineated above does, however one feels about it,

have at least three advantages. It is simple. It can be used in a variety of writing situations. And it is flexible, recognizing the non-linearity of the discovery process, recognizing that writers begin their discovery processes from different starting bases.

In sum, the freewriting heuristic seems worthy of serious consideration.

Pre-writing.[1] Pre-writing (that which precedes writing and re-writing) has become a popular term for traditional concerns of invention: it is used in several texts where the word invention is not used. As such, pre-writing often refers to a variety of prescriptions and techniques. But in this section I will focus on the theory and research put forward by Rohman of Michigan State University (Rohman and Wlecke, 1964) and popularized in an often-cited article by Rohman (1965) called "Pre-Writing."

Rohman freely cites psychologists Bruner (1962) and May (1959), among many others, in developing his ideas on invention. Philosophically and psychologically, Rohman seems committed to existential, humanistic, personalistic formulations: he writes that "we taught students to write . . . to allow them greater self-actualization through better thinking, 'to live more abundantly'"; "in the personal sense of what is real, we hoped to lead a student to desire real involvement with . . . conceptual expression in his writing" (Rohman and Wlecke,

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[1] For guidance in tracking down sources on pre-writing, neo-classical, dramatistic, and tagmemic approaches to invention, I am indebted to Richard Young's excellent bibliographical essay, "Invention: A Topographical Survey," in Gary Tate, ed., Teaching Composition: 10 Bibliographical Essays (Fort Worth: Texas Christian University Press, 1976), pp. 1-44.

1964, p. 7; italics added). In other terms, Rohman's pre-writing, like Elbow's freewriting, seems to have as its primary goal the writer's discovery of his or her own persona. For this goal to be reached, the writer must be motivated and involved--working at writing from within (pp. 2-3). Rohman's goals, like those behind freewriting, are quite different from those of classical invention.

The specific task of the writer, according to Rohman and Wlecke, is "to discover (L. invenio, to discover) within himself a pattern with which to organize his subject--the act of analogy in its widest sense as the illumination of any present circumstance by comparison with an assumed similar event in the past through a process of inference" (p. 5). All too often, would-be writers impose "inherited" patterns on subjects about which they do not have intimate knowledge, which they have not fully experienced. In contrast, pre-writing, or "groping," techniques, encourage writers to discover their own "in-forming structure"; they promote "effective concept formation," which includes three things: "attention to the particularity of events; attention to the personal sense of what is real; and transference of an already known structure of events to the events of the subject" (p. 7). Rohman's primary vehicles--his heuristics--for facilitating "effective concept formation" are keeping a journal, meditating, and using analogies (p. 24), although pre-writing heuristics need not be limited to these three.

It is clear that Rohman's formulations and suggestions for practice are more a synthesis of others' ideas than a new theory of discovery. Nonetheless, he was the first person to present the particular

synthesis as applied to written composition.

The practice of pre-writing is encouraged in several writing texts. Rohman's Michigan State colleague Burhans treats pre-writing, and then goes on to writing and rewriting (1971). Donald Stewart focuses on pre-writing in his text (1972), and describes its use in his course in a College Composition and Communication article (1974). Paull and Kligerman (1973) and Corder (1979) have also produced texts which include Rohman's methods among other heuristics for invention.

One of the pluses associated with Rohman's pre-writing is that it has been subjected to empirical test. The first study of the effects of pre-writing in the classroom was conducted by Rohman and his research assistant (Rohman and Wlecke, 1964). They used pre-writing methods they had devised to teach several "experimental" sections of a composition course. Controls were provided by sections of the same course being taught by other techniques. No randomization was attempted. Student essays, evaluated by outsiders, as well as subjective reactions of students and instructors, were the dependent measures in the study. The *t*-test run on scores of student essays revealed significant differences in essays written by students under the experimental and control conditions. Students in the pre-writing courses wrote generally more effective essays. Subjective responses in general indicated both teachers and students to be favorable to the pre-writing approach. Rohman and Wlecke's research program was extended by Burhans (1968), who found similar results, and found even better results when training in invention was accompanied by training in arrangement and style.

There are numerous methodological deficiencies in the studies of

pre-writing, including confounds across approach and teacher personality variables, and possible "Hawthorne" effects (changes in behavior resulting from increased attention). Nonetheless, the results provide some hope that an approach to writing which emphasizes heuristics can produce positive results.

Beyond that, the major contribution of Rohman's pre-writing seems to be its emphasis on the writing-task as process, and its attempt to provide a structured approach to that process. As important as this contribution is, Rohman's view of the writing process does not stand as definitive. For Rohman seems to assume that both discovery and "self-actualization" are linear processes, an assumption derived perhaps more from classroom practices than from careful observation of writers. And the purpose of writing as it is expressed by Rohman (as well as by the freewriting advocates) strikes me as tinged by the spirit of the 1960s: primary emphasis is on personal awareness, and the I seems usually the most important person. Insofar as the writer shares what Rohman sees as the goal of writing, he or she is likely to find Rohman's heuristics helpful. But for purposes of communicating ideas to others, the writer might better turn to other approaches.

(Again I note that the term pre-writing, when used in current writing texts, seldom refers exclusively to the approach of Rohman and Wlecke. For example, Koch and Brazil [1978] suggest some pre-writing exercises derived from Rohman's ideas, but extend their practice to groups; and the major exercise which Symes [1979] uses in his "pre-writing assignments"-- making lists--seems not related to Rohman's work.)

Neo-classical Invention. It is not surprising that many persons who are concerned with invention turn to Aristotle for guidance: his premises have survived centuries of use; his concern with audience is practical and pleases communications theorists; and his topoi (or variations on them) are convenient heuristics for topic-development. Corbett (1967) cites these and several other advantages inherent in approaches derived from classical rhetoric.

The neo in neo-classical refers to adaptations of classical discourse patterns to written composition. One of the first contemporary reported uses of neo-classical invention techniques was provided by Bilsky, Hazlett, Streeter, and Weaver (1953). They feared that use of the topics, while theoretically attractive, would prove only tenuously related to the "workaday job of writing a composition." But they reported: "On the basis of experience, we are now convinced that the topics can be intimately related to the student's problems in writing arguments, that they help the student to clarify the ideas which he wishes to set down on paper, and that, above all, they fulfill their primary purpose--the stimulation of the student's powers to discover relevant and effective arguments" (p. 215).

Bilsky's classroom practices led to his textbook (1956). Two other major figures in the area of classical rhetoric similarly have written not only articles on theory and practice but also textbooks: Corbett (1963, 1967, 1971), half of whose text is devoted to invention; and Winterowd (1973, 1975a), whose textbook provides examples of modern as well as neo-classical approaches to invention. Similar eclecticism, grounded in classical rhetoric, is obvious in Berke's (1972) textbook. Larson (1968)

and Boley (1979), like Berke, use lists of questions to stimulate invention in their classically informed articles about discovery techniques.

Ohmann (1964) implies certain criticisms of classical rhetoric in his call for a "new rhetoric": classical rhetoric somehow assumes "an insistent force [a speaker] acting upon a stubborn object [an audience]" (p. 18), while rhetors today are more likely to emphasize cooperation and mutuality; it assumes "that the speaker or writer knows in advance what is true and what is good," while we today view writing at least in part as self-discovery. My own criticisms have to do with practicality and validity. Few students today seem attracted to the approach to discovery of the topics; they are, after all, raised with the fewer-faceted method of scientific discovery as their society's paradigm for probing the unknown. More importantly, there has been no major effort to demonstrate that the use of classical heuristics produces better writing. Even Corbett, a teacher of classical heuristics, admits, "When I try to make use of the topics, I find the system mechanical and inhibiting" (1963, p. 18). Yet Corbett writes well. Teachers of writing deserve more than hearsay evidence if topics, old or new, are to again be taught as a prime, practical, and economical means of invention.

Dramatistic Analysis. Often mentioned in conjunction with invention--and in part a possible answer to objections to neo-classical approaches--is Burke's (1945) dramatistic method, built around a pentad of act, scene, agent, agency, and purpose. "Any complete statement about motives will offer some kind of answers to these five questions: what was done (act), when or where it was done (scene),

who did it (agent), how he did it (agency), and why (purpose)" (p. xv). This pentad, similar to the journalist's "who, what, when, where, why?," but emphasizing the dynamics of drama, is intended to act as a heuristic which leads to better understanding of behavior.

Burke's rhetorical theory (1950) stresses the importance of identification as the "new rhetoric" replacement for persuasion. The pentad, then, can be used to discover the important features of a topic, to discover the motives present in a situation, and thereby to help the investigator achieve identification (or "consubstantiality" [1945, p. 46]).

Burke is cited in works on composition primarily, I suspect, because of his prominence as a rhetorician, and because of the appeal of his heuristic's parsimony. However, his approach does not appear very often in composition textbooks, and has to my knowledge generated no published research. The pentad achieves its most prominent use in a composition textbook in Irmscher's handbook (1976, pp. 29-48). There the pentad is used to generate heuristic questions, and Irmscher proposes that "trying to answer the questions that spring from the terms becomes a way of gathering resources for writing" (p. 30). And Irmscher provides thorough examples of how the pentad might be used.

Burke's heuristics are simple, yet they promote a thorough examination; they are as applicable to concerns with audience as they are to the generation and testing of ideas; they appear within a theoretical frame. They deserve more attention and applied research than they have received.

Tagmemics. Like classical rhetoric, the tagmemic theory of language describes a coherent system. In part for this reason, it has attracted more researchers than have other approaches to invention. Although it seems less well known than pre-writing, having attracted a rather restricted group of adherents, along with pre-writing it has to be considered one of today's dominant heuristic approaches to invention in writing.

The primary statement of the tagmemic theory of language was put forth by linguist Kenneth Pike (1967). His theory grew out of years of linguistic work devoted to an attempt to discover a universal grammar. The theory, a linguistic application of field theory in physics and General Systems Theory (Bertalanffy, 1969), is based on an epistemology which sees human perception as trimodal. All data/experience can be perceived as (1) particles, isolates devoid of context; (2) waves, parts of a dynamic contextual continuum; and/or (3) parts of a field, dimensions of an organized whole. Further, any unit of data can be adequately understood only if three aspects of the unit are known: (1) its contrastive features; (2) its range of variation; and (3) its distribution in larger contexts. These two statements, containing epistemological trinities, constitute two of the several maxims which make up Pike's system.

Tagmemics have been extended to literary criticism and, more relevantly for our purposes, to composition, initially in four articles which appeared in College Composition and Communication in 1964 (English, 1964; Howes, 1964; Pike, 1964a & b). Young (1968a) emphasized heuristic possibilities inherent in the tagmemic approach. And

Young, Becker, and Pike (1970) provided a textbook which is at once a theoretical statement and a set of classroom exercises applying tagmemics to invention-for-writing. Their work is more extensive than that of Rohman, in that they not only apply tagmemics to exploration of one's own ideas, but also address problems of audience and purpose.

A brief review of the practices suggested by Young et al. (1970) seems in order. The life-blood of the text is Pike's six maxims, applied to needs created by the writing situation. The text's skeleton is the "four stages of inquiry," the conventional stages of preparation, incubation, illumination, and verification. (Though the authors note that this process varies from individual to individual, and is often non-linear or cyclical, their presentation of it is quite linear, perhaps a requirement of their medium of communication.) Help at various stages of the process is provided by heuristics designed to aid the writer in the retrieval of relevant information, to call attention to needs for further information, and to prepare the writer for "the intuition of an ordering principle, or hypothesis" (p. 120). Thus, a heuristic is provided to aid in problem-definition. But the major heuristic of the text, used for exploration, is a 3-by-3 matrix based on the two epistemological maxims of Pike mentioned earlier. Hypothesis-generation via this matrix is illustrated with an example of investigating Aztec grammar. (Perhaps the example says something about the type of freshman composition student the authors had in mind when they prepared the text.) Verification of hypotheses is aided by use of familiar heuristics which test correspondence, consistency, and usefulness. Since the authors state that "the task of the writer is to set in motion

a process that will result in a particular change in the reader's image" (p. 217), we can expect them to evidence a concern with audience. This they do, using as their basic model of the reader's change-procedure the therapy procedures developed over the years by psychologist Carl Rogers. Accordingly, change is seen as difficult or impossible when the reader finds a feature of his image threatened by the writer. (We note here that the Young et al. approach is, from a psychological perspective, cognitive in outlook and at least in part influenced by ideas of Leon Festinger.) Change is facilitated when "bridges" are built between writer and reader; heuristics are provided to aid in bridge-building. Although the climate in which these bridges are to be built is emotional, the bridges themselves are basically intellectual.

Young et al. have thus provided a comprehensive overview of the writing process, as well as a number of problem-solving heuristics which can be used at various stages in that process. While their own work is intended as a textbook, its very comprehensiveness may "threaten" a would-be freshman user. Thus, simplified versions of their approach have appeared in parts of at least three other texts: Kytle (1970, pp. 81-90); Williams (1970, pp. 166-205); and Winterowd (1975, pp. 98-109).

There have been at least three major studies of tagmemic procedures as used in the composition classroom. Odell (1970, 1973, 1974), using heuristics suggested by Pike (1964a & b), taught a composition course (at the University of Michigan) and then investigated student essays to see if the teaching of tagmemic heuristic procedures would

lead to writing which showed more thorough examination of data, fewer conceptual gaps, and more thorough problem solving. Results showed that writers from the experimental group examined data more often, although not in a greater variety of ways; did not leave fewer conceptual gaps; and in part demonstrated better problem solving through presentation of more evidence. There are numerous problems with Odell's study, including his acting as investigator, teacher, and partial evaluator of raw data. But it suggests useful research questions.

A more rigorous study of tagmemics and composition was reported by Young and Koen (1973). The authors used a repeated-measures design with 12 seniors enrolled in a writing course at the University of Michigan. The investigators asked a number of clear questions about the effects of using the Young et al. (1970) approaches; their dependent variables included two essays analyzing short stories, student-generated lists of problems in the world and in selected fiction, and journals of reactions. They found that, although subjects did not seem to become more aware of problems over a semester of exposure to the Young et al. approach, they did become better able to articulate problematic situations. Subjects also demonstrated increasingly greater variety in approaches to problems, and improved their ability to test their own hypotheses for adequacy. The authors report certain problems with rater reliability, and they used statistical approaches to test the impact of such problems when such an approach was possible. Because of problems with one of their measuring instruments, and in the absence of a separate control group, Young and Koen could not ascribe changes in subjects' writing to use of the Young et al. 3-by-3

matrix as a heuristic. But the investigators promised further study.

The only study of the tagmemic approach to composition not intimately associated with its Michigan developers and their students was conducted by Findlay (1974) at the University of Illinois. Findlay used senior high-school students in several writing-workshop sections, as well as students in two conventional writing classes, as her subjects. Using "topic lists" generated by various single-word verbal stimuli (e.g., balloon, sand), she found that subjects in the sections based on the Young et al. approach increased gradually and steadily the number and kinds of ideas they produced in response to the stimuli. (However, the posting of "section averages" in number of ideas led to competition among the sections [p. 132]. This confound makes it difficult to conclude that increases were the result of exposure to tagmemic heuristics.) Rather loose content analysis of essays revealed that students in the tagmemics sections tended to write "more interesting" papers after a semester of exposure to tagmemic heuristics. And attitude-scale ratings showed students in the tagmemics sections consistently to have more positive attitudes toward writing.

I report at length on the tagmemic approach to writing because it is the most thoroughly explicated and most frequently tested of the post-classical approaches to invention in composition. But its relevance remains potential: despite the articles devoted to it over the last 15 years, it is ignored by most textbooks and remains the province essentially of professors, graduates, and students from the University of Michigan. The reasons for its not catching on are undoubtedly related to the obstacles to the rise of heuristic approaches I will mention at the

end of this chapter. Two other possible reasons also come to mind. One is that the tagmemic system, while comprehensive for purposes of discovery, is cumbersome, and more likely to appeal to the philosopher/linguist/theoretician than the college composition student. The second is that the need to switch heuristics in order to approach each new problem in the composition process requires either the learning of a lot of heuristics or the ready availability of a textbook guide--neither of which is an attractive probability. The criticisms of others who have tried the Young et al. approach in the classroom suggest further difficulties. Hoover (1971) found the tagmemic approach appealing to the intellect but not to the emotions; her students found the language of the Young et al. text "obscure" and "complex," with a false "aura of 'holiness'" about it (p. 66). And Kinney (1978), in the most serious published attack on the theory to date, criticized the tagmemic approach for being the product of an "academically inbred group" not all that concerned with teaching people how to write. He found the claims for the 3-by-3 heuristic to be inflated, and saw it as simply one possibility among many. And he found that the use of tagmemic heuristics produces static, taxonomic, descriptive analysis rather than an understanding of dynamic processes.

As Winterowd (not of Michigan) put it, the final value of the Young et al. tagmemic approach may well be that the entire approach can itself serve as a heuristic--for theory-building in rhetorical invention (1975b).

"Problem-solving" Approaches. While most of the approaches to invention here reviewed can be considered, broadly, as problem-solving

approaches, there is another group of approaches defined by their specific acknowledgement of roots in one or another of the problem-solving paradigms suggested by psychological research. I will present a thorough review of that research in the next chapter. For now, I will sketch the general features of several "problem-solving" approaches to invention and discuss the research which they have engendered.

Widvey (1971) based her approach to teaching composition on similar principles she found to underlie inquiry teaching, discovery learning, and problem solving. She developed her problem-solving approach to teaching high-school composition courses into a 120-page mimeographed text, A New Rhetoric for Students. This text became the guide for the six experimental sections of high-school juniors involved in Widvey's study of her problem-solving approach's efficacy. A total of 306 students were involved in the study, half of them in "traditionally taught" sections. Teachers and students were randomly assigned to groups as far as hour-limitations permitted--one of the better jobs of randomization I have seen in educational research (possible in part, no doubt, because the investigator was also chairman of the English Department involved).

Widvey breaks problem solving into seven steps. These steps involve definition of the problem, generation of means with which to explore the problem, use of those means to collect data on the problem, grouping of data and the generation of related theses, and verification of theses by examination of evidence. (The verification may require the writing of a rough draft of an essay.) Audience is introduced by Widvey in conjunction with examination of evidence, but is evidently

not of great concern--Widvey writes, "Little time needs to be spent on such matters" (p. 54).

Using Sarett's "Test of Reflective Thinking" (unpublished, n.d.) as one of her dependent measures, Widvey found the experimental subjects to score significantly higher ($p < .05$, $df = 266$). But the actual difference in scores (35.4 vs. 33.7) is not very striking. Subjects in experimental sections were also found to write more "effective" essays, but this result is compromised by occasional low inter-rater reliability (ranging from .54 to .74 across pairs of three raters). Widvey found no differences in attitude between members of the experimental and control groups.

Widvey's approach to writing seems soundly based in the problem-solving literature available to her, and her research design was generally strong. Unfortunately, no further research based on her approach has appeared.

Schiff (1978) experimented with a problem-solving approach to paragraph development, although he writes of the dependent-variable paragraphs as if they were developed essays. His operations for acquisition of problem-solving skills in composition were neat. Subjects were given randomly ordered "sentences strips," sentences cut from a single paragraph. Problem-definition and solution-generation/evaluation involved ordering the sentences and scanning the different orders for appropriateness. After comparing their orderings with that of the original intact paragraph, subjects were asked to write one or two paragraphs on a topic similar to that of the model paragraph. Schiff found that urban and suburban high-school students who had

been involved in 12 such problem-solving "lessons" wrote better comparison/contrast essays than did students exposed to traditional writing "lessons." A glance at his data reveals that the overall differences between experimental and control groups were almost entirely accounted for by differences between the urban subject-groups, a fact which leads to questions about factors relevant to the observed differences.

Some of the most exciting research in the area of problem solving has been undertaken by Flower and Hayes of Carnegie-Mellon University. Flower is a communications specialist; Hayes is an established cognitive psychologist. Their 1977 article spoke of investigations they have conducted on the "heuristics and strategies of both good and poor writers, using the methods of 'protocol analysis'" (p. 451), analysis of taped transcripts of writers composing out loud. Flower and Hayes, working with the results of their investigation as well as with studies on creativity, outlined a set of heuristics which can be of use to the writer. These heuristics, they maintain, should provide the writer with an alternative to following "rules," waiting for "inspiration," or claiming "writer's block." The heuristics they provide strike me as well grounded in psychological research; their stress on the non-linearity of the writing process seems empirically justified; their audience-oriented heuristics fill a gap in other heuristically oriented efforts.

Several recent articles and papers by Flower and Hayes reveal that their contribution to the literature on problem solving and writing is not limited to delineation of useful heuristics. Their research has

yielded further refinements in the method of "protocol analysis," descriptions of differences in the writing processes of professional and novice writers, and a tentative model of the writing process.

Protocol analysis, as described by Hayes and Flower (1979a), requires that the subject--a writer--say aloud everything he or she is thinking, however trivial, while performing the writing task. This is done in the presence of a "prompter," who prompts the subject to speak whenever he or she falls silent. The entire procedure is recorded; the recording is transcribed for purposes of analysis. Analysis involves examination of the transcript with the aid of the subject's notes and written text; from these, the analyst must "make some reasonable guesses about what the subject was doing" (p. 6). Hayes and Flower report several instances in which independent raters reliably related items in the transcript with components in an inferred composing process or rhetorical framework (Flower and Hayes, 1979). In all cases, it seems that this reliability was achieved along dimensions determined by the experimenters rather than by the raters in the course of independent analysis.

Since the strength of claims made by Flower and Hayes rests at least in part on the validity and reliability of protocol analysis, and since variations on the method seem likely to continue to be used in composition research (Emig, 1971), the method deserves some comment. Hayes and Flower (1979a) compare protocol analysis with attempts to analyze the behavior of porpoises on the basis of observations of their surfacings. "Between surfacings, the mental process, like the porpoise, runs deep and silent. Our task is to infer the course of the process

from these brief traces" (p. 12). In effect, Hayes and Flower argue that we can learn more about invisible mental processes from examination of ongoing, immediate products of those processes--verbal utterances--than we can from examining the ultimate product--the finished piece of writing--alone. They also note that protocol analysis seems to be at most a laboratory research tool without immediate potential applications in teaching or evaluation.

Given how little we know about the writing process, use of protocol analysis can undoubtedly at this time yield helpful information. But it is hardly an ideal research tool, and its utility is severely limited. First, it cannot be used with a "random selection" of writers: the subject pool is limited to those persons who can write, think, and speak unceasingly in the presence of both a tape recorder and an attentive human being who serves as "prompter." Such a pool is unlikely to contain a representative sample of writers, even of professional writers. Second, the procedures involved in protocol analysis are undoubtedly reactive--that is, the requirement of ongoing verbalizations of thought undoubtedly changes the process of writing from what it would be under "ordinary" conditions by, among other things, introducing a novel stimulus into the writing situation. Third, the methods of analysis, and the length of time they require, preclude the use of protocol analysis with large numbers of subjects. The long article by Hayes and Flower (1979a) derived from analysis of slightly more than half of one transcript produced in conjunction with the writing of one one-page essay. Flower and Hayes's (1979) distinctions between processes of good and poor writers are based

primarily on analysis of parts of transcripts from nine subjects. The use of a handful of subjects seems to prevail whenever protocol analysis is the measurement tool in use.

All three of these limitations suggest that the results of protocol analysis are unlikely to have much generalizability. Nonetheless, the method is useful, much as the case study is useful at certain points in research.

The research of Flower and Hayes has also yielded information on differences between professional and novice writers. Flower and Hayes (1980) first of all provide a model of "the Rhetorical Problem" upon which the description of differences rests. This model shows "the basic elements of a writing problem which a given writer could actively consider in the process of composing, if he or she chose to." These elements are (1) the writing assignment or exigency itself; (2) the audience for which the writing is intended; and, in conjunction with these two elements of the rhetorical situation, (3) the writer's own goals, vis-à-vis (a) the reader (what effect does the writer want to have?); (b) the writer's persona (what voice, or projected self, should the writer create in order to establish the required relationship with the reader?); (c) meaning (what network of ideas should be explored?); and (d) text (which conventions of writing should be followed in the situation?). More simply, then, the typical writing exigency involves a topic and a larger rhetorical problem (purpose, requirements set by audience, and writer's sense of appropriate self). Novice writers typically focus on topic (meaning and text requirements), while expert writers respond as well to all elements in the rhetorical

problem. More precisely, novice writers seem to generate up to 70% of their new ideas by responding to topic-considerations alone, while expert writers generate up to 60% of their new ideas in response to the larger rhetorical problem (Flower and Hayes, 1979). Flower (1979) uses these differences in evolving her notions of writer-based and reader-based prose, each of which is appropriate, she maintains, for situations which the writing student can learn to distinguish.

Finally, Flower and Hayes's research has generated a model of the writing process (Hayes and Flower, 1979a & b). While the model is complex, its basic elements are conventional: planning (generating and organizing), translating (putting ideas into standard written English), and reviewing (reading and editing). For purposes of this review, we note that the model is basically one of problem-solving processes, and that work in a given component of the process can be aided by heuristics.

In sum, the research of Flower and Hayes to date supports three important contentions:

1. The cognitive processes in which writers engage can be described in units which allow comparisons among writers; these units together suggest a model of the general writing process.

2. Particularly germane in distinguishing processes which are followed by successful writers are units involving the larger rhetorical problem--purposes, audience, writer's persona. Effective heuristics for invention will likely stress exploration not only of a topic, but also of goals, audience characteristics, and the writer's projected self.

3. The writing process is not, ordinarily, one of responding to inspiration. Indeed, the writing process can be described as a problem-solving process. Thus, familiarity with problem-solving strategies should be of potential help to the writer. (Approaches to the teaching of some problem-solving strategies of use to the writer are outlined in Flower's pilot textbook [1978].)

Whither Heuristics for Invention?

Except for the work of Flower and Hayes, there are few recent reports of development and/or testing of new heuristics for invention. Indeed, three recent prominent articles treat heuristics more from a philosophical than a pedagogical perspective (Kinney, 1979; Lauer, 1979; Wells, 1977). Despite the efforts of the persons whose work I have just reviewed, heuristic approaches to invention are not all that frequently taught in the college writing classroom. Even less frequently are they topics of research.

One reason for the mixed attention to heuristic approaches is undoubtedly their association with rhetoric. It is quite clear that teachers of composition have yet to reach a consensus on the role which rhetoric--new or old--should play in the teaching of writing. Some teachers and theoreticians, trained by and respectful of an earlier generation of rhetoricians, see the teaching of writing as concerned primarily with the arrangement of ideas and with style--concerns which dominated rhetoric earlier in this century. Invention, and thus heuristics, generally elicits little concern among such persons. Others, often those trained more recently, have pronounced biases against

rhetoric, especially rhetoric in the writing classroom. These biases may result in a resistance to any formal concern with heuristics for rhetorical invention. Finally, those in composition who are enthusiastic about the "new" rhetoric and are concerned with invention may be frustrated by the sheer number of (usually untested) approaches to invention which have been suggested.

Attitudes toward heuristics are also influenced by the educational backgrounds of those who might use heuristics in the writing classroom. The majority of college composition instructors today are either teaching assistants--students in graduate literature programs--or holders of the Ph.D. in literature. Most of these instructors have done or are doing advanced study in literature and criticism; few have had any formal training in theories and techniques of teaching composition. One result of this typical background is that many teachers of writing have a pronounced respect for "inspiration," "creativity," "genius," and "the muse"--in other words, they tend to inhabit romantic rather than empirical worlds. For such persons, heuristics may seem to be "at home" only in the non-romantic world of computer scientists and other such "enemies" of the humanities (see Berthoff, 1971). This attitude at least in part explains why the English-department researcher is unlikely to be encouraged to perform research with heuristics by his or her professional colleagues.

Another obstacle to research on and dispersion of heuristic approaches to invention is the composition area's "respect" for theory. "Hard" research is a relatively new phenomenon in the field; perhaps it is some desire to "legitimize" such research which leads to the

frequency of published pleas for composition "theory" and "theory-based" research. One reason why tagmemic heuristics have been studied more than any other heuristics-for-writing may well be their being sanctioned by the existence of tagmemic theory. But psychology today provides more and more examples of valuable research which was conceived and executed without the guidance of a comprehensive theory. Composition researchers might learn from psychologists' experience: perhaps composition research which shows that a particular approach can be of some use in the composition classroom should not be seen as inferior just because it is not theory-based. Facts--research results --can, after all, lead to the generation of new theories as well as validate already-stated theory.

Despite these possible obstacles to heuristics-for-invention in the writing classroom, there are grounds for hope that heuristic approaches will be more frequently studied, if not become an established part of the composition-course curriculum. There seems to be a growing awareness of the need for studied content in student writing. "I feel" has replaced "I think" and "I beleive" not only in conversation, but also in writing. In reaction, at least some teachers are reemphasizing the importance of clarity and substance in thinking and writing as essential products of a real education. As educators seek to aid in the generation of such products, it seems likely that greater interest in heuristics will emerge. Then too, writing teachers today seem less opposed to "structure" (that is, less in favor of "spontaneous expression") than they were during, for example, the late 1960s. Thus, the structure provided by heuristic approaches to invention may come to

be seen in increasingly positive light.

In short, it seems that Lauer's (1970) call for increased attention to psychological research on heuristics is more timely today than it was a decade ago.

CHAPTER II

PROBLEM SOLVING: WHAT IT IS AND WHAT PSYCHOLOGISTS KNOW ABOUT IT

Among the approaches to invention surveyed in the last chapter, freewriting was the first which was clearly amenable to heuristic formulations. But research on freewriting remains unpublished, if it exists at all. Such is not the case with respect to the last of the approaches discussed in the chapter: the problem-solving approach. Decades of research on problem solving have been involved in the formulation of problem-solving heuristics. To better understand problem-solving heuristics--or, more precisely, the family of problem-solving heuristics --it is useful to know something about the course of problem-solving research in psychology.

Problem-solving research has been reviewed elsewhere (Duncan, 1959; Davis, 1966; Newell & Simon, 1972), and the scope of the present study does not demand an exhaustive new review. My goal is, rather, to define phenomenally the complex of behaviors studied under the rubric problem solving; and, from the perspective of a social psychologist interested in testing the use of problem-solving techniques in a new applied setting, to draw conclusions about problem solving which are suggested by research. To do this, I will first review definitions of problem solving from various theoretical perspectives; then I will review historical approaches to the study and use of problem

solving, on the assumption that we can best learn what a thing is by observing how people have grappled with and used it. Finally, I will summarize the results of research which has involved the training of human beings in the use of problem-solving skills.

Definitions

There exists a variety of definitions of problem solving, most of which reflect particular theoretical orientations. Some of these definitions might be classified as reductionistic, in that they view problem solving in terms of molecular components; others might be seen as dynamic, with an emphasis on problem solving as a process.

Although they holistically study dynamic (and covert) processes of perceptual field organization, gestalt psychologists can be seen as reducing problem solving to phenomena associated with perception. For example, Kohler, in his The Mentality of Apes (1925), held that a problem does not exist until it is perceived by an organism. Once perceived, it sets up stresses in the organism's psychological field, stresses which demand a reorganization of that field. In the course of reorganizing, the organism will perceive interrelations among elements; one or more of these interrelations will suggest a solution to the problem. The moment at which an appropriate interrelationship is perceived is a moment of insight. This insight is seen as a central part of problem solving.

It is not difficult to see how this gestalt viewpoint has influenced other definitions and practices of problem solving. Educators Bloom and Broder (1950), for example, defined problem solving as "the

process by which the subject goes from the problem or task as he sees it to the solution which he regards as meeting the demands of the problem" (p. 7, italics added). Gestalt psychology also serves as the foundation of many practices suggested for "creative" problem solving. Brainstorming and analogic thinking (to be discussed below), for example, can be used to restructure one's perceptual field, thus allowing the magic moment of "aha!"--insight--to occur.

A more clearly reductionistic definition of problem solving comes from within the tradition of operant learning theory. According to Skinner (1966), "Problem solving is concerned with relations which prevail among three terms: a stimulus, a response, and a reinforcing consequence" (p. 226). "A hungry man faces a problem if he cannot emit any response previously reinforced with food; to solve it he must change either himself or the situation until a response occurs. The behavior which brings about the change is properly called problem solving and the response it promotes a solution" (p. 225). Skinner does not deny that problem solving can involve a process, or sequence of operations--he does, for example, point to the use of induction, deduction, hypotheses, and heuristics as examples of the person's resorting to "precurrent responses" in response to environmental events. But the sequence of operations is specific to the problem; hence, Skinner sees the more appropriate focus of the study to be the behavioral unit within the sequence. And each behavioral unit can be accounted for by principles of operant behavior.

Skinner's view of problem solving is similar to that of most psychologists within the Stimulus-Response domain. And it has had

practical applications--for example, as it has been extended by Staats and his associates (e.g., Staats, 1966, 1968, 1975). But its emphasis on the molecular unit does not seem to provide ready prescriptions for the person interested in becoming a more skillful problem-solver. In fact, Skinner's deemphasis on mediators (such as thought) can, if religiously observed, impede problem solving. Green (1966) reports a subject in a finger-maze learning experiment who believed theories of incremental learning. The subject passively ran his finger through the maze, expecting the finger to learn the maze. After the finger had had four times as many trials as other subjects' fingers had needed, the subject was persuaded to think, or at least to take some active part in learning.

Other definitions of problem solving place more emphasis on problem solving as process. Following an information-processing approach, Newell and Simon (1972) see problem solving "within a framework that views the process as selecting from a large set of possibilities an element having certain properties, or has traversing a large space to find one of a rare set of paths with preferred properties" (p. 137). The framework owes an obvious debt to computer science. Less obvious, perhaps, is its kinship with gestalt frameworks (it accepts the relevance of internal cognitive events [Davis, 1973]). And, with a rigor comparable to that demanded by those who hold S-R viewpoints, the proponent of the information-processing framework can describe any moment within the process in terms of its components. The influence of this approach can be seen in problem-solving training programs which emphasize protocol analysis and the generation of problem-solving rules,

models, and heuristics.

The definitions mentioned thus far derive from theory-guided research. Applied research, though not necessarily atheoretical, provides yet other definitions of problem solving. Perhaps typical of them is this definition proposed by D'Zurilla and Goldfried (1971): "Problem solving may be defined as a behavioral process, whether overt or cognitive in nature, which (a) makes available a variety of potentially effective response alternatives for dealing with the problematic situation and (b) increases the probability of selecting the most effective response from among these various alternatives" (p. 108, italics omitted). The authors of this definition are behavioristic in their emphasis on the situation-specificity of each problem. But they distinguish themselves from S-R theorists in that they view problem solving more as a process, a discovery-process, than as a sequence of discretely emitted responses.

This process-oriented behavioral definition sees problem solving as a set of skills which an individual can learn, and learn to use effectively. As we shall see, an increasing amount of research derives from attempts to define and teach problem-solving strategies. By speaking of "effective . . . alternatives," the definition, like that from the information-processing framework, recognizes that there is often more than one solution to a problem; by speaking of selection of the "most effective response," the definition suggests that problem solving involves decision-making, and, at least potentially, judgments based on qualitative as well as quantitative assessment.

Approaches to the Study of Problem Solving

Definitions provide us with abstract visions of what problem solving is about. To be more concrete, we might do better to follow Corman, who in presenting a 1958 review of problem-solving literature, stated that we can consider problem solving as "the behaviors that researchers, who say they are studying problem solving, study" (p. 459).

Grouping of studies is an arbitrary venture. I shall group studies into two categories: studies from academic psychology and studies from applied settings. Academic psychology has produced studies in the gestalt, experimental, and information-processing traditions. Applied studies derive primarily from industrial, educational, clinical, and applied social psychology.

Some of the earliest psychological studies of problem solving were conducted in the late nineteenth century as studies of thinking. Such studies, from the early part of this century on, occurred increasingly within the framework of gestalt theory. We have already considered Kohler's (1925) description of problem solving, with its emphasis on perceptual configuration. Luchins (1942), in experimenting with mental sets, noted the negative effects of habit on effective problem solving. Sheerer (1963) saw fixated mental sets behind a lack of problem-solving flexibility: fixated subjects are unlikely to choose the most effective or efficient path to solution. Maier (1970), approaching problem solving from non-Gestalt, yet cognitive, framework, in a

sense extended the work of Luchins by delineating the mental set which was most likely to facilitate problem solving. This mental set involved concern with the present and future, with the particular, with clear goals and solutions, with variety, and with non-impulsive action.

Developing alongside the cognitive-gestalt tradition, but distinguished from it by a distrust of "mentalistic events," was the tradition of experimental psychology. The principles of learning developed within this tradition had their roots in Aristotle's laws of association. Thorndike (1898), in a series of experiments with cats in problem-boxes, elaborated principles of trial-and-error problem solving. More complex types of problem-solving behavior were brought into the framework by Hull (1934), who introduced, as an explanatory principle, the concept of habit-family hierarchies. These hierarchies could be either convergent (several stimuli associated with the same response) or divergent (several responses associated with the same stimuli). Maltzman (1955) extended this concept to include hierarchies of hierarchies in his attempt to explain complex behavior. In a related manner, Staats (e.g., 1968) used hierarchies of learned verbal sequences to explain complex cognitive behavior.

The Stimulus-Response approach to problem solving has been criticized for sacrificing completeness in an attempt to gain simplicity (Davis, 1973). Nonetheless, whatever one's theoretical framework, one could argue that experimental psychology has contributed much to the study of problem solving by emphasizing the situation-specificity of each behavioral event. As we shall see below, this emphasis is translated into a concern with careful specification of the problem in

much of the applied problem-solving literature.

A good deal of the recent research in problem solving occurs within the information-processing framework. The approach goes back to the development of cybernetics (Wiener, 1948) and early attempts to create "artificial intelligence" through the programing of computers to solve complex problems. Research within this framework relies heavily on computer simulation, and allows construction and testing of models of human cognitive processes. Particularly important has been the development of heuristic (as opposed to algorithmic) programs (Newell and Simon, 1972). These programs allow simulation of complex rule-following and heuristic-guided (as opposed to trial-and-error) problem-solving behavior. All in all, information processing allows the study of complex, non-linear processes of problem solving.

Requiring at least brief mention in any survey of academic psychology's contribution to the problem-solving literature is the area of psychometrics. This area has for a long time concerned itself with delineating components of general mental ability. Guilford's (1967) studies of intelligence resulted in an emphasis on the importance of divergent thinking in creative problem solving. Guilford's studies are the basis for Torrance's (1966) battery of creativity measures, tests still widely used in the study of "creative" behavior.

Studies by Guilford and by Torrance provide a convenient transition to consideration of problem solving in applied settings. Guilford and Torrance were often asking questions about creativity. This concern with creative behavior has been probably the widest bridge

between academic and applied psychological studies in problem solving. Between many studies with other foci there have been no bridges. In general, academic psychology has emphasized component-specification and/or model-building, while applied psychology has been concerned with idea-generation and decision-making. Applied psychology in particular has focused on problem-solving process(es), from problem-definition through ideas-generation on to decision-making and evaluation. The unbridged gulf between this molar perspective and the often molecular perspective of academic psychology led Davis to comment: "Rarely has any theory or [laboratory] research in psychological problem solving specified how distantly related solution-components become combined into a final creative solution" (1973, p. 76). In many applied settings, arriving at the "final creative solution" is what both psycologist and client have as their goal.

While the first few applied approaches to problem solving which I will mention were generally developed for use in industrial settings, most have also been used in educational environments.

Much of the work on the brainstorming approach to problem solving was done by Osborn (1963). Osborn provided rules for group-brainstorming: turn off your mental "critic"--allow no criticism of ideas, however wild; welcome freewheeling speculation; seek a quantity of ideas; and feel free to combine and improve ideas proposed by other members of the brainstorming group. These rules govern a "mental set" and promote idea-finding. But idea-finding is only one part of the problem-solving process, and Osborn also emphasized the relation between (and practical need for) problem-definition and

idea/solution-evaluation.

Where brainstorming is freewheeling, other approaches to applied problem solving employ more structure, apparently trying to "force" idea-generation. Crawford's (1954) use of an attribute-listing heuristic encourages the problem-solver to "take a step . . . by changing an attribute"--that is, by changing color, shape, texture, size, etc., of some aspect of the problem-situation. Osborn (1963), in addition to pioneering work on brainstorming, proposed question-heuristics, specifically "seventy-three idea-spurring questions." Similar idea-checklists are provided by Davis and Houtman (1968) in their guide for teaching intermediate-school children to design, invent, and improve.

An analogic-thinking approach to problem solving has been developed by Gordon (1961) in his work with what he calls synectics. Gordon has group leaders encourage would-be problem solvers to view a problem in three heuristic ways: as if it were something in nature; as if it were personal (this can lead to role-playing); and as if it were fantasy. Gordon's group leaders move the problem solvers through set stages of a process designed to promote deliberate flexibility.

Problem-solving approaches in education are generally guided by the idea that real education must be concerned with providing students more with useful processes than with memorizable tidbits about products. As already mentioned, many of the approaches devised for problem solving in industry have been adapted for educational purposes. One of the most ambitious attempts to teach problem-solving strategies in an educational setting has produced the creative-thinking

program at State University College in Buffalo, New York (Parnes, 1967; Parnes, Noller, & Biondi, 1977). The research of Parnes and his associates led to the founding of The Journal of Creative Behavior. There are numerous textbooks designed with principles of problem solving in mind (e.g., Myers & Torrance, 1964), and several guides for teachers who are interested in bringing problem-solving principles into their classrooms (e.g., Torrance, 1965; Parnes et al., 1977). Problem solving in educational settings has also been a popular focus for research funding, especially through the U.S. Department of Health, Education, and Welfare's "Cooperative Research Projects" (e.g., Daniels, 1964; Forehand, 1967; Rimoldi et al., 1962, 1964).

Clinical psychology is another applied area which has provided some approaches to problem solving. Morton (1955) used Thematic Apperception Test protocols in an attempts to train adult short-term psychotherapy clients in problem-solving strategies. He reported improved adjustment, but provided no assessment of problem-solving skills. D'Zurilla and Goldfried (1971) were the first to suggest that training in problem-solving skills be incorporated into behavior modification programs. Their careful review of the literature on impersonal problem solving led them to a delineation of components which appear relevant to effective problem solving. D'Zurilla and Goldfried found general agreement on the kinds of operations involved in effective problem solving, and thus provided a rough model of the problem-solving process, divided into five stages or sets of cognitive operations: general orientation (mental sets and attitudinal factors); problem definition and formulation; generation of alternatives;

decision-making (evaluation and selection); and verification. This model was used as the backbone of D'Zurilla and Goldfried's informal clinical program aimed at teaching clients in essence to be their own therapists.

The area of applied social psychology has recently provided some of the most thorough empirical research in problem solving. Gordon's (1970) Parent Effectiveness Training trains parents to communicate with their children in problem situations, and aims at mutually satisfactory resolution of problems. Although PET has achieved popular public recognition, its contribution to science and to society is probably surpassed by that of Spivack and Shure's studies involving a problem-solving approach to childrearing. In contrast with the focus of most efforts to promote problem solving in education settings, their focus (like Gordon's) has been on interpersonal problems and their solutions.

Spivack (1973) held that, regardless of IQ, a key determinant of the quality of a person's social adjustment is a set of mediating skills that define one's capacity to think through and solve interpersonal problems. Shure and Spivack (1978) claimed that this position has been supported in research with middle-class and poor children, adolescents, and adults. They have found that these "mediating skills" both develop at different ages and assume different orders of importance with age. Thus, the most important mediator of young children's social behavioral adjustment appears to be the ability to conceptualize multiple solutions to interpersonal problems; second in importance is the ability to anticipate consequences of acts (Spivack and Shure, 1974). However, from about third-grade on up, the most

important mediating skill becomes what the authors call "means-ends thinking" (Shure and Spivack, 1972), associated with an awareness of obstacles standing before the goal and a recognition that goals are not always reached immediately. Focus on behavioral consequences, and weighing the pros and cons of what to do, become particularly important during adolescence (Spivack, Platt, and Shure, 1976).

The recent study by Presbrey (1979) extended the approach of Spivack and Shure to a population of college students. She found that short-term training in interpersonal problem solving led to enhanced scores on verbal problem-solving measures.

Spivack and Shure were evidently the first to employ problem-solving training programs in large efforts at "primary prevention"--that is, in trying to lessen the number of present and potential social and personal problems by manipulating primary socializing institutions rather than "problem individuals." Allen, Chinsky, Larcen, Lochman, and Selinger (1976) extended this "primary prevention" approach into another elementary-school setting, where they established a program to train children in independent problem-solving skills, not limited to the solving of interpersonal problems. The Allen et al. program was built upon the D'Zurilla and Goldfried model. Using clues provided by other psychological literature, the program included modeling, brainstorming, behavioral rehearsal, reinforcement, and shaping techniques.

Conclusions

We are not yet in a position to provide a difinitive theory or

model for the problem-solving process. Nor do we know the discrete and interactive effects of various components in the problem-solving training programs we have mentioned. Nonetheless, for persons interested in designing and/or implementing problem-solving training programs, several tentative conclusions seem justified.

1. Problem solving can be studied molecularly, as a sequence of discrete S-R events, as is learning-via-conditioning and rote-learning. Problem solving can also be profitably studied as a "transfer-of-training phenomenon involving the operation of cognitive strategies or 'learning sets' . . . which enable an individual to 'create' or 'discover' symbolically solutions to a variety of unfamiliar problems" (D'Zurilla and Goldfried, 1971, p. 108).

2. Problem solving involves external (e.g., stimulus situation; "directions"; goal) and internal (e.g., memory; selection) events (Gagné, 1966). Thus, not all of these events are observable; nor are these events necessarily arranged in a linear sequence (Newell, 1966). Nonetheless, most investigators suggest that the problem-solving <u>process</u> contains several components: awareness of and definition of problem; generation of hypotheses or search for solutions; decision-making; and verification/evaluation. Although these components have been treated as stages in a problem-solving model, we might do better to see them as items on a flowchart, or subroutines of a computer program (Newell and Simon, 1972).

3. Success in problem solving can be attained through three different procedures: trial-and-error (perhaps the most common procedure, especially in unfamiliar problem-situations; also the least

economical procedure); heuristic (the use of guidelines for recall, idea-generation, verification, etc., in a systematic approach to problems with more than one possible solution); and rule-governed (following a finite sequence of steps to arrive at the one correct solution).

4. Success in problem solving can be impeded by possession of an ineffective mental set (e.g., shame at having a problem); by habitual response patterns; and by a lack of problem-solving skills.

5. Success in problem solving is mediated by fluency in particular skills (e.g., ability to generate alternative solutions).

6. Progress through the problem-solving process--and acquisition of fluency in problem-solving skills--can be facilitated both by particular instructions (Maier, 1970) and by general guidelines or heuristics which can be used with different types of problems, or at various stages of the problem-solving process. These heuristics can function in at least three ways: (a) distinguishing relevant aspects of the stimulus situation; (b) stimulating recall of appropriate concepts or rules; and (c) guiding the thinking process in certain directions (Gagné, 1966).

7. Research continues to show that an increasing variety of persons can be taught to use problem-solving heuristics just as they can be taught other cognitive skills: via modeling, reinforcement, shaping, etc. Learning of heuristics might be enhanced by the use of verbalization (Gagné and Smith, 1962) and/or self-statements (Meichenbaum, 1974).

8. The salience of particular heuristics and the ability to generate and use heuristics are both developmental phenomena (Shure and

Spivack, 1978) and functions of individual differences (Bloom and Broder, 1950; Forehand, 1967; Guilford, 1967).

9. Complex problems can often be viewed as a series of discrete, yet related, subproblems, each of which can be approached with its own appropriate set of problem-solving heuristics.

CHAPTER III

TOWARD THE DEVELOPMENT OF PRACTICAL EFFECTIVE HEURISTICS FOR COMPOSITION

I have now reviewed the psychological literature on problem solving, focusing on uses of heuristics and cognitive-strategy training. I have similarly explored both suggested and actual uses of heuristics in the teaching of composition. It is appropriate, then, in this chapter for me to summarize the findings of these reviews and to formulate the research questions which will guide the rest of this study.

Moving through the literature on problem solving is a bit like moving through a maze. This is particularly true when we move in the problem-solving literature which derives from interests in creativity, where creativity is defined in a variety of ways. When we move through the literature on effective problem solving, however, we find it a bit easier to recognize cues and landmarks. We find that "mental set" affects problem solving effectiveness; we find that there are various sets of problem-solving skills, each with its own degree of effectiveness with different individuals and in different situations; we find that individuals can be trained in the acquisition and use of problem-solving skills. In situations where there is no single correct solution to a problem, individuals trained in the use of an appropriate problem-solving heuristic seem more likely to select an effective solution than do individuals not so trained.

Our survey of heuristics for composition reveals that the use of heuristics thus far has been advocated primarily in conjunction with a concern with invention. This is true in the domains of both theory and practice.

The dominant heuristics in the domain of composition theory are those of Aristotle and of Pike (1967). Burke (1945, 1950) offers an alternative, but Burke himself questions the applicability of his theory to composition (1978), and his theory has not been applied to the point where either it is demonstrably useful or it challenges the dominance of Aristotle, Pike, or "new" rhetoricians who offer other incomplete theories. (We should remember, of course, that Aristotle and the modern rhetorical theorists are overshadowed by composition's real dominator: NO theory and NO heuristics.) Although Aristotelian heuristics have historical appeal, and tagmemic heuristics have a partially demonstrated utility, neither system is that much taught or used. Why? Both seem somewhat impractical, given the conventional goals of the one-semester college composition course. The discovery heuristics in both systems are complex; they require attentive study, memorization, and practice; they would probably require at least a full semester to teach, leaving no time in a one-semester course for attention to other matters related to composition. Further, it would take a great deal of familiarity with the heuristics to use them in a "spontaneous," non-linear way.

In the domain of classroom practice, invention, where it is a matter of concern, seems most often handled with the prescription of various pre-writing and freewriting exercises. It is unlikely that

these exercises include training in the use of either Rohman's pre-writing or Elbow's freewriting heuristics; in fact, it was only at the end of 1979 that the heuristic properties of freewriting were recognized in a prominent journal. Nonetheless, the ideas of Rohman, Elbow, and Macrorie, loosely construed and filtered into several textbooks, have appeal for composition teachers. Their applications in practice are less cumbersome than are those of Aristotle and of Pike; indeed, they seem to help students to discover themselves. But they seem weak for purposes of communication, and thus appear at best to cover only a part (self-discovery) of a part (invention) of the composing process. Neither freewriting nor pre-writing practices have been subjected to significant evaluation via experimentation.

Heuristics derived from problem-solving research in psychology dominate neither theory nor practice in composition. Indeed, their only prominence comes in pleas that they be developed and used (Larson, 1972; Lauer, 1970). Nonetheless, the research of Flower and Hayes suggests that the use of such heuristics to solve problems in written communications has great potential.

In sum, the heuristic approaches to invention which have been most clearly articulated, and occasionally subjected to some testing, have been found wanting. Several alternative heuristic approaches seem worthy of further exploration. Among them, perhaps the two which would provide the most telling comparative study are the two approaches which stand at the extremes of an intuitive-to-rational continuum: the "intuitive" freewriting approach and the "rational" problem-solving approach. It is clear that a careful reading of Elbow

(1973) can yield relatively simple heuristics which can be applied to the tasks of rhetorical invention. No research on the effects of teaching or using such heuristics yet exists. It is also clear that research in psychology has yielded a general heuristic which is of use in solving problems; since it is a general heuristic, it should be of use in solving the "problems" of rhetorical invention. The research of Flower and Hayes, consistent in its findings with models proposed by communications psychologists, suggests specific concerns of invention with which the general problem-solving heuristic might most effectively be used. To my knowledge, no research on the effects of teaching or using the general problem-solving heuristic to deal with the concerns of rhetorical invention has yet been done.

One part of the present study, then, involved the articulation of freewriting and problem-solving heuristics for invention in forms which would allow their being taught in the college composition classroom. The second part of the study involved the teaching of the two heuristics in experimentally meaningful classroom settings, and an examination of the effects of that teaching, primarily through analyses of writing produced by students who were taught one or the other heuristic approach.

Before I discuss the rationale behind the use of experimentation in this study, I want to describe some of the similarities and differences of the two heuristic approaches which were employed.

The freewriting and problem-solving heuristic systems used in this study are presented in detail in Appendix A. Both approaches were developed for use in this study. I formulated the problem-solving

heuristics out of my experience as a college instructor of composition and my knowledge of problem solving, communications psychology, and heuristic approaches to composition. The freewriting heuristics were formulated by an advocate of Elbow's approach to writing out of her experience as a college instructor of composition and through many hours of discussion with me about the nature of heuristics and heuristic approaches to invention.

The freewriting and problem-solving heuristic systems used in this study have certain common features. They include

1. Guidance in the pursuit of knowledge as well as in the use of knowledge. Aristotle's heuristics, and classical heuristics in general, seem to assume that the speaker comes to a rhetorical situation already "knowing" what the situation demands that he know; his task is only to "remember" or restructure what he knows for a particular rhetorical purpose. Ohmann (1965) points out that the modern student cannot be presumed to confront a rhetorical situation with the requisite knowledge already in his or her possession. The modern student needs guidance in the pursuit of knowledge. In different ways, both the freewriting and the problem-solving heuristics involve the pursuit of knowledge and the use of acquired knowledge in response to a writing exigency.

2. Acceptance of the fact that invention is unlikely to be a linear process. Andersen suggests that any teacher in the communications field must try "to describe the 'processness' of the communication event." Communication occurs only when the individual elements of the communication event "become intermeshed and related so that

each element is, potentially at least, acting upon the other in some sense (1971, p. 26). The problem-solving heuristics try to accomplish this by emphasizing the absence of a set order for dealing with a writer's basic concerns, and by emphasizing the importance of revising decisions in the light of subsequent analyses. The freewriting heuristic approaches the invention process--indeed, the entire writing process--holistically, and purposely fails to distinguish among components in the communications event.

3. Economy and understandability. Both systems attempt to share one feature with the journalist's heuristic pentad (who? what? where? when? why?): economy. Neither requires a variety of different heuristics for use with different situations. The heuristics in both systems are stated in straightforward English (although both require the student to assimilate some jargonistic short-hand, and the free-writing system uses--after explanation--Elbow's basic metaphors).

4. Concern with teachability in a short time. As long as college composition courses remain one semester long, it is unlikely that invention can be focused upon for more than a few weeks without leading to negative effects. Young and Koen spent an entire semester teaching students tagmemic heuristics for invention. Among their findings was this: "Although students wrote more clearly and persuasively at the end of the semester, they continued to make about the same number and kinds of stylistic errors; formal instruction is probably necessary to bring about substantial improvements in the student's ability to produce stylistically and grammatically adequate sentences" (1973, pp. v-vi). In an attempt to create heuristics which could be

practically taught in a one-semester course, we packaged both the freewriting and problem-solving heuristics in modules intended for use during 6 class-hours.

Of course, whether students could learn to use the heuristics in that short time was seen as an empirical question, to be dealt with in the evaluation section of this study.

Between the problem-solving and freewriting heuristic systems there are clear differences. They include

1. An emphasis on reason versus an emphasis on intuition. As I noted earlier, Kinney (1979) proposes that heuristics be classified as empirical, rational, or intuitive. The problem-solving heuristics used in this study are readily classifiable as rational, although they include empirical elements (in the step which suggest careful observation of the problem-situation) and intuitional elements (in the step which suggests brainstorming). In Chapter II, I suggested that freewriting involves rational processes where the basic heuristic calls for the writer to extract a "center of gravity" statement from his or her freewriting. But the overall thrust of freewriting is intuitive[1]; the language in which Elbow speaks of the process, much of which was carried over into the freewriting heuristics developed for this study, is basically metaphoric--an attempt to express in words the mystery of creativity.

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[1] I am speaking here of freewriting as described by Elbow in his 1973 book. It may well be that the treatment of freewriting in his forthcoming text--to which I refer in the note on page 12--will be much more rationally oriented.

2. Discovery via decision-making processes versus discovery via writing. The basic problem-solving heuristic calls for defining, generating, evaluating, choosing, and testing, all as part of a decision-making process. The process is repeated again and again in dealing with a variety of problems in written communications. Only in the testing-stage is writing--the writing of a paragraph or a draft, that is--suggested; even there, it is only one of several possibilities. The basic freewriting heuristic, on the other hand, calls for writing from the very beginning of the discovery process. The writing called for is a special kind of writing, a writing-for-discovery--free of rules, unconcerned with coherence, produced with one's "mental editor" turned off. The writing may become more focused across several exercises, but it remains discovery-oriented until the writer is satisfied with what has been discovered and is ready to begin a different kind of writing: editing.

One ramification of this difference is that the follower of the problem-solving heuristics generally will draft a piece of writing only after the invention-process is more or less completed, while the practitioner of freewriting will have produced a number of word-embryos in various stages of development before the invention-stage of the composing process is more or less completed. (I include "more or less" twice because both systems recognize that the final moment of the invention process cannot be clearly marked--some "discovery" undoubtedly occurs even during the preparation of a final draft.) Insofar as success at writing is a function of quantity of writing practice (as distinct from, say, quality of invention procedures followed), the

practitioner of freewriting would have a clear advantage over the follower of problem-solving heuristics-for-invention.

3. Differential treatment of communications requirements. Communications concerns--concerns with audience, purpose, speaker's "voice," etc.--have traditionally been considered part of invention. The research of Flower and Hayes suggests the importance of these concerns, particularly at the invention stage of the writing process; so too does research in the psychology of communications. Thus, the problem-solving heuristics, in attempting to deal with the full range of invention, suggest explicit attention to communications problems during the invention stage of writing. (Because of this concern with communications, what I have up to now been referring to as the problem-solving heuristics system is called the Communications Awareness/Problem-Solving approach [CAPS] in the rest of this study.) Freewriting heuristics, in contrast, focus almost exclusively on the writer's discovery of what he or she has to say about a subject. Elbow stresses the importance of the audience, but suggests that it becomes a matter of concern only when the writer is ready to begin the editing process. In one sense, then, Elbow has the invention process extending into the editing stage of writing. For this reason, the freewriting heuristics used in this study include some suggestions for editing. But explicit treatment of communications concerns in the freewriting (FW) approach is minor when compared with their treatment in CAPS.

4. Differential treatment of editing and revising. For reasons just mentioned, the FW training sessions included some discussion of editing; the CAPS sessions did not, although they clearly covered some

of the material contained under "editing" in the FW module. And, while freewriting involves much more than revising, in the ordinary sense of the word, freewriting exercises, at least in later stages of the invention-process, are revision exercises. CAPS suggested nothing about revision.

5. Differential emphasis on the importance of attitude. CAPS incorporates the idea of a facilitating "mental set" into the first step of the problem-solving heuristic. There is nothing comparable in FW, although the training of students in the freewriting approach included several injunctions on positive attitude.

Experimentation and Evaluation. Once the heuristic modules just described had been developed, it seemed appropriate to subject them to experimental testing. As Tharp and Gallimore (1979) point out, experimentation can be useful in trying to determine the probable value of particular treatments. In later stages of the development of a program for invention in composition classes, one would systematically manipulate individual elements in a demonstrably effective treatment package to learn just what elements were producing or interacting to produce the desired effects.

Given the problems of establishing equivalent measures in composition research, it seemed that the experimental design of choice for this study was the post-test-only control group design (Campbell & Stanley, 1963). In order to be able to generalize any findings to the larger population of students who typically are required to take a college course in composition, it seemed important that subjects be enrolled

in a required composition course. The pool of such subjects available for this study included a maximum of about 45 who were enrolled in such a course at any given time. To divide 45 (or fewer, through attrition) subjects into the three random groups required by the post-test control group design would have made the production of statistically meaningful results difficult indeed. So a two-experimental-group design, minus a control group, was chosen. This decision limited the questions which the study could try to answer; but it did allow a comparison of the effects of the two heuristic approaches, and such a comparison was of primary interest.

Questions. The specific questions to be addressed in this study were:

1. Can the CAPS and FW programs developed for this study be effectively taught in 6 class-hours?

Answers to this question were sought among observations made by the trainers, observations made by the subjects, and data produced by the subjects.

2. What, if any, differences are apparent in the writing produced by subjects trained in either the CAPS or the FW approach to invention?

An examination of two writing samples produced by all subjects, evaluated on a variety of scales by two independent raters, and subjected to statistical analysis, was expected to yield answers to this question.

3. Are differences in writing produced by subjects in the two treatment groups--if found--related in any systematic way to either

the subjects' knowledge of the heuristics involved or the subjects' use of those heuristics in the production of the writing?

Subjects were quizzed on the heuristics taught in the two training programs. Subjects were also asked to report on their use of the heuristics in producing the two samples of writing which each submitted via filling out two self-report compliance forms. Various analyses of these data were expected to produce answers to this question.

4. Is training in CAPS and FW related to differences, if any, in subjects' subsequent "feelings" about writing, confidence in writing ability, and ability to evaluate writing produced by others?

Subjects were asked to report on their "feelings" about writing and their confidence in their writing ability both before and after intervention. Similarly, they were asked to rank-order five "letters" before and after intervention. Statistical analyses were expected to yield answers to this question.

5. Are the outcome measures related in any meaningful way to measures of Need-achievement/Need-affiliation, cognitive complexity, or subject motivation?

Correlations between outcome measures and subjects' scores on appropriate scales were expected to yield this information.

6. What do the subject-trainees' own reports suggest about the strengths and weaknesses of the two training programs?

At the end of the training, subjects were asked to complete an evaluation questionnaire. Their responses were intended to answer this question.

Measures. Measurement is a problem in all research, particularly

when it comes to determining a measuring instrument's reliability and validity. As we move from the physical to the social sciences, measurement problems compound almost geometrically, since the variables of interest are often complex; since accurate and meaningful measurement in terms of frequency, duration, and intensity is not always possible; and since experimental control of all relevant variables is seldom possible (see Nunnally, 1978). These problems compound again in educational research, where social and political concerns often frustrate those who seek accurate measurement of relevant variables (see Cooley & Lohnes, 1976). Finally, when we come to research in composition, we are plagued by a paucity of careful experimental research; by the lack of guidance from a comprehensive theory; and, when it comes to judgments of writing, by problems with interrater reliability (see Diederich, 1974; Cooper, 1977).

The primary dependent variables in this study were two pieces of writing produced by subjects in both groups, one in the course of, the other at the end of, intervention. Related to these writing samples was a pre-intervention piece of writing produced by all subjects and used in statistical analyses as a covariate, the best available measure of pre-intervention writing ability.

Sanders and Littlefield (1975) found it difficult to demonstrate much of anything with impromptu essays written in class during a single period. They recommended, for purposes of evaluation, use of essays for which background research was performed outside of the test situation. In contrast, Hogan (1977) and Davis (1979) reported that impromptu essays written in class could be used to measure

writing improvement. In the present study, one of the dependent measures was an impromptu "speech" written during 40 minutes of class time. The other was a "letter" prepared outside of class in response to two homework assignments. (Alternative procedures for generation of the "letter" were considered and rejected. Having all subjects present for a 3-hour time block in which to work through the invention process and prepare a final text would have been ideal; unfortunately, the experimenter was in no position to mandate such subject-presence; and the situation might have been tinged with student-resentment had it been possible to arrange. Working in class, over several class periods, would have provided some check on "cheating," but no check on cognitive operations engaged in by subjects between class sessions. So the present course, which required no class time, was adopted, and the major threat to validity--"cheating" --was assumed to be more or less evenly divided across both treatment groups via random assignment of subjects.) The pre-intervention measure was an "article" written during 45 minutes of class time prior to intervention.

Several recent studies have found that writing skill might not be constant across modes of discourse (Crowhurst & Piche, 1979; Perron, 1977; Rosen, 1969; San Jose, 1972). Thus, the writing stimuli for all three pieces of writing demanded some expository and some descriptive writing. Beyond that, students were free to write in other modes also. The "letter" assignment, in particular, lent itself to writing in the argumentative mode, which both Perron and San Jose found to be the most complex. Since ability to write in the argumentative mode is

generally considered important, and since subjects faced no imposed time-constraints with the "letter" assignment, it seemed fitting to provide "room" for persuasive discourse with that particular assignment.

In keeping with the recommendation of Sanders and Littlefield (1975) and Lloyd-Jones (1977) that writing tasks for use in measurement specify a full rhetorical context, all three writing stimuli provided information about speaker, subject, and audience. Purpose was implied, but left somewhat vague, since discovery of purpose was part of the invention processes being examined. The most "complex" audience was provided in the "letter" assignment, again because subjects were free to deal with it apart from imposed time constraints.

Finally, in order to strengthen the possibilities that the treatment conditions rather than other factors might be seen as responsible for any observed differences, the "letter" writing stimulus provided all subjects with the same clear and comprehensive data on both audience and information which might be included in the letter. All subjects received the same, somewhat open-ended, instructions as to purpose. In other words, the "letter" assignment assured that subjects would be not only familiar with their audience and their topic, but <u>equally</u> familiar, at least in potential.

For these reasons, then, and even more for reasons related to time, it was hypothesized that treatment effects, if present, would be most pronounced in the dependent variable produced outside of class, the "letter." Although both treatment conditions included instructions on the use of the particular heuristics in essay-exam situations, it

seemed unlikely that any writer could both conscientiously employ the heuristics taught in the training sessions and complete a submittable draft of a piece of writing during a 40-minute period. Thus, it was hypothesized that subjects' self-reported compliance with the heuristics would be lower on the in-class writing than on the out-of-class writing. Nonetheless, inclusion of the in-class writing measure did seem useful. It extended the rhetorical range of the dependent variables. It offered the potential of a "check" on any group differences which might show up in the "letter" variable. And it provided some test of the training protocols' contention that the CAPS and FW heuristics can be useful in essay-exam situations.

Reservations about the appropriateness of in-class writing as an independent variable were less strong, primarily because there was no reason to assume that subjects would need time to employ heuristics for invention before exposure to intervention.

The procedures followed with evaluators are described in the next chapter of this report. A major concern was, of course, interrater reliability; another major concern was that criteria presented to evaluators not be biased in favor of one or the other heuristic program. Thus, evaluators were trained in the use of criteria agreed upon by the designers of both treatment packages. Further, it was determined that scores on which the interrater reliability coefficient was less than .60 would not be acceptable. (Diederich [1974] reports that "even after working with an English staff for some time, I have rarely been able to boost the average correlation between pairs of readers above .50, and other examiners tell me that this is about what they get"

[p. 33]. Thus, the requirement of a coefficient of .60 seemed almost stringent.)

This study called for several self-report measures, with which there can be a variety of problems (see Nunnally, 1978). Among these measures, the most important was seen as the measure of compliance with experimental heuristics. In order to allow for a more accurate reflection of reality, the compliance inventories allowed report of, and were scored to reflect, variation in degree of compliance (see Appendix C).

The Barron's cognitive complexity and Lindgren's Need-achievement inventories were included in the battery of measures primarily for exploratory purposes: their relevance was more potential than probable. Both inventories were also easy to administer.

With this background, we are now ready, in the remaining chapters of this report, to describe specific experimental methods, to present results, and to discuss implications of those results.

CHAPTER IV

METHOD

Subjects

The initial 47 subjects in this study, 24 females and 23 males of varying ethnic backgrounds, were all college students enrolled in two regular 10:30 a.m. sections of English 100, "Introduction to Expository Writing," at the University of Hawaii in Honolulu during the spring semester of 1980. English 100 is essentially a required course, and students must take it or its equivalent sometime during their first 5 semesters of college. Thus, all but two of the subjects were freshmen or sophomores. No grouping of subjects at time of registration was attempted, and course enrollment was on a first-come, first-served basis.

One of the initial subjects could not be included in the final sample for an unanticipated reason: he refused to turn in any work over the course of the intervention period. Five additional subjects --three females and two males--failed to meet the criterion of attending at least half of the training sessions for inclusion in the sample. Thus, the final sample was composed of 41 subjects. However, the number of subjects included in each outcome analysis varied slightly, since complete data sets were not available for each subject. The primary analyses, for example, involved 39 subjects who had submitted

the three component pieces of writing.

Personnel

The two treatment-group trainers were regular faculty members in the Department of English at the University of Hawaii. Each had had about 10 years of experience in teaching writing. The trainer for the problem-solving approach was the experimenter, a Caucasian in his mid-30s who was on leave from regular teaching duties at the time of this study. He had developed the problem-solving protocols in the course of teaching several sections of an upper-division course in written communications. The trainer for the freewriting approach was a Caucasian in her late 30s. She had used the freewriting approach extensively in teaching both introductory and advanced courses in composition, and had been awarded a grant to bring free-writing-exponent Peter Elbow to Hawaii for a teacher-training seminar.

The two paid primary raters were female Caucasians, lecturers in English at the University of Hawaii, each with more than 7 years of experience in teaching writing. They knew none of the subjects in the study; they knew nothing about the nature of the study other than that it involved dissertation research; they had previously known the two trainers only by name and/or chance hallway passings. They were selected on the basis of similar scores on an objective measure (see below) and availability.

The 10 panelists whose rankings of the ranking-of-writing measure constituted the "normative ranking" were English-department faculty members, from lecturer through full professor, all of whom

had had at least 5 years of experience teaching at the college level.

General Format

The primary research questions were handled with a post-test only design involving the two treatment groups. Where pre-intervention measures were available and relevant to research questions, they were handled as covariates.

Grouping

Once registration lists for the two classes whose enrollees were subjects in this study were stabilized, the two class-lists were combined and all 47 of the enrolled students were randomly assigned to one of the two treatment groups. This meant that about half of the students had to move from their regular classroom to a different classroom for the 3 weeks of the intervention.

Treatment

There were two treatment conditions for this study: one involved training in communications awareness and problem solving (CAPS); the other involved training in freewriting (FW).

CAPS classroom exercises focused initially on problem-solving procedures; over the course of six classes, these procedures were used to "solve" common writing and written-communication problems--problems considered to be within the traditional domain of rhetorical invention. Out-of-class exercises intended to provide additional practice in the techniques were provided at every training session.

Outlines of the "scripts" followed by the CAPS trainer are provided in Appendix A.1 & 2.

Early FW training sessions provided experience of freewriting and "focused" freewriting. The FW trainer used Elbow's metaphors of "growing" and "cooking" to build a model of the freewriting approach to invention. Freewriting exercises, usually using materials included in the CAPS out-of-class exercises, gave subjects additional practice in the heuristic stages of freewriting, reflecting, and "summing up." Outlines of "scripts" followed by the FW trainer are provided in Appendix A.1 & 3.

Measures

Independent Variables. In the two class sections which provided subjects for this study, all students were given, on the same day before the beginning of experimental training, a full 50-minute period to write an "article" for the college newspaper entitled "How to Survive Registration." This topic was one with which all subjects were assumed to be equally familiar. (For the exact wording of the writing stimulus, see Appendix B.1.) The writing was collected by the regular course instructors, xeroxed, "graded" by them, and returned to the students. The ratings by paid outside readers of the xeroxed copies of these pieces of writing provided a measure of each subject's pre-intervention skills-level. (Procedures for the rating of the "articles," used also with dependent-measure writing samples, are described below.)

Scholastic Aptitude Test Scores were available for 35 of the 41 final subjects. (That six scores were unavailable was likely due to

students' transferring to the University--usually from a community college--or to clerical oversight.) The scores were used primarily as a check on the effectiveness of randomization.

Several independent measures were obtained during the class period immediately preceding the first training period. Subjects were at that time given three self-report scales concerning (1) motivation to improve writing skills; (2) general feelings about writing; and (3) confidence in ability to meet the demands of writing assignments (Appendix F.1 & 2). Subjects were also asked to fill in the 30-item Lindgren "Prevailing Mood" inventory (Lindgren, 1976), a simple Need-achievement/Need-affiliation scale. Finally, subjects were asked to rank five sample "letters" in terms of effectiveness of writing, and to give reasons for their rankings (Appendix D). (This task was also used in the selection of paid readers.)

Between the final training class and the final in-class writing assignment, subjects were asked to complete the Barron Cognitive-Complexity Questionnaire (Barron, 1963).

Dependent Variables. There were three categories of dependent-variable measures: (1) knowledge of heuristics; (2) use of heuristics in responding to writing assignments; and (3) results of training in the use of heuristics.

1. Subjects in the CAPS and FW groups were given two "knowledge" quizzes, each quiz worth a maximum of 60 points. In all cases, that a quiz would be given was "announced" during the training session before the session at which the quiz was to be given.

The first FW quiz, given during training-session 4, covered the

rules for freewriting and the differences between freewriting and "focused" freewriting. The second FW quiz, given during training-session 5, covered the rules for "desperation writing," basically the guidelines for external handling of the "internal" processes which freewriting entails.

The first CAPS quiz, given during training-session 3, covered the six steps in the problem-solving process (D'Zurilla and Goldfried, 1971). The second CAPS quiz, given during training-session 6, required that subjects demonstrate a familiarity with the "concerns" of a communications-conscious writer and the problem-solving heuristic to be used in dealing with those concerns.

The quiz questions are reproduced in Appendix E.

2. There were basically three measures of ability to use, and actual use of, the FW and CAPS heuristics.

a) The first three out-of-class ("homework") exercises for both experimental groups were intended both to give subjects practice in use of the heuristics and to provide some evidence of their ability to use the heuristics. Each of the exercises was given a score ranging from 4 ("evidence of better-than-expected ability to use the heuristic in question") to 1 ("little or no evidence of ability to use the heuristic in question") by the appropriate trainer. Scores on the three exercises were summed to provide a rough measure of each subject's ability to use the experimental heuristics.

b) When they submitted out-of-class and in-class writing samples at the conclusion of training, subjects were asked to fill in a self-report "compliance" form on their use of the experimental heuristics

in the preparation of the samples. The form not only included every possible step in the heuristic process, but also allowed subjects to indicate varying degrees of compliance (see Appendix C.1 & 2). The score assigned to each subject's report of compliance was a ratio, in effect a percentage of compliance. Thus, a subject who reported to-the-letter compliance with each step of the heuristics would have received a score of 100.

c) With both out-of-class and in-class writing samples, subjects were requested to submit all work done on paper in connection with their response to the writing assignment. While these peripheral materials were not scored, they did allow the possibility of some check on the reliability of the subject's self-reported assertions on compliance with the experimental heuristics.

3. There were three types of data used to measure results of training.

a) Each subject was asked to submit two pieces of writing toward the end of the experimental interventions. The first, a "letter" in response to a given letter, using material specified in a handout and a "voice" other than the writer's own, was submitted at the beginning of training-session 6. (See Appendix B.2.) The second, a "speech" to students still in high school, was written during the first 40 minutes of the class following training-session 6. (See Appendix B.3.) These two writing samples were scored according to procedures which will be described under "Scoring of Writing Samples," below.

b) At the end of the last intervention session, each subject

was asked to rank five sample "letters" in terms of effectiveness of writing, and to give reasons for the rankings. The identical task had been administered before the beginning of intervention also. The subject's score on this task was the correlation between his or her ranking and the normative ranking.

c) Two single-item self-report scales administered earlier as independent variables were again administered at the end of the training sessions. These scales concerned "feelings" about writing and "confidence" in ability to meet the demands of writing assignments (Appendix F.2).

Scoring of Writing Samples

All writing samples--one generated before the experimental interventions, and two generated at the end of interventions--were xeroxed with all identifying materials removed. A code number was assigned to each piece of writing by the experimenter. The writing samples were then initially subjected to "General Impression Marking" (Cooper, 1977) by the two paid independent raters. ("General Impression Marking" is the system of holistic essay evaluation employed by the Educational Testing Service with the essay portions of its college entrance exams.) The pieces of writing were not rated against any absolute norm. Instead, raters were instructed to sort the writing samples from each set into a specified distribution, with the "worst" pieces of writing in category 1, the "best" in category 7, and the others in between. Raters were instructed to proceed in this "Q-sort" according to guidelines described by Nunnally (1978). (Instructions to raters are found

in Appendix G.) Where interrater reliability was at or above the criterion of .60, individual "essays" were to be assigned a score of the combined individual ratings. Thus, the potential individual-score range was 2 to 14.

Before the writing samples were given to the raters, the two trainers met and agreed upon primary and secondary concerns which were to govern the holistic ratings. (This slight modification of "General Impression Marking" protocols was seen as necessary to obtain interrater reliability with a small sample.) The order in which the writing-sample sets were evaluated was determined by a random drawing. Before each set was evaluated, the experimenter met with the raters for a 30- to 45-minute "training session," intended to enhance interrater reliability. During each training session, the raters were given a random selection of four pieces of writing from the set to be evaluated. The raters were given 8 minutes to arrange these pieces of writing according to quality, as specified by the criteria. The raters discussed their rankings between themselves; the experimenter answered questions put to him by the raters, taking care to clarify existing criteria rather than to add to them. During rater training-sessions 2 and 3, the first several minutes were spent by the raters in a discussion of samples from the previously ranked set of writing on which there had been a discrepancy of more than 1 point in their rankings. These reviews were again intended to enhance interrater reliability.

It was decided that if preliminary analyses suggested significant group differences on one or both of the dependent-variable "essays,"

raters would be asked to arrive, in similar fashion, at rankings of the "significant" essay(s) on six component scales. Five of these scales were selected and defined by the experimental trainers as central to the CAPS and/or FW approaches to invention. They were (in no particular order):

1. attention to the specific needs of the audience;

2. clarity and appropriateness of the writer's voice, given the writer's purpose and the audience's needs;

3. development of a central idea or theme which in effect controlled the choice and arrangement of ideas/materials;

4. appropriateness of the ideas/materials included in the pieces of writing, given the writer's purpose and the audience's needs; and

5. appropriateness of the organization of the piece of writing, given the writer's purpose and the audience's needs.

A sixth scale, "Attention to Conventions (Grammar, Mechanics, Spelling)," was included not because of relevance to rhetorical invention, but because this concern remains prominent in the evaluation of writing proficiency, and because an earlier study of a heuristic approach to invention found that students trained in the use of heuristics were less attentive to such conventions than were students in "traditional" writing classes (Young & Koen, 1973).

Training of raters for evaluation of writing samples on the six scales was to take place in several training sessions. The definition of each scale was to be presented and the usual "practice" with four randomly selected pieces of writing was to follow. The raters were to be instructed to select numbers from 1 to 6 from a cup in order to

determine the order in which they would deal with the six scales. This was intended as a check on familiarity and fatigue effects.

For use in any instance where raters failed to reach the interrater-reliability criterion of .60, three possible courses of action were defined. If post-ranking questioning of raters suggested that the evaluation criterion was at fault, the two trainers would meet and redefine the criterion; raters would then be retrained with that criterion and proceed once again with the rating. If post-ranking questioning of raters suggested that unreliability was due to one or both of the raters' failure to abide by the criterion or to follow the defined procedures, retraining and reranking would again take place. If post-ranking questioning of raters suggested neither of the above, a different team of independent raters would be asked to rate the pieces of writing on the criterion or criteria in question.

To attenuate the effect that one round of ranking might have on another round, raters were instructed never to rank more than one set of papers on one criterion per day; to shuffle each set of papers immediately after recording the rankings; and to record each particular ranking on a separate score-sheet, without looking at previous score-sheets. (The experimenter was to collect the score-sheets whenever he met the raters to insure that this third condition be followed.)

Scoring of Other Measures

The "normative ranking" on the ranking-of-writing measure was derived from the rankings of the 10 panelists on the ranking task given to the experimental subjects.

Scores on measures collected in the course of intervention (on homework and quizzes) were computed by the appropriate group-trainer. All other pre- and post-intervention scores (the ranking-of-writing measure and the various self-report inventories) were computed and double-checked by the experimenter.

Follow-up Questionnaire

After the in-class dependent-variable writing sample was elicited, subjects were given, for completion outside of class, a voluntary general questionnaire on various aspects of the experimental training. Subjects were asked to return the questionnaires to their trainers via their regular course instructors during the next class meeting.

CHAPTER V

RESULTS

Data related to the major research questions in this study--questions having to do with treatment-group differences--were analyzed by one-way analyses of covariance or, where appropriate, by simple *t*-tests. Other data were analyzed by correlational methods.

Results on tests of randomization and of interrater reliability will be reported first. Then the research questions presented in Chapter III will be taken up, one at a time.

Randomization

No attempt to level subjects on ability or "intelligence" factors was made beyond random assignment of subjects to groups. Post-assignment *t*-tests for group differences on available Scholastic Aptitude Test scores and pre-intervention writing-sample scores revealed that randomization was effective: there were no significant group differences. The means and standard deviations for both groups on SAT scores were extremely close. The overall SAT-verbal mean score was 464, while the overall SAT-quantitative mean score was 550. Pre-intervention writing-sample scores are found in row 1 of Table 2. Again, there was no significant group difference.

Rater Reliability

Paid independent raters were employed for the scoring of one independent variable--the "article" written by subjects in class and used as a covariate--and two dependent variables--the "letter" written outside of class and the "speech" written in class. The same two paid raters rated the "letter," in addition, on six component-criteria, after preliminary analysis indicated that the "letter" provided the clearest evidence of group differences.

Pearson product-moment correlation coefficients computed on the two raters' independent scores for each of the nine independent readings are reported in the final column of Table 1. Coefficients range from .60 to .78. On only one out of the nine pairs of ratings are raters' group-means in opposite directions.

In two of nine instances, interrater reliability coefficients failed to reach the required criterion of .60. Investigation revealed that, according to the contingency plan for such instances described in the last chapter, second rankings by the same raters were in order. In the first instance, the initial coefficient on appropriateness of materials was .33. Questioning of raters revealed that one of the raters had, in the course of her ranking, evolved a method of quantification which she then employed for the course of the ranking. Since this procedure had not been discussed during the training period, the ratings were disallowed. After a second training session, the raters reranked the papers; their reliability coefficient on the reranking was .73. In the second instance, the initial coefficient on organization

TABLE 1

DESCRIPTIVE STATISTICS ON WRITING SCORES BY RATER AND TREATMENT GROUP

	Rater 1				Rater 2				Interrater Pearson P-M Correlation Coefficient
	CAPS		FW		CAPS		FW		
	Mean	S.D. (n)	Mean	S.D. (n)	Mean	S.D.	Mean	S.D.	
Article	4.19	1.66 (21)	3.71	1.55 (20)	4.28	1.42	3.71	1.82	.64
Letter	3.50	1.50 (20)	4.53	1.74 (19)	3.65	1.39	4.37	1.92	.73
Speech	3.95	1.75 (21)	4.05	1.53 (21)	3.76	1.61	4.24	1.64	.73
COMPONENTS OF LETTER									
1. Audience-awareness	4.05	1.61 (20)	3.95	1.81 (19)	4.00	1.72	4.00	1.70	.78
2. Clarity of Voice	4.30	1.63	3.68	1.73	3.80	1.51	4.21	1.87	.60
3. Controlling Idea	3.75	1.62	4.26	1.76	3.85	1.60	4.16	1.80	.65
4. Materials-appropriateness	3.45	1.79	4.58	1.39	3.20	1.58	4.84	1.39	.73*
5. Organization	3.50	1.70	4.53	1.54	3.85	1.66	4.15	1.74	.66*
6. Conventions (grammar, etc.)	3.60	1.43	4.42	1.87	3.50	1.67	4.53	1.58	.66

* Second ranking

was -.01. The fault lay with the experimenter as well as with the raters. Fatigued after several training sessions, the experimenter and raters had departed from outlined procedures and foregone training on ranking of organization, mutually assuming that the organization criterion was clear and that years of grading papers would assure a common understanding of organization. The coefficient revealed that such, obviously, was not the case. After a training session on use of the organization criterion, the raters reranked the papers; their reliability coefficient on the reranking was .66.

Research Questions

1. Teachability. Can the heuristic packages developed for this study be taught in 6 class-hours? Trainers answered this question with a qualified yes. Both trainers found that it was possible, in general, to cover the intended heuristics in the class time allotted. Reviews of homework, however, led both trainers to revise their intended training-session #5 to make it essentially a review-session, since it was beginning to seem that there was too much material which had to be presented in too short a time. Both felt, at the completion of training, that students would definitely have benefited from a few more class sessions on the protocols. Nonetheless, the basic heuristics were covered in class, and through homework exercises subjects seemed to have acquired minimal expertise with their use.

Fifteen CAPS subjects and 11 FW subjects completed the voluntary evaluation questionnaire after training was completed. The majority of respondents in both groups reported satisfaction with the training

sessions. Three of the CAPS subjects and four FW subjects suggested that the classes were too "rushed" or involved too much work over too short a period. Nearly all respondents in both groups reported a rise in the importance they assigned to invention, compared with their pre-intervention assumptions. Most commonly, respondents indicated that this rise was suggested by a 2- to 4-point jump on a 7-point self-report scale.

To some extent, quiz scores provide a measure of teachability. Scores on the first quiz in both groups averaged about 90%. On the second quiz, CAPS subject-scores average 92%, while those of the FW subjects averaged 80% with a large standard deviation (15 points, on a scale of 60 points). On neither quiz did a *t*-test suggest significant group differences.

2. Quality of Writing. Complete sets of three writing samples (a pre-intervention "article," a "letter" written out of class after the fifth training session, and a post-intervention, written-in-class "speech") were available for 39 of the subjects. Correlations across samples (article/letter, $r = .18$; article/speech, $r = .33$; letter/speech, $r = .32$) indicated a not unexpected low level of writer-consistency across assignments. Despite the low correlations, it seemed that the most meaningful statistical test was that which would take the greatest amount of data into account without a loss of degrees of freedom. Thus, analysis of covariance, using data from 20 CAPS subjects and 19 FW subjects, was selected as the primary statistical tool for use with this question. The pre-intervention "article" functioned as a covariate in all analyses.

Multivariate analysis of covariance, involving simultaneous consideration of both dependent variables, did not reveal significant group differences on a linear combination of the 2 variables: the F-approximation (df = 2, 35) based on the Hotelling-Lawley Trace was 2.2, $p = .12$. However, it had been hypothesized that the "letter" was a more powerful measure than the "speech" (see Chapter III), and that, consequently, group differences, if any, would be more likely to show up in analysis of the "letter"-scores. Subsequent separate univariate analyses of covariance, the test of choice for hypothesis-testing with individual variables (Spector, 1977), revealed that the "letter"-scores indeed provided greater discrimination between groups. While there were no significant group-differences on the "speech" measure (F [2, 36] = 0.77), group differences on the "letter" measure were significant (F [2, 36] = 4.16, $p = .05$).

Summaries of the univariate analyses are presented in Appendix I.

Table 2 presents the group means for the "speech" and "letter" variables in raw state and adjusted on the covariate. A glance at Table 2 reveals that although group differences on the "speech" scores were not significantly different, the direction of the adjusted group means supports the inference which can be drawn from the analysis of "letter" scores: the writing produced by subjects trained in the use of freewriting heuristics was, when rated holistically, significantly better than that produced by subjects trained in the use of communications awareness/problem-solving heuristics.

In accord with pre-determined procedures, all "letters" were independently ranked an additional 6 times on components of interest in

TABLE 2

RAW AND ADJUSTED GROUP MEANS ON NINE SETS OF WRITING SCORES

	RAW SCORES				SCORES ADJUSTED ON COVARIATE			
	CAPS (n=20)		FW (n=19)					
	Mean	S.D.	Mean	S.D.	CAPS	FW	F	Sig.
Article (pre-intervention)	8.20	2.55	7.31	2.85	--	--	1.05	--
Letter	7.15	2.62	8.89	3.45	7.03	9.02	4.16	.05
Speech	7.80	3.07	8.21	3.02	7.60	8.43	0.77	--
COMPONENTS OF LETTER								
1. Audience-awareness	8.05	3.14	7.95	3.31	7.96	8.05	0.01	--
2. Clarity of Voice	8.10	2.65	7.89	3.43	7.98	8.02	0.00	--
3. Controlling Idea	7.60	2.91	8.42	3.25	7.44	8.59	1.44	--
4. Materials-appropriateness	6.65	3.18	9.42	2.43	6.61	9.47	9.41	.004
5. Organization	7.35	3.01	8.68	3.06	7.24	8.80	1.97	--
6. Conventions (grammar, etc.)	7.10	2.83	8.95	3.06	6.89	9.16	6.50	.01

one or both heuristic packages. Since there was no reason to hypothesize conjoint variance on these component measures, independent univariate one-way analyses of covariance were run to yield information on group differences potentially present in the component data. On two of the component-measures, clear evidence of such differences was found. These two components were appropriateness of the materials/ideas included in the place of writing (F [2, 36] = 9.41, p = .004), and observance of conventions of grammar, etc. (F [2, 36] = 6.69, p = .01). Significant group-differences were not found with respect to the other four components. Summaries of all six analyses are presented in Appendix J.

An examination of Table 2 reveals that it was again subjects trained in use of the FW heuristics who were responsible for the observed differences in scores on materials-appropriateness and observance of conventions. Indeed, the adjusted group means on all measures show the consistent superiority of the FW subjects, although the extremely small differences on measures of audience awareness and clarity of voice lend no meaningful support to this assertion.

It seemed useful to try to learn how scores on the six component scales were related to scores from the holistic ranking. Correlations between the component scores are presented in Table 3. Table 4 includes correlations between each component and the holistic "letter" score (column 4); it also summarizes the results of a stepwise regression analysis of the data. It is clear that almost all of the variance accounted for in the analysis is explained by four component-variables: materials-appropriateness, controlling idea, audience awareness, and

TABLE 3

PEARSON PRODUCT-MOMENT CORRELATIONS ON SIX COMPONENT SCALES

	Audience	Voice	Controlling Idea	Materials	Organi-zation	Conventions
Audience	1.0	.80***	.55***	.25	.49**	-.04
Voice	--	1.00	.53***	.26	.54***	.02
Controlling Idea	--	--	1.00	.13	.57***	.32*
Materials	--	--	--	1.00	.55***	.40**
Organization	--	--	--	--	1.00	.39**
Conventions	--	--	--	--	--	1.00

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 4

RESULTS OF STEPWISE MULTIPLE REGRESSION ANALYSIS INVOLVING "LETTER" AND COMPONENT SCORES

	Multiple R	R^2	R^2 Change	r with "Letter"	F at Entry	Final F
Materials	.61	.37	.37	.61	22.19	9.57
Controlling Idea	.73	.54	.17	.48	12.63	.73
Audience	.76	.57	.03	.52	2.93	3.46
Conventions	.80	.63	.06	.49	5.73	5.58
Voice	.80	.63	--	.47	.02	.02
Organization	--	--	--	.58	--	--

observance of conventions. The F-ratios for each of these variables are provided in the last two columns of Table 4.

3. Relations between Writing and Heuristics. Variables of interest with respect to this question were the "speech," the "letter," the two quizzes, the two compliance self-report forms, and homework exercises. Complete sets of scores on all of these variables were not available for all subjects. Of particular interest is the fact that scores for only 31 subjects--16 from CAPS, and 15 from FW--were available on the compliance-with-heuristics-on-"letter" variable. Subjects were asked to fill in the self-report chart for this variable outside of class, after they had submitted the "letter." Several subjects "forgot" the charts when they were scheduled to be turned in. The trainers asked the "forgetters" to submit their charts at the time of the next class. Beyond that, no attempt was made to secure the missing data, in that the length of time between the writing and the preparation of the compliance chart would have made the self-reports potentially too unreliable for analysis.

T-tests revealed that there were no significant differences between groups on either quiz 1 (t [39] = 0.19) or quiz 2 (t [38] = 1.79). (The larger t on quiz 2 can be accounted for by the large standard deviation on quiz-2 scores among FW subjects.) The same was found to be the case with homework scores (t [41] = 0.41). But t-tests on the compliance-with-heuristics scores revealed significant differences between groups with respect to both the "speech" (t [40] = 2.84, $p < .01$) and the "letter" (t [30] = 2.42, $p = .02$) variables. An examination of mean scores (Table 5) revealed that in both cases,

TABLE 5

GROUP MEANS ON SELF-REPORTED COMPLIANCE WITH HEURISTICS ON TWO ASSIGNMENTS

	CAPS			FW				
	Mean	S.D.	(n)	Mean	S.D.	(n)	*t*	p
Compliance with Heuristics on "Speech"	0.32	0.15	(21)	0.46	0.18	(20)	2.84	.007
Compliance with Heuristics on "Letter"	0.54	0.14	(16)	0.67	0.15	(15)	2.42	.02

subjects trained in the use of FW heuristics reported a greater degree of compliance with the heuristics in preparing the pieces of writing.

Perhaps the strongest evidence in support of a contention that the observed greater degree of compliance with heuristics was related to the higher writing-scores among FW subjects would have been a significant interaction term from two-way (group × compliance) analyses of variance. Unfortunately, the power of such analyses in this study was undermined by the relatively large number of missing compliance-scores. Despite this, such analyses were run on both the "speech" and "letter" scores, as well as on the materials and conventions component scores. In no case did analysis yield a significant interaction term. The strongest *F*-for-interaction derived from the two-way analysis of covariance on the "letter" scores, with compliance coded into four levels: $F\ (7,\ 23) = 2.27$, $p = .13$.

The next best approach to this question seemed to be the examination of correlations. Scores on quiz 1 were clearly related to scores on the "speech" ($r = .42$, $p = .003$), but not on the "letter"; there were no significant correlations between the writing measures and scores on quiz 2. Scores on the "speech" were not significantly correlated with subjects' reported compliance-with-heuristics ($r = -0.11$); the same is true with respect to "letter" scores ($r = .20$).

We recall, however, that there were significant differences between the CAPS and FW subjects on reported compliance with heuristics. A close examination of the data showed that this difference may be reflected in the various group/compliance correlations also (summarized in Table 6). But in no instance was the correlation between reported compliance and holistic writing score statistically significant.

TABLE 6

CORRELATIONS (NON-SIGNIFICANT) BY GROUP BETWEEN WRITING SCORES AND REPORTED COMPLIANCE WITH HEURISTICS

WRITING EXIGENCY	GROUP	
	CAPS	FW
Letter	0.02	0.17
Speech	0.02	-0.31

When we turn from the holistic writing scores to the component writing scores, we find a number of significant correlations with one variable related to familiarity with the heuristics: scores on homework assignments. There were significant correlations between homework scores and rankings on controlling idea, organization, audience-awareness, and voice ($.32 < r < .42$). But on the two component-variables where significant treatment-group differences were found, there were no significant correlations with homework (although the correlation with conventions of grammar was close to significant [$r = .24$]).

Some light can be shed on this finding by including SAT scores in our analyses. Homework scores were significantly correlated with SAT-verbal scores ($r = .30$, $p = .04$). Component scores were also correlated with SAT-verbal scores; the correlations were all in the range of .32 to .42, except for the materials-appropriateness component, where the correlation was .08. It may well be that these correlations reflect not an effect of practice with the heuristics (i.e., the homework score), but rather a weak but consistent mediating effect of general academic ability.

4. "Feelings," "Confidence," and Ability to Evaluate Writing. In looking for possible treatment effects on subjects' feelings about writing, confidence in ability to handle writing assignments, and ability to accurately evaluate writing done by others, we had access to pre- and post-intervention measures. Thus, the statistical test of choice was once again one-way analysis of covariance, with the pre-intervention scores serving as covariates.

Analysis revealed no differential treatment effects on feelings about writing (F [2, 33] = 0.01) and confidence in writing ability (F [2, 33] = 0.67).

Subject-scores on ability to evaluate writing done by others were correlation coefficients representing the correlation between the subject's ranking of five pieces of writing and a "normative" ranking of the five pieces. The "normative" ranking was that determined by the most frequent ordering given the pieces of writing by the panel of 10 experienced college teachers of writing. Kendall's coefficient of concordance on the panel's ranking of the pieces of writing was 0.85, which corresponds to an average correlation coefficient across all possible pairs of rank-orders of 0.84 (Hays, 1973).

The mean correlation between subject's ranking and "normative" ranking was .56 for CAPS subjects and .65 for FW subjects. Analysis of covariance revealed no significant differences between the groups (F [2, 34] = 0.919).

With respect to this ranking task, one serendipitous finding seems worth reporting. Both the pre- and post-intervention subject-rankings were negatively correlated with SAT-quantitative scores: with the pre-intervention ranking, $r = -0.38$, $N = 34$, $p = .01$; with the post-intervention ranking, $r = -0.43$, $N = 32$, $p = .007$. No similar relationship was found between SAT-verbal scores and the ranking-task scores.

5. Need-achievement, Cognitive Complexity, Motivation, and Writing. Means and standard deviations for scores on these variables are reported in Table 7. It can be noted that the distribution of

TABLE 7

DESCRIPTIVE STATISTICS ON NEED-ACHIEVEMENT, COGNITIVE-COMPLEXITY, AND MOTIVATION SCALES

	NEED-ACHIEVEMENT	COGNITIVE-COMPLEXITY	SELF-REPORTED MOTIVATION
N	41	31	41
Possible Score Range	0-30	0-49	1-10
Mean	10.86	21.94	6.79
S.D.	10.34	4.97	1.41

scores about the cognitive-complexity mean is rather tight, suggesting little variability in the subject-population on this measure.

All three of these measures were included in the study for "exploratory" purposes. Thus, an examination of correlations between these measures and the writing-outcome measures seemed the appropriate course to follow.

There were no significant correlations between either motivation or cognitive complexity scores and any of the writing measures. And there was only one significant correlation with need-achievement: the materials-appropriateness score was negatively correlated with need-achievement ($r = -0.35$, $p = .01$). Since the need-achievement score is really two-dimensional (Lindgren, 1976), this correlation suggests a weak relationship between the need for affiliation and the selection

of materials which are appropriate for a writer's audience and purpose.

Again, some serendipitous findings may be of mild interest. Self-reported motivation to improve writing was negative correlated with the cognitive-complexity score: $r = -0.31$, $N = 31$, $p = .05$. Motivation was positively correlated with post-intervention "feelings" about writing ($r = .37$, $N = 36$, $p = .01$), but not correlated at all with post-intervention confidence in writing ability. The need-achievement scores were insignificantly but negatively correlated with most of the writing measures--most correlations were in the -0.15 to -0.25 range. There was a clear positive correlation between the need-for-affiliation dimension and post-intervention success at ranking on the writing-ranking task ($r = .47$, $N = 38$, $p = .001$).

6. Post-intervention Questionnaire Findings. Items included in the voluntary post-intervention questionnaire were purposely redundant, asking basic questions in different ways. This may have in part been responsible for the already reported low number of 11 FW and 15 CAPS respondents. (One suggestion from one respondent was "Have fewer forms and questionnaires to fill out!")

The responses of the FW and CAPS subjects will be reported in turn.

What the FW subjects reported as strengths and weaknesses of the FW approach is difficult to summarize, in that nearly every subject pointed to some different aspect of the approach. Three subjects found the approach "freeing," with worries about choices and editing left till "later." Three also found FW useful for the development of ideas. Individual strengths cited included FW's emphasis on "getting

it down"--"saving" ideas--and its utility for evolving a thesis. "Freewriting gave me a way to bridge what I wanted to say with what I had to say," wrote one respondent. While one subject found that FW forced one to think, another reported that FW helped him/her to avoid wasting time on "thinking."

The most frequently cited weakness of FW was the amount of time it took--"Freewriting made me devote more time to this course than I had hoped I would have to." Related to this was some subjects' sense of needless repetition. Others sensed that the FW approach was not versatile, that it was unlikely to be useful for writing which required specific information. This observation was supported in responses to later questions about probable use of FW in the future: seven cited "creative writing" and "English essays" as likely candidates for their freewriting efforts; six cited term- or research-papers as their least likely candidates.

After FW training, respondents rated invention at an average 5.45 on a 7-point scale of importance. Their pre-intervention mean rating was 3.73. On a 5-point scale, FW respondents yielded a mean of 3.72 regarding likelihood of using FW with future writing tasks. (On both scales, higher numbers represented more positive responses.)

Responses from CAPS subjects were a bit easier to group. Clearly, the major perceived strength of the CAPS approach was comprehensiveness of coverage of a writer's concerns. Several also cited problem-definition as a major strength; others cited various types of clarifications. Two-thirds of the respondents cited "brainstorming" as the most helpful of the CAPS techniques they had learned. As one

put it, "I never knew I could come up with so much."

CAPS subjects were also clear on the major weakness of the approach: it required too much time. It took them over the same ground again and again. As to "least useful" aspects of the approach, they seemed divided between problem-solving Step 1 (establishing positive mental set) and problem-solving Step 6 (evaluating choices).

Eight CAPS respondents indicated that they expected to use the CAPS approach on term-/research-paper assignments. Others cited writings concerned with a particular audience as likely candidates for their use of CAPS. "In-class writing," "stories," "personal writing," "personal letters" were listed as situations in which respondents were least likely to again use the CAPS approach.

CAPS respondents rated invention at an average 5.53 on a 7-point scale of importance, in contrast to their pre-training rating of 3.0. Their responses to the question about likelihood of future use of the heuristics produced an average of 3.53 on a 5-point scale.

Some CAPS subjects offered suggestions regarding the CAPS approach. Three suggested that the training should be less rushed, that more exercises should be provided. Others suggested less homework, and condensing the heuristics or the amount of time it took to teach them. One suggested that the CAPS approach should be taught to students long before they reach college.

Serendipitous Findings

For possible reference in future research, Table 8 reports correlations between writing measures and SAT verbal and quantitative

scores. Of particular interest are the changes in correlations across the various component variables.

TABLE 8

CORRELATIONS BETWEEN WRITING MEASURES AND SAT SCORES

WRITING MEASURE	(n)	SAT-VERBAL	SAT-QUANTITATIVE
"Article"	(35)	.27	.33*
"Speech"	(35)	.39**	.16
"Letter"	(33)	.20	.04
Audience	(33)	.39**	.17
Controlling Idea		.42**	.50**
Voice		.37**	-.05
Materials		.08	-.07
Organization		.38**	.36*
Conventions		.33*	.35*

* $p \leq .05$

** $p \leq .01$

CHAPTER VI

DISCUSSION

The present study is, as far as I can determine, the first study to treat freewriting as a heuristic, and the first study on the effects of short-term training in the use of heuristics for rhetorical invention. In addition to the immediate findings of the study, its long-range value may be even more in the questions its raises and the procedures it describes. In the course of this chapter, I will try to define some of the important questions and to offer suggestions for future research.

However they might appear in time, the findings of this study do appear to be substantial. The results do indicate that short-term training in the use of freewriting heuristics has some significant effects on the writing produced by trainees. The fact that educational training can be clearly associated with any effects is somewhat surprising (see Cooley and Lohnes, 1976); that 6 hours of training in composition with college students, who have probably received hundreds of hours of composition-training and had a thousand or more hours of experience with writing, can result in a clear discrimination of those writers from comparable writers affords hope that effective training techniques in composition can be developed.

In the absence of a control group, we cannot say whether FW training improved subjects' writing or CAPS training worsened subjects' writing. In light of the fact that CAPS training included no mention

of editing, it might have been hypothesized that the CAPS training would result in weaker compliance with conventions of grammar and mechanics. The results of this study could be seen as supporting such a hypothesis. But to hypothesize that CAPS training, with its emphases on audience and communications concerns, would result in trainees' weakened concern with audience would make no sense. And yet, the most pronounced difference in this study was on an audience-related component of writing: the writer's inclusion of material which was appropriate for his or her purpose and audience. Given the untenability of the hypothesis I just mentioned, it seems more logical to see this study in general as supporting the contention that training in freewriting results in an improved written product.

The training protocols treated freewriting as a heuristic, and it would be nice to be able to conclude that it was the freewriting heuristics rather than some other aspect of freewriting which was responsible for the observed effects. Here the data are less clear. Certainly subjects in the FW group reported higher degrees of compliance with the heuristics in producing the written products. But this fact alone does not allow for unambiguous interpretation. One of the problems is the nature of self-report measures, discussed in Chapter III; another is the specific compliance measure used in this study, discussed later in this chapter. Still another problem becomes apparent when we look at the correlations between self-reported compliance and writing scores. With respect to the "letter," there clearly was no correlation between compliance with the CAPS heuristics and the writing scores. While there was a slight correlation between self-reported compliance

with the FW heuristics and writing scores, it was too slight to be statistically significant. The possibility of there being a clear relationship deserves study. With respect to the "speech," we find a (statistically insignificant) negative correlation between compliance with FW heuristics and writing scores! This seems potentially troublesome; but I think it says more about the appropriateness of the "speech" measure than it does about freewriting heuristics. It may well be that the subject who used freewriting for the first time in preparing an in-class piece of writing indeed was unable, in 40 minutes, to devote sufficient time to those factors which most influence evaluation of the finished product. He or she may simply have been too busy complying with the freewriting heuristics.

An alternative possibility suggested by this latter situation is that FW heuristics are differentially useful with different writing exigencies. Subjects' comments suggest that they expect freewriting to be of limited use with writing exigencies which call for limited information and limit structuring of that information. In fact, the "letter" assignment was such an exigency, and in response to it the FW subjects did clearly better writing. So the question of freewriting's utility across writing situations deserves further study, with more subjects and across a broad range of writing situations.

The lack of clear support for a relationship between compliance with the FW heuristics and the quality of submitted writing holds open the possibility that it was not the heuristics but rather some other aspect of freewriting which was responsible for the observed effects. The first aspect which comes to mind is quantity of writing. While

the CAPS subjects were honing their decision-making skills, FW subjects were writing. And writing. And writing again. In her survey of the ongoing search for panaceas for teaching writing, Maxwell (1979) reports that having students "write five themes a week, on the assumption that practice was everything" was popular during the 1890s (p. 227). Two relatively recent tests of that assumption produced conflicting results. McQueen, Murray, and Evans (1963) reported evidence in favor of the hypothesis that quality of writing is a function of quantity of experience with writing. Heys (1963), on the other hand, reported that the effectiveness of "theme-a-week" assignments was not supported by his data. It is tenable that the quantity of writing demanded of FW trainees rather than their compliance with the particular heuristics produced the observed effects. Such a hypothesis is certainly testable, and deserving of investigation.

Do the results of this study support Kinney's contention that freewriting heuristics, "the simplest, most effective, and most readily available of all intuitive heuristics," lead to better writing because they incorporate the workings of both halves of the brain (1979, p. 335)? Even though the CAPS heuristics employed in this study were clearly "rational" heuristics, no direct hypothesis on intuition versus reason was here being tested. As I pointed out in Chapter III, the FW heuristics employed included at least one "rational" guideline. And Kinney's full-brain hypothesis itself implies an interplay between the intuitive and the rational. A real test of Kinney's hypothesis may become possible once brain research is sufficiently fine-tuned to allow a study of the relationship between physical brain functions and the

composing process. For now, all we can say is that freewriting heuristics are basically intuitive, and that short-term training in the use of freewriting heuristics leads to the production of more effective writing than does comparable training in the use of "rational" CAPS heuristics. Beyond that, there remain basic definitional questions about the meaning of intuitive. Is the following of intuition anything more than behavior guided by the left-brain's "understanding" of "records" of experience and training stored in the right brain? Research in the area suggested by Kinney should prove interesting and challenging.

Chapter II offered an accumulation of evidence that training in problem-solving heuristics can produce positive behavioral results. This study offers no support for or against such a conclusion. It does demonstrate that short-term training in the use of a particular problem-solving heuristic for rhetorical invention is less related to the production of effective writing than is comparable training in the use of freewriting heuristics. There are several possible reasons for this potential deficit in the power of problem-solving training. Let me mention a few of them.

Problem-solving training has been reported to be effective with a broad range of problems--from how to design screws to how to handle boyfriend-girlfriend differences. It may well be that none of the problems handled by problem-solving techniques involves a configuration of behaviors comparable to that involved in the production of effective writing. Interpersonal problem solving, for example, certainly involves a number of variables. But the variables at work

in the composing process may, in comparison, involve both greater numbers and greater ambiguity. Interpersonal problems involve, in a simplified scheme, situations, persons (often only two), and communications. Through improved interpersonal communication, problem-situations often yield clearer problem-parameters; communication also provides interpersonal feedback, important in the testing and reformulating of tactics. Situational demands and interpersonal needs generally become clearer once the problem-solving process is begun. Now writing also involves communications, situations, and persons. But it involves skills in the use of which most people have far less training than they have in interpersonal skills. The receiver in the writing situation is not immediately present, is not providing feedback. Communication is always, in the course of writing, in potentia. Problems must be defined, and solutions generated, by an individual working alone. Thus, the writing process is fraught with ambiguity, and the process whereby one might acquire an effective set of problem-solving skills for writing is elongated relative to situations in which feedback occurs quickly and frequently.

Writing problems, insofar as they were "problems" for subjects in this study, are likely to have a different salience from, say, marital or job problems. For an inventor, problem-solving involves pay and prestige. For partners in a problem-ridden marriage, problem-solving involves minute-to-minute happiness. But for the college student, writing is likely to become a salient problem only when the student is forced to confront the possible consequences of ineffective writing--when faced with, say, an essay exam or a research assignment. The

subjects in this study were not students who were in a writing course because of problems with writing. They were enrolled in a required writing course, in regular sections of that course, not in sections set aside for students who claim to have writing deficiencies. In a public-university world of large lecture-classes, writing for most students becomes a problem increasingly associated only with English classes. Once the typical student passes the required English courses, writing is often a problem only in memory.

Related to this is the fact that in our society writing is an increasingly infrequent act. We have a mobility which allows for face-to-face communications; we have phones in nearly every residence; we have calculators which allow us to avoid even the writing of numerals. Writing is increasingly associated with a desire to avoid personal confrontations and with "problem"-situations which require the keeping of careful records.

In this study, subjects trained in the use of problem-solving techniques seemed to appreciate the comprehensiveness of the CAPS heuristics. They seemed to understand the problem-solving steps. Their homework assignments suggested that they had achieved a minimal facility in the use of the CAPS heuristics. But, after intervention, some reported that they did not want to have to do "so much work." When a problem is as complex, as ambiguous, as "unimportant," and as infrequent as writing problems seem to be, it is not unlikely that persons exposed to a set of a writer's problem-solving heuristics will see them as something akin to an arsenal with overkill-capacity.

All of this is post-mortem hypothesizing. It is equally possible

that problem-solving training for writers simply cannot take hold given only 6 hours of in-class training. Future research employing the same CAPS package might involve 12 hours, or 24 hours, or an entire semester, of training. Under any of these training schedules, the package might prove effective. But it would seem far less practical for inclusion in the typical college composition-course curriculum.

As an interesting, nonscientific, sidelight, I can report that the subjects' regular course instructors felt that their students who had had the CAPS training were outpacing the FW students once they were again producing writing in response to "regular assignments." One of the instructors even showed me his grade-sheet, and asked me to compare the mean-grades of subjects in the two groups. He was right: the CAPS subjects were getting better composition grades. Neither instructor was ready to accept what the data of this study suggested. I suspect that this reluctance was at least in part the result of a tendency among academics to consider anything so simple and "intuitive" as freewriting to be "lightweight." On the other hand, CAPS training may have long-range effects which this study was not designed to look for, primarily because the experimenter had no control over potentially confounding variables once the subjects returned to their regular classes and instructors. Once again, a future research study might explore the possibility of long-term effects.

Another positive finding of this study concerns the evaluation of writing. The interrater reliability coefficients seem quite a bit better than those typically reported in composition research. It seems quite clear that reliability was enhanced by two factors. First, the raters

were chosen from a pool of potential raters after an examination of their scores on the same ranking-of-writing task used with the experimental subjects. Potential raters whose scores did not correlate perfectly with the normative ranking (procedures for arriving at that ranking were described in the last chapter) were dropped from the pool. This to some extent assured not only that the raters' standards were in-line with those of a majority of polled writing instructors, but also that their own standards were similar. More importantly, the raters were trained in the Q-sort technique, and in its application with various criteria. The importance of this training was accidentally revealed when a training session on one of the criteria was omitted, and a correlation of -0.01 on the two sets of ratings on that criterion was the result. A deviation from procedures by one of the raters on another criterion similarly demonstrated the importance of having clearly defined procedures.

Perhaps equal in importance to the findings on the importance of training and clear procedures is the finding that two raters can read the same set of 39 papers nine times without producing inter-scale correlations so high as to make examination of individual scale-scores meaningless. Where strong correlations occurred, they seemed logical: the strongest (.80) was between sensitivity to audience-needs and appropriateness of writer's "voice"; the second strongest (.57) was between organization and presence of a controlling idea. Compliance with grammatical conventions correlated not at all with audience- and voice-criteria, and only weakly with the other components.

Similarly, it is refreshing to be able to report that regression

analysis makes clear that holistic ratings were not dominated by a consideration of grammar--in fact, grammar was the fourth of five components entered into the equation involving regression of component-scores on the holistic scores.

In sum, this study demonstrates that with training and adequately defined procedures and criteria, evaluation of writing can be both reliable and meaningful.

Evaluation leads naturally to the topic of measures. The "letter" measure used in this study, a measure which not only specified audience and "voice" and suggested purpose, but also "controlled" the materials/information which might be included in the final product, seems of a type unusual in research on writing, if not unique to this study. Some of the measure's advantages are apparent from the foregoing discussion of evaluation. It also allows some control over subjects' familiarity with components in the writing exigency, something often lacking in an exigency where a general (e.g., "American citizens") or variegated (e.g., "your best friend") audience is specified, and where the topic is one with which students may be assumed to have similar knowledge when in fact they do not, or even can not (e.g., "effects of inflation"). Emphasis in many past studies has been on control over the writing situation (room, lighting, time, access to dictionaries, etc.). I am not suggesting that these things are unimportant. But of at least equal importance, it seems to me, is control over subjects' potential for equal familiarity with components of the writing exigency. The control inherent in the "letter" exigency may well have been related to the differentiation found in the various ratings performed on the writing

done in response to it.

The results of this study also support the contention of Sanders and Littlefield (1975) that in-class writing assignments are not the best place to be looking for probable effects of training in writing.

A more problematic measure was the self-report compliance form used in conjunction with both of the writing-measures. The form seemed to have many advantages: it was easy to use, it was comprehensive, and it allowed meaningful comparisons across heuristics. The form becomes problematic when one tries to interpret the score which it yields. The score was a ratio of the subject's reported degree of compliance and the total degree of compliance possible. Unfortunately, it is overly simplistic to assume that the highest score was the best score. In neither the FW nor the CAPS training was total, to-the-letter, written compliance with the heuristics held to be the ideal in all writing situations. Comprehensive treatment of all concerns underlying or specified by the heuristics was presented as important; but situational factors might lead a given user to comply with a particular heuristic mentally, or even to omit an occasional step or two. This certainly would be the case in many situations which require in-class writing. It would seem, then, that the equation describing the bad-to-good dimension of compliance scores would be curvilinear, and the location of the high-point of the curve would vary with situations. Consider the finding of this study that high compliance scores were somewhat related to low writing-scores on the "speech"-measure, among FW trainees. It might well have been that the "best" compliance score for the writing situation created by the "speech" exigency was, say, .35 rather than 1.00, since full

compliance with the FW heuristics would likely take up most if not all of the 40 minutes allotted to writing.

Any research which attempts to examine the relationship between compliance with a particular heuristic and some outcome measure will have to confront the problem I have just described. The problem may even be more complex: "best" scores may vary not only across situations but also across individuals. Perhaps this problem is a product of the types of behaviors with which heuristics seem useful: while something (the heuristic) is better than nothing (hit-or-miss approaches), the something never can become one thing (a rule).

This study was not designed to shed light on the contribution of general academic ability to writing ability. The correlations between SAT scores and writing scores reported at the end of the last chapter suggest that quantitative and verbal ability are likely to be related to writing ability in no straightforward way--in part, at least, because what we call "writing ability" is a composite of abilities tapped in varying degrees by various writing exigencies. In this study, the SAT quantitative score was significantly correlated with the pre-intervention writing score ($r = .33$, $N = 35$, $p = .03$). The SAT verbal score was correlated with the post-intervention in-class "speech" writing-score ($r = .39$, $N = 35$, $p = .01$). Both SAT scores were uncorrelated with the "letter" writing-scores. Thus, any generalizations about contributions of "intelligence" to writing ability should be treated gingerly.

This study did not attempt to control for possible trainer-personality/treatment-condition interaction effects. The possibility was

considered beforehand. The decision to use different trainers with each treatment condition was based on the experimenter's desire to assure that subjects were trained by someone who not only knew but also "believed in" the heuristics he or she was teaching. Although that decision was not without risks, those risks seemed preferable to having the effects of the heuristics-training possibly diluted by a trainer's apathy, a trainer's unfamiliarity with protocols, or a trainer's preference for one heuristics-package over the other.

On the face of it, the trainers used in this study seemed quite well matched. They had similar educational backgrounds, similar numbers of years of teaching experience, similar peer evaluations, and similar (positive) student evaluations. Both were known for their enthusiasm in the classroom. Nonetheless, there are likely to be some differential effects of a teacher's style in many teaching situations. Thus, future research in this area would ideally involve a large number of subjects randomly assigned to a large number of trainers who were randomly assigned to the use of different protocols. Unfortunately, few experimenters have the means to achieve such control in applied research settings.

It seems clear from this study that freewriting deserves much more serious attention than it has been given up to this time. It deserves further study as formulated in the heuristics-package used in this study. It deserves study as it might be formulated into other treatment modules. And the heuristics which Elbow seems likely to present in his 1981 book should certainly be studied carefully and promptly. As studies of various freewriting approaches proceed, it

will be necessary for experimenters to break the approaches into component parts, in order to determine just what aspects of a particular approach might be responsible for observed effects. Such studies will contribute greatly to the much-needed development of effective approaches to training in composition.

Finally, training in the use of heuristics--not only in composition, but in any behavioral setting where clear-cut rules are impossible and a hit-or-miss approach leaves much to be desired--seems likely to be of great use to persons working in the area of cognitive strategies. So-called cognitive-strategy training employs the same principles of learning as do various approaches to behavioral training. The difference seems to be that cognitive-strategy trainers, from the beginning of intervention, work to provide trainers with a generalizable strategy rather than situation-specific tactics for dealing with life's problems. Strategies formulated as heuristics can have both the specific applicability and the generalizability which the trainer seeks and the trainee needs. Carefully formulated heuristics are both flexible and comprehensive. Any training package which has both of these qualities, and is also readily teachable and learnable, would seem to have great potential for helping contemporary individuals to live their lives more effectively.

APPENDIX A

Protocols for the Freewriting and Communications Awareness/Problem Solving Training Sessions

Explanatory Note. In conducting the experimental interventions (hereafter called training sessions), the trainers followed sets of protocols which had been devised before they began to offer the training sessions. At the end of each training session, the trainers compared what had actually occurred in the classroom with the protocols; what follow are detailed outlines of protocols actually followed in the training sessions.

Both trainers devised their own protocols, after the experimenter had set forth the general requirements. Once the outlines of the protocols had been independently established, the two trainers met to incorporate common materials into both classroom exercises and assigned homework. The protocols as they appear here were shaped by the literature on freewriting and on problem solving, the literature on heuristic approaches to rhetorical invention, the experimental questions and design considerations, and the accumulated teaching experience of the two trainers.

The protocols are presented as combined outline and "script."

The outline of each training session should provide a sense of overall structure, while the scripts offer elaborations on that structure. LOGISTICAL CUES are given in capital letters. Attention is drawn to sections of a protocol, such as classroom and homework EXERCISES, through capitalization and underscoring. (Explanatory materials, including references, which would not ordinarily be presented in the classroom, appear in parentheses.) Handouts used during training ordinarily appear at the end of the session-protocol in which they were used, and are labeled FORMS.

This appendix has three parts:

1. Introduction: Presented to All Subjects
2. Protocols of Six Communications Awareness/Problem Solving (CAPS) Training Sessions
3. Protocols of Six Freewriting (FW) Training Sessions.

All protocols were designed for use in a 50-minute class period.

A.1. Introduction: Presented to All Subjects

(This script was followed twice, in the two existing classes from which experimental subjects were taken, on the same day. The trainers were together in each classroom for about 15 minutes. Some of the materials-distribution and collection was handled by the regular classroom instructors.)

Your instructors have already told you that part of your semester in English 100 will be team-taught. Well, we're the rest of the team. And, although we don't yet know you, we want to introduce ourselves and tell you a bit about what we will be doing.

This is Joy Marsella. And I am Tom Hilgers.

We are both regular faculty members in the English Department; we both have been teaching in the department since the early '70s. We have both taught English 100 often, and have taught writing courses at just about every level. We don't claim to be better or worse teachers than your regular instructor; the main difference is that we are doing research designed to improve the teaching of writing.

We will be teaching you for the next three weeks. Things won't really be that different from what you'd find in every English 100 class. You will have classes every MWF at 10:30. You will write. Attendance at class will be checked. So will your work on homework assignments. You will write, and the final versions of what you write will count toward your final grade. What you study is going to be pretty

standard, too--we teachers of writing usually call it "invention"--from the Latin, "to discover"; what invention involves is the "discovery" of ideas and the "discovery" of how to state them.

What will be different is that we will be looking with particular care at what you write, so that we can evaluate the effectiveness of the approaches to invention that we teach. So you'll be getting a little extra attention.

There are many approaches to invention. The typical English-100 approach is to teach those approaches helter-skelter. We feel that such an approach is not the best--usually students learn just a little about a lot. So what we are going to do is take two common methods and focus on them very intensively. We will try to help you learn those methods and use those methods. Then we will carefully examine your writing, to see just what you seem to have learned. Our goal is to help you write more effectively right now; our longer-range goal is to improve the teaching of writing.

What will you have to do? Not much that's different from what you have been doing, with a couple of exceptions. Let me outline what we expect.

1. Because we are doing research, we will ask you to fill out a few forms, questionnaires, etc. (One will come to you in a couple of minutes.) Your responses are for our research only; nothing about you individually from these forms will ever be told to anyone, including your course instructor. After we have collected the forms, we will refer to individuals with code numbers--your identity will be confidential.

2. Probably the major difference will be that about half of you will be meeting in a different classroom. You selected this class for the most part by time and your time of registration. Did you ever notice how many of your names begin with K L M N O S and T? Because we are doing research, we want you better mixed up. So we randomly reassigned you to classrooms for the next three weeks--I'll pass out a list of classroom assignments in a minute.

3. There is no textbook for what we will be doing, so we ask you to attend the class sessions faithfully.

4. As in every class, we ask you to participate in class exercises; we also ask you to do your homework carefully and faithfully.

5. We want you to make your best effort to learn the techniques we will be teaching, because we believe in them, and because they will help you to become better writers. And they aren't all that difficult, either--they are practical and helpful. We ask you to give them a fair chance.

As you already know, your attendance, work on assignments, and the writing that you do will count toward your final grade.

SOLICIT QUESTIONS; ANSWER THEM.

Okay. Right now I'm going to give you one of those forms I was talking about. We want to know, before we begin to teach you, how you rate pieces of writing in general. What I'm going to pass around is not a test; it will not count toward your grade. But it will help us to help you.

PASS OUT RANKING-OF-WRITING MEASURE (Appendix D).

Just follow the instructions. When you have all finished, we will collect the forms. Feel free to remove the paper clip and rearrange the pieces of writing if that will help you.

TRAINERS LEAVE. REGULAR CLASSROOM INSTRUCTORS COLLECT FORMS. REGULAR INSTRUCTORS PASS OUT CLASS LISTS/CLASSROOM ASSIGNMENTS. INSTRUCTORS DISTRIBUTE AND COLLECT LINDGREN (1976) PREVAILING MOOD FORM.

A.2. Protocols of Six Communications Awareness/Problem Solving (CAPS) Training Sessions

CAPS Training Session #1 (50 minutes)

REINTRODUCE SELF; INSTRUCT SUBJECTS TO INTRODUCE SELVES TO THOSE AROUND THEM.

TAKE ATTENDANCE/LEARN NAMES FROM CLASS LIST.

A. Invention and Problem Solving

"Invention" is concerned with two things: discovering ideas and planning how to communicate those ideas.

For most of us, discovering and planning present problems. Sometimes we try to avoid the problems by waiting for "inspiration." At other times we use a "hit-or-miss" approach, and hope that we "hit" more often than we "miss." Sometimes we claim to have "writer's block" and avoid invention entirely. (See Flower, 1978.)

Since invention presents us with a series of problems, we will be learning a problem-solving strategy to deal with invention. The problem-solving strategy is pretty straightforward: it is not mysterious, chancey, or defeatistic. The ability to use this strategy is a skill. As is the case with other skills (such as bicycle-riding or reading), we learn it through work and practice.

I want to know, before we move on, more about how you feel about writing.

DISTRIBUTE & COLLECT CONFIDENCE & FEELINGS SCALES (Appendix

F.2).

DISTRIBUTE & COLLECT MOTIVATION SCALE (Appendix F.1).

B. Recognizing Problems through Feelings

ASK QUESTION: How do you know when you have a problem?

SOLICIT ANSWERS

At least one clue to the presence of a problem is feelings.

EXERCISE: Feelings about Writing.

PASS OUT HALF-SHEETS OF BLANK PAPER

I want you to use your imaginations to help you pinpoint your own feelings, thoughts, and actions. So I'm going to ask you to close your eyes and follow me through the script of a mental movie starring YOU. Put the paper aside for right now. Just close your eyes, follow the script, and get into your feelings.

READ SCRIPT, PAUSING WHERE APPROPRIATE:

It's Monday morning. You're in your history class. It's the end of the class period. The professor is passing out a handout; he says "This is due Friday." You get the handout and read it.

> For Friday, write a paper of about 1000 words on the impact of the scientific revolution on social thought, religious thought, and political thought in England. Be sure that your essay is clear and coherent. Be sure to give credit to your sources, even if you do not quote word-for-word. Your paper will be graded on accuracy, insight, the logic of organization, and the usual grammar, punctuation, and spelling.

(How are you feeling now? What are you saying to yourself?) You put the handout in with your notes, and you walk out of the classroom.

It's now Monday night, after dinner. You think about that history paper due Friday.
(How are you feeling now? What are you saying to yourself? What are you likely to do?)

Now it's Wednesday morning. Back in history class. The professor is saying "I hope you've all gotten going on those papers for Friday. I'll be reading them myself, and very carefully. No late papers will be accepted. See you Friday!"
(How are you feeling now? What are you saying to yourself?)

It's now Wednesday evening after dinner. You're lying on your bed, thinking about the history paper.
(How are you feeling? What are you saying to yourself? What are you likely to do?)

It's Thursday afternoon. You're walking on campus. The history paper is due tomorrow morning, and you're thinking about it.
(What are you feeling? What are you saying to yourself? What are you likely to do?)

Thursday night, after dinner. 1000 words due tomorrow on the effects of the scientific revolution on social, religious, and political thought in England.
(How are you feeling? What are you saying to yourself? What are you

likely to do?)

It's Friday morning. You're passing your completed paper up to the front of the room.

(How are you feeling? What are you saying to yourself? What are you likely to do?)

Now, OPEN YOUR EYES.

Now, WRITE A BRIEF OUTLINE of what you remember of your feelings, what you told yourself, what you were likely to do.

COLLECT PAPERS; READ A FEW AT RANDOM.

SOLICIT ANSWERS TO QUESTION: What in general seem to be your feelings about facing a writing assignment?

What can we learn from this?

1) We respond to discomfort with old reactions, automatically (impulsively).
2) We respond to discomfort with self-defeating self-statements.
3) Our responses aren't all that likely to be effective--in fact, they will reinforce our being in a writer's rut.

It might be better to

1) Respond to discomfort with "Stop! What's happening? What can I do about it?" STOP-THINK whenever we experience discomfort. AVOID impulsive, automatic action.
2) Tell yourself, "If I act logically, I can lick this problem."
3) Start applying a problem-solving strategy.

This is Step 1 in the problem-solving strategy:

When confronted with a problem--and negative feelings--don't react automatically. Instead, stop, think, and tell yourself what you might do next to solve the problem.

C. Defining Problems

One thing you can do next--you can even tell yourself to do--is to define the problem. There's an old saying "A problem well-defined is a problem half solved." But--we're often pretty sloppy at defining problems.

Example (overheard in Library Snack Bar)

Cheryl: "I'm feeling depressed lately."

Cindy: "Why? Is it because of Kevin?"

Cheryl: "I guess so. He's working at night, you know."

Cindy: "So what are you gonna do?"

Cheryl: "Oh, I don't know. But I sure get depressed."

Cheryl might know better what she could do if she defined her specific problem.

Problem Definition is Step 2 of the problem-solving process.

What is a good problem-definition? WRITE ON BOARD:

1) It includes the specifics of the situation.

E.g., Cheryl is now alone at night; has little social life; doesn't get as many chances to talk with Kevin; but they need more money to get married; etc.

2) It includes specific needs or requirements or goals.

E.g., Cheryl and Kevin need money. They need opportunities to talk. Cheryl needs some social activity in the evening.

3) It includes obstacles to "happiness."

E.g., need for money versus desire for time together; limited opportunities for social life without Kevin.

4) It includes specifics which might help in solving the problem: facilitators.

E.g., Cheryl loves Kevin; Cindy is a good friend of Cheryl.

INTRODUCE HOMEWORK ASSIGNMENT

On Friday we'll go through the rest of the steps in problem-solving. And we'll begin to apply them to problems in writing.

1) Since problem definition is so important for problem solution, your homework is an exercise in problem definition. Please look it over.

PASS OUT FORM A.2.1.

2) Also, observe yourself in situations where you have negative feelings (anger, frustration, disappointment). What do you say to yourself?

Form A.2.1

Name: ID number: _ _ _ - _ _ - _ _ _ _

Homework Assignment: Defining Problems

"To define a problem well is to be halfway to its solution."

A good definition of a problem focuses on the specifics of the people or situations involved. A good definition takes particular needs or requirements into account. A good definition of a problem highlights particular obstacles to solution of the problem; likewise, it makes note of any positive factors which might point the way to a solution of the problem.

Assignment. You are to list 9 general problems--3 personal, 3 public or social, and 3 writing problems. After making note of what you usually say to yourself when you confront or think about the problem, go on to define the problem specifically.

An example of how someone else defined a problem is given at the beginning of each category.

A. PERSONAL PROBLEMS

Example General Problem: I don't get along with my father.
My typical response: "I wish he'd get off my back."

Problem Definition: I often get angry at my dad, because he treats me the way he did when I was 10, and that was almost 10 years ago! And when I get angry at him, I either say nasty things or I pout--the same things I used to do when I was 10 and got angry. I want to be able to stop this vicious circle of me getting angry at being treated like a child and then acting like a child. I don't want to alienate my father (I don't think he's happy with the situation either), but I want to be able to make more of my own decisions, and even mistakes, as an adult. But I don't think I'm ready yet to move away from home and depend only on myself.

General Personal Problem #1:

My Typical Response:

Specific Definition:

General Personal Problem #2:

My Typical Response:

Specific Definition:

General Personal Problem #3:

My Typical Response:

Specific Definition:

B. PUBLIC or SOCIAL PROBLEMS

Example General Problem: The administration won't allow the students to set up a day-care center for pre-schoolers on campus.
My typical response: "That bunch of blockheads cares only about paychecks, not about students."

Problem Definition: Students who have kids don't really have "equal educational opportunity." ASUH could provide funds to help set up a day-care center. But there are two big problems. The first is convincing childless students that students with children wouldn't be getting a "bigger piece of the pie" if student funds were used to start a day-care center. Then there's the administration. They are legally responsible forever, while students come and go. So the second problem is convincing the administration that any day-care-center proposal is well-planned, legal, and likely to result in a financially self-sustaining unit.

General Public or Social Problem #1:

My Typical Response:

Specific Definition:

General Social or Public Problem #2:

My Typical Response:

Specific Definition:

General Social or Public Problem #3:

My Typical Response:

Specific Definition:

C. WRITING PROBLEMS

Example General Problem: How am I gonna compare and contrast the French and British responses to the US Civil war?
My typical response: "I can't write, and I'll get a C anyway."

Specific Definition: I just can't get started with writing. I've never worked out a strategy to get me going, if such a thing is possible. So I put off and put off, and end up writing the night before the paper is due, rushing and panicking. The professor said that he looks at how well we've done the reading, how well we've understood the lectures, and how much we've thought on our own when he grades our papers. When I rush like I do, I leave out some things from the reading and lectures, and maybe don't think too well either. But I have to get an A to balance out the C I'll get for sure in Chemistry, where I really do get lost.

My Writing Problem #1:

My Typical Response:

Specific Definition:

My Writing Problem #2:

My Typical Response:

Specific Definition:

My Writing Problem #3:

My Typical Response:

Specific Definition:

CAPS Training Session #2 (50 minutes)

REVIEW NAMES; TAKE ATTENDANCE.

A. Review

1. Inability to solve problems can result from

a. repetition of habitual, impulsive responses to a situation

ASK QUESTION: Can someone give us an example of this from your own experience?

ALLOW STUDENTS RESPONSES

ASK QUESTION: What could you have done that might have been more effective?

ALLOW RESPONSES--REINFORCE "STOP AND THINK" RESPONSES.

b. fuzzy definitions of a problem-situation

ASK QUESTION: What are some of the elements of a good problem-definition?

WRITE RESPONSES ON BOARD

Let's see how you did with definitions on your homework.

SOLICIT ONE PERSONAL, ONE PUBLIC/SOCIAL, & ONE WRITING PROBLEM-DEFINITION FROM HOMEWORK.

COLLECT HOMEWORK.

Today we will deal with the third major reason for inability to solve problems:

c. poor decision-making skills

B. Generating Alternative Solutions

Imagine that you work for your uncle's newspaper, "Aloha News," for tourists in Hawaii; he wants you to write a weekly column of about 1000 words, for $100. This is a problem, right?

What is the first step in the problem-solving process? Stop and Think! Don't just say "That's impossible!" Say something positive to yourself.

Then we want to define the problem.

WRITE PROBLEM-DEFINITION ON BOARD, STRESSING VARIOUS COMPONENTS.

Then what would you do? You might think, I'll write on the hula. That might be okay. But the best choice is likely to result from consideration of many possibilities.

A useful strategy for coming up with many possibilities is brainstorming. There are two rules for brainstorming:

1) Be free. Let your mind go. Think of far-out things. You can tame your ideas later.
2) Don't judge. Turn off your censor. Don't let yourself criticize your ideas. That will come later.

BRAINSTORMING EXERCISE

Your problem is the one we earlier defined--writing for the "Aloha News." You walk into a coffee shop, trying to come up with ideas to write on. You see these.

SHOW CHOPSTICKS AND KNIFE & FORK

You brainstorm on topics which they suggest: be free; do not judge.

STUDENTS TAKE OUT FULL-SIZE SHEET OF PAPER.

Choose as a partner someone near you. You brainstorm for a minute while he or she records. Then reverse.

INSTRUCT STUDENTS TO RECORD ALL ITEMS IN A COLUMN DOWN THE LEFT SIDE OF THE SHEET OF PAPER.

Let me start you with an example or two:

unusual hair ornaments in Honolulu's discos;

differences among ethnic groups in Hawaii.

Now you go to it!

AFTER 2 MINUTES, LIST SOME STUDENTS' IDEAS ON LEFT SIDE OF BOARD. IF TOO TAME, REPEAT EXERCISE.

The next step in brainstorming is to squeeze your list for even more possibilities. You do this by making combinations. For example, "Hair styles among Hawaii's ethnic groups."

STUDENTS SPEND 2 MINUTES MAKING COMBINATIONS FROM LISTS AND FROM BOARD.

AFTER 2 MINUTES, LIST SOME COMBINATIONS ON BOARD

Any questions?

Discovering alternatives is Step 3 of the problem-solving process.

C. Evaluating the Possibilities

Now we've got to evaluate these alternatives. We can do this by listing the consequences of each item--consequences in terms of our problem-definition.

LIST, ACROSS TOP OF BOARD, ELEMENTS FROM PROBLEM-DEFINITION (e.g., APPEAL TO TOURISTS, 1000 WORDS, LIKELY TO SELL PRODUCTS).

We go down our list of items, and use + or - or ? to indicate positive or negative or unknown consequences with respect to our problem.

EVALUATE A FEW ITEMS ON LIST ON BOARD.

Now, you and your partner do the same thing with the lists you made.

GIVE STUDENTS A FEW MINUTES FOR EVALUATION.

You've just done Step 4 of the problem-solving process.

D. Choosing Among the Possibilities

Step 5 in our process is making a choice.

Look over the plusses and minuses: too many minuses in a line means drop the item! If you have several items with a high number

of pluses, you might have to choose among them by asking which one you are most interested in. It's good to rank alternatives, too--in case your first choice doesn't work.

E. Verifying the Decision

How can you tell if you've made a good choice? You might try your topic out on some tourists--ask them how interested they'd be in reading about it. Or you might role-play--imagine yourself as a tourist.

Since your problem is a writing problem, you'd probably go on to deal with other aspects of writing before you'd actually begin to write. We'll do that next time.

DISTRIBUTE HANDOUT: "Basic Steps for Solving a Writer's Problems" (FORM A.2.2)

ANNOUNCE QUIZ ON 6 STEPS FOR NEXT CLASS.

DISTRIBUTE HOMEWORK ASSIGNMENT: "Choosing a Topic Via Six Problem-Solving Steps" (FORM A.2.3).

Form A.2.2

BASIC STEPS
FOR SOLVING A WRITER'S PROBLEMS

The most effective strategy for solving a writer's problems is to break the larger problem ("How should I write this essay?") into manageable parts ("What do I know about the Civil War? What is my purpose? What are the characteristics of my audience?").

By following these basic steps with each "manageable" writing problem, you can
(a) discover what you have to say (find your topic and thesis);
(b) plan how to communicate what you have to say to your audiience.

STEP 1. Stop and Think!
Stop impulsive, automatic responses to your writing problems ("I'll do it later--I'll wait till I'm inspired"; "This doesn't matter anyway").
Stop making self-defeating statements to yourself ("I'll get a C no matter what I do").

Tell yourself that by thinking and by following a rational strategy, you can solve your writing problems and say something significant to your audience.

STEP 2. Define the specific problem (usually a piece of a larger problem).
Your general problem might be "What can I write about?" (finding a topic).
Restate the problem in specific terms. Say you have been assigned a 500-word essay on the American Civil War, due next Friday. Your specific problem might be "What do I already know about the Civil War, or what can I learn by Wednesday, which will allow me to write a 500-word essay that will get a grade of A or B from Professor Chun?"

STEP 3. Come up with alternative possibilities.
Make a list of possibilities by "brainstorming" or analyzing.
Be free--let your mind think of the "far-out" as well as the tame;
Don't judge--don't criticize any idea or you will "choke up";
Aim for lots of ideas--the more, the merrier;
Try combining half-baked ideas into super-ideas.

STEP 4. Evaluate the alternative possibilities in terms of their likely consequences.
For each alternative, ask "Is this likely to solve my specific problem?"
For example, if you have decided to write on causes of the Civil War (your topic), and have "brainstormed" 47 possible causes, you might evaluate each by asking
--What is the evidence that X caused the Civil War?
--Is X a basic cause or part of a basic cause (e.g., is "the price of cotton" a basic cause or part of "economic unrest," a larger cause)?
--Is X more important or less important than the other 46 items on my list?
--If I use X in my essay, can I say enough about it to persuade Professor Chun that I am correct?

You'll be able to eliminate some alternatives right away.
The rest you'll have to examine more carefully.

STEP 5. Choose the alternative(s) most likely to succeed.
Of the alternatives which seem possible after your evaluation, choose the one which seems most likely to bring you success. But rank the remaining possibilities, so that you can return to them in case your first choice doesn't survive the test of reality.

STEP 6. Test the alternative you've chosen.
For example, if you've chosen V, X, and Z as the major causes of the Civil War, you might read a few articles to see if evidence in support of your choices exists.
Or, if you've chosen to appeal to your audience's sense of pride, you might try role-playing to see if your appeal is likely to accomplish your purpose.
Or, you might try writing about the item you've chosen.

<u>Then</u>, go on to your next problem and run it through these six steps.

Form A.2.3

Name: ID number: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

CHOOSING A TOPIC VIA SIX PROBLEM-SOLVING STEPS

Instructions. Go through the 6 problem-solving steps 3 times with the problems on the next 3 pages. On the first 2 pages, writing assignments which require you to choose your own topic are given. On the third page, you will have to supply a writing assignment which requires you to choose a topic (you may take one from your own experience, or make one up); with the third exercise you will also have to supply the "stimulus" you use for brainstorming.

Please list the alternatives (from STEP 3) on the left side of each page. Use as many of the columns to the right of the list as you need for evaluation of the alternatives. Each column should have a heading suggested by the specific requirements, obstacles, and facilitators mentioned in the problem definition. (Be sure to label one column "additional considerations.") Use +s and -s, with a few words of explanation, to indicate pros and cons.

When you get to STEP 6, describe how you would test or verify your choice if you were working on a real writing assignment.

Name:
ID: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

Assignment #1 You have to write a term paper of 10 to 12 pages for a course called "Contemporary American Life." The term paper is due in about 3 weeks.

General Problem: "What should I write about?"

STEP 1. Your automatic reaction:

"Stop & Think" reaction:

STEP 2. Your definition of the problem (including specifics of the situation, requirements, obstacles, and facilitators):

STEP 3. List the alternatives you come up with via "brainstorming" in this column.

Stimulus for brainstorming:

your medicine cabinet

STEP 4. List the pros and cons of each potential topic. Your column headings should be related to the specifics in your problem definition.

(over)

Assignment #2 Your sorority/fraternity/church group/company/social club/ _____ is putting out a yearbook for present and past members. You have been asked to write an introductory page. The printer wants your introduction within one week.

Name:
ID: ___ - ___ - ____

General Problem: "What should I write about?"

STEP 1. Your automatic reaction:

"Stop & Think" reaction:

STEP 2. Your definition of the problem (including specifics of the situation, requirements, obstacles, and facilitators):

STEP 3. List the alternatives you come up with via "brainstorming" in this column.

Stimulus for brainstorming:

the word sand

STEP 4. List the pros and cons of each potential topic. Your column headings should be related to the specifics in your problem definition.

(over)

Assignment #3 (Describe the assignment)

Name:
ID: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

General Problem: "What should I write about?"

STEP 1. Your automatic reaction:

"Stop & Think" reaction:

STEP 2. Your definition of the problem (including specifics of the situation, requirements, obstacles, and facilitators):

STEP 3. List the alternatives you come up with via "brainstorming" in this column.

Stimulus for brainstorming:

_____

STEP 4. List the pros and cons of each potential topic. Your column headings should be related to the specifics in your problem definition.

(over)

STEP 5. My first three choices of topic are: Reasons:

STEP 6. I would "test" my choice by

CAPS Training Session #3 (50 minutes)

TAKE ATTENDANCE.

ADMINISTER QUIZ (Appendix E.1) (5 minutes).

A. Review

SOLICIT COMMENTS ON HOMEWORK; ASK ABOUT TOPICS CHOSEN BY STUDENTS; COLLECT HOMEWORK.

B. Writing and Communication

Coming up with a topic is one concern in invention/writing; we still have many concerns (i.e., thesis, choice of materials, audience, etc.) which we must deal with.

Today we will focus on communications concerns--even before we look at other content-concerns such as finding a thesis--because the need to communicate often narrows down the choices related to content that we do have. In other words, the "good ideas" you can come up with by using the problem-solving steps have to be developed with a particular purpose for a particular audience. By addressing problems of communication, we can better assure that our "good idea" will reach its target.

ASK QUESTION: What is involved in communication?

$\left.\begin{matrix}\text{encoder}\\ \text{sender}\end{matrix}\right\}$ chooses medium to carry message to $\left\{\begin{matrix}\text{decoder}\\ \text{receiver}\end{matrix}\right.$ for a purpose.

This process is really quite complex.

ASK QUESTION: Can you think of examples where the message as received was not the message the sender intended? (E.g., Japanese-U.S. exchanges before bombing of Pearl Harbor.)

ASK QUESTION: Can you think of examples where we have to struggle to make communication happen? (E.g., resorting to sign language--a special medium--with foreign tourists.)

We are born with the tools of communication, but not with the skills. Communications skills must be learned--you probably know this from experience, because you've undoubtedly said at some point "I just can't communicate with _____!".

After we've chosen a topic for writing on (Concern A), it is useful to deal with some communications problems before trying to develop that topic.

C. Dealing with Purpose (Concern B)

When we decide to write something, we think we know our purpose: to inform, to convince, to entertain, to soothe, etc. The problem-solving process can help us to make sure that we are aware of secondary as well as primary purposes, for most writing has more than one purpose.

EXAMPLE

You have to write a history paper on the causes of the French Revolution.

Step 1 Stop & think--say something positive to yourself.

Step 2 Define the purpose-problem: What do I want to accomplish (what is my purpose) in this essay on the French Revolution for Professor X, due on Friday?

Step 3 First response: "Get an A!"

List other possible purposes, including secondary purposes which might help you to get an A.

SOLICIT SUGGESTIONS; WRITE LIST ON BOARD (e.g., show that I attend lectures; show that I understand problems of interpretation in history; get my spelling correct; finish quickly).

Step 4 Evaluate in terms of problem-definition: Is this important to Professor X? Can I do it by Friday?

Step 5 Select a few purposes which are related and important.

Step 6 Test your choice out by going on to the next concern.

D. Dealing with Audience (Concern C)

We often think we know our audience, and stop at that assurance. But problem solving can help us to pinpoint characteristics of our audience which are relevant to our purpose--something which is constantly being done by advertisers and politicians.

EXAMPLE/EXERCISE

You are writing an article for the military newspaper Stars & Stripes on surfing in Hawaii. You are aiming for newly arrived soldiers and dependents. Your purpose is to promote water safety.

There are two common ways to analyze your audience and list

characteristics (Step 3).

Approach #1: Brainstorm answers to these questions about your audience:

1. What needs of my audience should I be concerned about in order to accomplish my purpose?
2. What characteristics of my audience are obstacles to my purpose?
3. What characteristics of my audience are facilitators to my accomplishing my purpose?

Approach #2: Analyze you and your audience in terms of differences and similarities in knowledge, attitudes, and goals (Flower, 1978). You might construct a chart like this (PUT ON BLACKBOARD):

	Knowledge	Attitudes	Goals
Large Differences			
Some Differences			
No Differences			

FILL IN DIFFERENCES CHART FOR MILITARY AUDIENCE & SURFING EXAMPLE.

After you've listed the pros and cons of emphasizing the characteristics you've listed (Step 4), you can go on to select a few characteristics which you will try to emphasize in your writing (Step 5).

E. Dealing with the Writer's Voice

You are a complex of roles you have learned to play over the

years. When you write, you can speak with any voice you know; it is best to speak with a voice which is appropriate for your purpose and your audience.

EXAMPLE/EXERCISE

You have just been hired by an insurance agency to sell policies. The manager wants you to send out a letter to clients and prospective clients in which you introduce yourself.

You do problem solving with purpose (Concern B), and find that your primary purpose is to secure clients; your intermediate purpose is to make readers of the letter confident of your integrity and your ability--you are, after all, only 22.

You do problem solving with audience (Concern C), and find that most of your readers will be over 35, middle class, oriental, with an average of 2 children. Now you hit Concern D, WHO AM I?

HAVE SOMEBODY DEFINE THE "VOICE" PROBLEM. E.g., what kind of voice should I use to get middle-class oriental parents to become confident of my integrity and my ability so that they will use me as their insurance agent?

Let's brainstorm some characteristics you might emphasize.

CLASS BRAINSTORMS CHARACTERISTICS; LIST SOME ON BOARD.

Okay, now let's check out the pros and cons of these characteristics.

ASK FOR HELP IN INSERTING +s AND -s.

You'd then go on with Steps 5 and 6 as usual.

DISTRIBUTE HANDOUT: "Dealing with a Writer's Communications Problems" (FORM A.2.4).

DISTRIBUTE: "Homework Exercise: Dealing with a Writer's Communications Problems" (FORM A.2.5).

DEALING WITH A WRITER'S COMMUNICATIONS PROBLEMS

	CONCERN B: Why am I writing? What do I want my writing to accomplish with my audience?	CONCERN C: To whom am I writing? What characteristics of my audience are relevant to my purpose(s)?	CONCERN D: Who am I? What characteristics of myself do I want to come through my writing?
(1) Stop & Think! Avoid habitual, self-defeating responses.	"It's obvious."	"They're like me."	"What? I'm me!"
(2) Define the specific problem (situation, requirements, obstacles, facilitators)	Are there secondary purposes, or intermediate purposes which I must deal with before I can accomplish my primary purpose?	What are the major needs of my audience, with respect to my purpose(s)? What are characteristics of my audience which are obstacles to accomplishing my purpose? Facilitators to accomplishing my purpose?	Given my audience, what "voice" should I use to accomplish my purpose? Simple? Old & wise? Informed? Hard? Soft? Strong? Educated? etc.
(3) List the alternatives	Brainstorm to list the possibilities (for example, do I want to inform? persuade? impress? convince? entertain? explain? etc.)	Approach #1: Brainstorm, especially with large audiences. Approach #2: Make a Differences Analysis to pinpoint differences between you and your audience in knowledge, attitudes, and goals.	Brainstorm a list of the "voices" you are capable of assuming.
(4) Evaluate the alternatives (consider consequences, pro & con, with respect to your specific definition)	List pros and cons of the various possibilities.	Emphasizing which characteristics will produce the greatest number of positive consequences? (proud? young? middle-class? uninformed? educated? "local"?)	List pros and cons with respect to consequences on your audience, given your purpose(s).
(5) Rank alternatives and choose the one most likely to succeed	Define primary purpose, and perhaps 1 or 2 secondary or intermediate purposes.	Define the characteristics of your audience which are most relevant (pro & con) to your purpose(s).	Select "voice(s)" which are most relevant.
(6) Test your choice to see if it will work	Role-play; try it out on friends; go on to CONCERN C.	Experiment (as advertisers do). role-play; go on to CONCERN D.	Experiment; role-play; write.

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Form A.2.5

Name: ID: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

HOMEWORK EXERCISE: DEALING WITH A WRITER'S COMMUNICATIONS PROBLEMS

On the next several pages are described three situations which require that you write. In each situation your topic is the same: what you have gotten out of the last 5 months in college. But your audience, your purpose, and (I assume) your "writer's voice" differ in each situation.

CONCERN A, Finding a topic, is taken care of already here--your topic is given. What you have to do is deal with CONCERNs B, C, and D (Why? To whom? and Who?) if you want your writing to be effective.

With each of the three situations, deal with CONCERNs B, C, and D by going through the 6 problem-solving steps. You will be going through the 6 steps a total of 9 times--good practice for you. Please use the separate handout titled DEALING WITH A WRITER'S COMMUNICATIONS PROBLEMS for guidance in following the 6 steps. You may well find that you "brainstorm" some of the same lists, especially when dealing with CONCERN D. But your evaluations and choices will no doubt differ.

Name: ID: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

COMMUNICATIONS PROBLEM 1

Within a week, you must submit a report to the Director of the Abigail McCampton Foundation on what you have gotten out of college since last September. The Abigail McCampton Foundation is providing you with a scholarship this year, and you would like very much to have that scholarship renewed for next year.

The Director of the Foundation, who chooses scholarship winners, is a wealthy kamaaina descendant of the McCampton missionary family. He's in his mid-50s, and has given several speeches on the decline in educational quality here in Hawaii. He is a deacon at First Christian Church, and has donated money to support "Operation Green Harvest" (the confiscation of marijuana plants). He lost his one bid for elective office--lieutenant governor on the Republican ticket. He has no children of his own.

Please number the steps in the problem-solving process as you deal with the Communications concerns on the following pages.

CONCERN B--Why?

CONCERN C--To whom?

(Remember that you have a choice of approaches at STEP 3.)

CONCERN D--Who?

COMMUNICATIONS PROBLEM 2

You are about to write to a very close friend from high-school days who is now living on the mainland. You haven't written for quite a while, and you intend to write primarily about what's been happening during, and what you've gotten out of, your first 5 months in school this year. You want your friend to know that you're still alive, and that the friendship is still important to you.

Use a real friend for this exercise, OK? Use his or her real characteristics in going through the problem-solving steps.

CONCERN B--Why?

CONCERN C--To whom?

CONCERN D--Who?

COMMUNICATIONS PROBLEM 3

Your English 100 instructor is asking for a 500-word essay from you, due on Friday. The topic: What I Have Gotten Out Of College Since Last September.

Analyze the communications problems--purpose, audience, and "voice"--as if you were really confronted with this problem. Assume that either Mr. Blair or Mr. Sumida is your instructor.

CONCERN B: Why?

CONCERN C--To whom?

CONCERN D--Who?

CAPS Training Session #4 (50 minutes)

TAKE ATTENDANCE.

A. Review

So far we have learned six steps of the problem-solving process, and we have used those steps to find topics to analyze the communications needs of a writing situation. Today we will talk about using those concerns in planning a full piece of writing.

But first,

ASK QUESTION: What did you learn from doing your homework assignment?

(Use responses for review and clarification of heuristics for both communications analysis and problem solving.)

B. Formulating a Dominant Idea

Once you have your topic and a good idea of your purpose and your audience, you have to make some decisions on what to say about that topic.

In almost all pieces of good writing, there is a dominant idea on which the writer focuses and around which the writing is unified. This dominant idea will usually dominate the finished piece of writing, and in the reader's mind. It can often be expressed in a nutshell statement (Flower, 1978).

Let me give you some examples of dominant ideas expressed in

nutshell statements.

DISTRIBUTE HANDOUT: "Brainstorming in Order to Come Up with a Dominant Idea" (FORM A.2.6).

This is a list of possible dominant ideas someone has "brainstormed" for an article. Note how each one is complete. Once we have such a list, we can go on to evaluate each of these statements (Step 4) in terms of pros and cons with respect to our purpose.

ON BOARD, MAKE COLUMNS WITH PURPOSE-COMPONENTS AND AUDIENCE-COMPONENTS AS COLUMN HEADINGS. GROUP EVALUATES POSSIBLE DOMINANT IDEAS WITH USUAL +s AND -s.

When you are familiar with your topic, you can often brainstorm a list of possible dominant ideas like the one we have been working on. When you are less familiar with your topic, you may have to do research and make lists of aspects of your topic which you might write about. In other words, sometimes you won't be able to select a dominant idea until you know more about your topic.

C. Choosing Materials to Include in a Piece of Writing

Once you have your dominant idea, you are ready to decide what to put into your piece of writing, and what to leave out. You want to develop your dominant idea and not stray away from it.

EXERCISE: CHOOSING MATERIALS AND A DOMINANT IDEA

Please take out the homework you did for today. Turn to the

pages on which you analyzed the communications requirements for a report to your scholarship committee.

Before you choose a "dominant idea" for your report, you have to do some mental "research" on your past year as a student. You might try to brainstorm a list of everything that's happened to you as a student over the past year.

HAVE TWO-PERSON TEAMS BRAINSTORM LISTS OF HAPPENINGS.

Look over your own lists. What possible dominant ideas might emerge from the items you've included on your list? Brainstorm, and write them down.

GIVE TIME FOR STUDENTS TO BRAINSTORM DOMINANT IDEAS INDIVIDUALLY.

In real life, you would now evaluate each of the nutshelled ideas you have listed, just as we did with the list of ideas on baseball. But to save time, please select one idea which you think you might use.

BRIEF PAUSE.

Now that you've selected that idea, your dominant idea, go back to your list of items and decide which of them fit with your dominant idea, which do not. Keep in mind your purpose and your audience's needs. You will now be choosing the materials you should include in your report.

STUDENTS INDIVIDUALLY SELECT MATERIALS WHICH FIT WITH DOMINANT IDEAS.

Your test (Step 6) for both your dominant idea and your choice of supporting materials is in part the test of truth: Is what I want to present true to my experience, true to the facts, and true to the rules of logic?

E. Putting It All Together

The final concern of rhetorical invention is a major concern: choosing words, a style, an organizational strategy, etc., which are appropriate for your purpose, your audience, and your ideas. This is what you will be studying for the rest of the semester. For today, I will give you only a list of basic strategies which some writers find useful.

DISTRIBUTE HANDOUT: "Strategies Which Might Be Useful" (FORM A.2.7).

A summary of the points we covered today is in the handout I will now give to you.

DISTRIBUTE HANDOUT: "Dealing with Problems of Thesis, Materials, and Organization" (FORM A.2.8).

Our entire scheme for invention is summarized on another handout, which you might use to guide you in the next homework assignment.

DISTRIBUTE HANDOUT: "Planning your Essays" (FORM A.2.9).

COLLECT HOMEWORK.

RETURN QUIZZES.

DISTRIBUTE HOMEWORK ASSIGNMENT: "Planning a Piece of Writing" (FORM A.2.10).

Form A.2.6

BRAINSTORMING IN ORDER TO COME UP WITH A DOMINANT IDEA

Billy Fitzpatrick writes a weekly column on college life for his school's newspaper. His articles are sometimes serious, sometimes humorous, sometimes exposés, sometimes satires, sometimes a bit of everything.

Since spring is in the air, Billy has decided to do a piece on college baseball (his topic). He has decided that his primary purpose in the article will be to entertain his readers--and perhaps to make just a little bit of fun of the campus jocks who start flexing their muscles this time of year. His audience is one with which he has become familiar through months of writing.

Here is Billy's brainstorming list of possible dominant ideas:

College baseball builds character--and characters.

Watching a college baseball game isn't all that different from watching a Little League game.

They say that baseball is the All-American sport--but that would be hard to support from what I see of spring sports on this campus!

You'd probably never know it, but there are several reasons for the size and shape of the catcher's mitt.

The Rainbows are likely to repeat last year's victorious season, for several reasons.

Baseball players are not the campus sex symbols that football players are.

Baseball season means extra work and little play for the Rainbows.

After a day with the varsity team, I learned that the secret to success as a baseball player is following directions.

You'd never know it, but there are seven clear steps to proper care of a baseball uniform.

The new baseball cheerleaders threaten to take attention away from the baseball diamond.

...

Some combinations:

Another victorious baseball season may create more "characters" on campus than it would create "character."

A catcher's mitt is very much like a cheerleader, and vice versa.

Following directions is important in baseball, but it spoils the fun of other spring sports on this campus.

Form A.2.7

A Few Examples of Strategies Which Might Be Useful
in Planning the Organization of a
Composition

If your purpose is . . .	you might try . . .
TO DESCRIBE	focusing on physical properties focusing on functions focusing on psychological impact
TO TELL ABOUT	using the voice of personal experience ("I") using the voice of others' experience ("he, she, they") arranging events chronologically arranging events psychologically
TO EXPLAIN	classifying defining comparing contrasting analyzing causes listing effects
TO PERSUADE	using examples using facts and figures using formal logic

DEALING WITH PROBLEMS OF THESIS, MATERIALS, AND ORGANIZATION

	CONCERN E: What is the dominant idea in what I want to communicate? OR, What is my thesis?	CONCERN F: What material should I include? What should I leave out?	CONCERN G: How should I put all this together? How should I organize? What should be my style? What level of language is appropriate?
(1) Stop & Think. Avoid habitual, self-defeating responses	"I'll just write--something will come."	"It'll pop into my head as I write."	"I'll just write."
(2) Define the specific problem (situation, requirements, obstacles, facilitators)	Can I express in a nutshell the idea I want to have dominate in my reader's mind, the idea through which I will accomplish my purpose?	For a report/letter/essay to _____ (audience) on _____ (my dominant idea), what material should I include in order to accomplish my purpose?	What organizational plan, style, and level of language will help me best to accomplish my purpose with my particular audience?
(3) List the alternatives	"Brainstorm" a list of possibilities suggested by your topic. The possibilities should be expressed in full sentences, not in questions or in incomplete sentences. (See separate handout.)	"Brainstorm" a list of specific items which are related to your dominant idea. Don't worry about how they are related; the goal is to exhaust the possibilities. You want all the specific tidbits you can find on your particular topic and dominant idea.	Try different groupings of items selected under CONCERN F. Consult a list of rhetorical strategies. (See separate handout.) List possible tones, styles.
(4) Evaluate the alternatives (consider consequences with respect to your definition)	Consider pros and cons with respect to your purpose(s) and your audience's characteristic needs, obstacles, and facilitators.	List the pros and cons of including each specific item in terms of its relevance to your dominant idea, your purpose(s), your audience, and your voice.	List pros and cons of using different strategies and tones and styles.
(5) Rank alternatives and choose the one most likely to succeed.	Select (and refine) the statement which offers the greatest number of positive consequences.	Select several items most relevant; discard ideas which are generally irrelevant; put the rest back on the shelf for possible further use.	Select a combination of strategies which seems most likely to work with your audience.
(6) Test your choice to see if it will work	Is my dominant idea logical, true to the facts, and true to my experience?	Can I clearly state the relationship between each idea or group of ideas and my dominant idea?	WRITE! See if your choices work together and produce the effect you intend.

Planning Your Essay: Fill In the Pukas

GO THROUGH EACH OF THESE STEPS ↓

TO COME UP WITH ANSWERS TO EACH OF THESE QUESTIONS

	A. Topic?	B. Why?	C. To whom?	D. Who?	E. Thesis?	F. What?	G. How?
1. Avoid habitual, self-defeating responses							
2. Define the specific problem							
3. "Brainstorm" to discover many alternative possibilities							
4. Evaluate each of the alternatives (pros and cons)							
5. Choose the alternative most likely to solve the specific problem; rank other alternatives							
6. Test your choice in the world of evidence and experience							WRITE!

Form A.2.10

(See Appendix B.2 for accompanying materials.)

HOMEWORK: PLANNING A PIECE OF WRITING

You are a writer working in the correspondence section of APASCO Products, Inc. Your job involves replying to all sorts of letters about APASCO products, using the signature which is appropriate for the particular product's advertising campaign.

Today you are working on letters about the Sonictone Hearing Aid. You plan each letter carefully, since your letter could mean the difference between a sale and no sale. You write, and sign each letter, as "Elizabeth Baines."

Everything you have to know about the Sonictone Hearing Aid is on page G-23 of the APASCO PRODUCT GUIDE (reproduced as part of this handout). Everything you know about the person to whom you are writing is contained, of course, in the letter the person has written to "Elizabeth Baines."

You must now plan a reply-letter to Buddy Taneshiro. Please use the WRITER'S CONCERNS and the STEPS of the problem-solving process to plan your reply. Since the topic--the Sonictone Hearing Aid--is provided, you don't have to deal with CONCERN A. But you should work out a plan which takes care of CONCERNS B through G.

Please write everything that you do on paper, even if you might, in real life, deal with one or two of the concerns in your mind only. What you hand in during the next class, then, should be the work you have done in going through the 6 STEPS of the problem-solving process to deal with 6 CONCERNS.

Please label each CONCERN as you begin to deal with it; label also each STEP in the problem-solving process. Remember that you are writing as "Elizabeth Baines"; remember also to do all of your planning on the pages which you will hand in.

CAPS Training Session #5 (50 minutes)

(The purpose of this training session is to review the entire CAPS approach to invention. Much of the class is given to group work, the results of which the trainer records on the blackboard. The "script" for this session makes a few new points, but most of the session is presented in outline form, since much of the content of the session comes from what the students present at the training session.)

TAKE ATTENDANCE.

ANNOUNCE QUIZ ON WRITER'S CONCERNS AND PROBLEM-SOLVING STEPS FOR NEXT CLASS.

A. Review

Research shows that while beginning writers often plan their writing by focusing on their topic, professional writers focus also on their purpose and their audience (Flower and Hayes, 1979). The problem-solving approach to planning a piece of writing should help you to write more effectively, and should provide you with a way to work through your writing problems.

You have been shown a comprehensive system for dealing with writing problems, with every step spelled out. In real life, you should address every concern we have covered. You will find that some concerns need to be treated more, some less, comprehensively than others.

When using this approach, be flexible yet thorough.

EXERCISE: PLANNING A REPORT

Let's practice the problem-solving approach as we might use it in real life.

Let's pretend that State Senator Ambercrombie is investigating the effects of the university's undergraduate program. He has asked you, as part of a sample of students, to write him a report on your past year at the university.

Concern A: Topic--is given.

Concern B: Why? Your immediate response is "to inform him." But you recall Step 1: Stop and Think. Is this the only possibility? Step 2: Define the problem. You ask, "Is there anything else I want my report to accomplish beyond giving information? Are there any secondary purposes?"

HAVE STUDENTS GO THROUGH STEPS 3-6 WITH CONCERN B.

Concern C: To whom?

HAVE STUDENTS GO THROUGH STEPS 1-6 TO ANALYZE THEIR AUDIENCE(S). WORK WITH THEM AT BLACKBOARD.

CONTINUE THROUGH CONCERNS D-G, USING 6 PROBLEM-SOLVING STEPS.

DISTRIBUTE HANDOUT: "Out-of-Class Writing" (Appendix B.2).

ASK QUESTION: Have you any questions about the writing assignment?

Please keep the homework which you did for today. Redo it, or

some of it, if that will help you to write a better letter.

CAPS Training Session #6 (50 minutes)

TAKE ATTENDANCE.

COLLECT HOMEWORK: "LETTER" PLUS PREVIOUS RELATED HOMEWORK PLUS DRAFTS, ETC. GIVE QUIZ (Appendix E.2).

ANNOUNCE IN-CLASS WRITING FOR NEXT CLASS--TOPIC UNANNOUNCED.

ASK QUESTION: What did you experience in using the problem-solving approach with your letter-writing assignment?

SHORT DISCUSSION.

A. Using Problem Solving in Preparing for Exams

1. Topic: if not known, brainstorm list of likely topics. When confronted with specific exam question, underline the topic.

EXAMPLE (WRITE ON BOARD):

> "Critique the Carter Administration's stand on the Moscow Olympics in terms of domestic U.S. politics, the U.S. and international alliances, and U.S. relations with the U.S.S.R."

HAVE CLASS SPECIFY TOPIC TO BE UNDERLINED.

2. Purpose: while major purpose if often not stated in exam question, you can often anticipate it. It is usually for you to show evidence of something.

a. mastery of subject matter

b. mastery of skill

c. skills applied to different groupings of subject matter.

There's no point in trying to accomplish something besides the purpose of the question--e.g., demonstrating creativity.

Often there is a secondary purpose which tells you how to demonstrate your knowledge or skill. That secondary purpose is often implied in a "code word"--e.g., "critique," "compare," "show how," etc.

Sometimes the secondary purpose is only implied, as in "How does Oahu's prevailing weather pattern differ from that of the Big Island?" Ferret out the code word! (Here, it is contrast.)

3. Audience: unless otherwise specified, it is your professor. Analyze him (what do lectures tell about his needs and obstacles to satisfying those needs?). "Psyche out" the professor.

4. Your voice: in an exam, it should usually be secure, knowledgeable, authoritative; not flippant, sarcastic, etc.

5. Appropriate material

a. Be sure you understand the code word.

b. Lay out schema of question.

c. List (via brainstorming) items for possible inclusion.

6. Dominating Idea: remember, this is a "nutshell" statement which summarizes your response to the question.

You often state your dominating idea at the beginning or at the end of your response.

7. How? Your structure and tone are often implied by the question.

B. Summary of Problem-Solving Approach

1. Don't panic: tell yourself that you can respond with reason.

2. Define your problem carefully.

3. Plan your course before starting out. Know your destination. Know how you are going to get there.

This approach can be used in almost every possible writing situation.

DISTRIBUTE AND COLLECT CONFIDENCE AND FEELINGS SCALES (Appendix F.2). DISTRIBUTE RANKING-OF-WRITING SCALE (Appendix D).

You have done this exercise before. Try not to remember what you wrote before. Read the letters with a fresh mind, rank them as best you know how, and list your reasons as specifically as you can.

COLLECT RANKING-OF-WRITING SCALE.

DISTRIBUTE COMPLIANCE FORM (Appendix C.1); DISTRIBUTE BARRON'S COGNITIVE COMPLEXITY SCALE; BOTH TO BE RETURNED NEXT CLASS.

A.3. Protocols from Six Freewriting (FW) Training Sessions

FW Training Session #1

REINTRODUCE SELF.

DISTRIBUTE & COLLECT CONFIDENCE & FEELINGS SCALES (Appendix F.2).

DISTRIBUTE & COLLECT MOTIVATION SCALE (Appendix F.1).

A. Invention and Freewriting

Invention is concerned with the "discovery" of ideas and the communication of ideas.

"Freewriting" is an approach to invention developed by a writer named Peter Elbow and explained in his book Writing Without Teachers (1973). Over the next couple of weeks, we will study several aspects of freewriting: the guidelines for freewriting and focused freewriting; the evolution or "growing" of ideas through various stages of freewriting; the interaction or "cooking" of contrasting ideas to produce new thoughts; and models of the freewriting process.

Freewriting emphasizes right-brain, intuitive thinking. It assumes that writing isn't just a two-step procedure in which you get an idea and write it down. It assumes, rather, that writing is a developmental process, that you get ideas as you write, that what you want to say will emerge in the process of your writing. In our class sessions we will study methods which allow ideas to be created in the process of writing.

For success with freewriting, be patient, and give it a chance to work; write in a place where you can truly concentrate; and assume that freewriting will work for you if you give it a chance.

B. Guidelines for Freewriting

Freewriting is described easily, although why and how it works and can help you in your writing are a bit more difficult to explain. Freewriting--as we will be using it in the next few weeks--is done within the framework of an exercise, that is, within a given period of time, say ten or fifteen minutes. During this exercise, the writer begins writing and writes continuously and freely whatever comes into his/her head.

There are four basic guidelines for freewriting:

1. Start writing and keep writing. Write continuously, but don't rush. If you get to a point where nothing comes into your head, write, "I can't think of anything to say" until something comes to mind. Or simply write squiggles until you get a thought. Something will come. In fact, you will probably be surprised at the end of the exercise at how much you have written.

2. Follow your ideas wherever they take you.

3. As you write, do not be concerned with traditional matters of form and style. Do not be concerned--at this point in your writing --with misspelled words, punctuation errors, grammatical mistakes. Just be concerned with producing a continual flow of ideas to fill a page.

4. Don't stop to revise or edit your work. Don't worry about

matters of logic and coherence. Don't worry about whether what you've written makes sense or sounds right. Don't worry about producing "garbage." Write spontaneously, write just what comes into your head, in the way it comes into your head, even if you realize that the thoughts are not in the format of traditional writing. If ideas, words, thoughts, images come very quickly, write them down in a stream-of-consciousness manner. You will probably find some free associations in your freewriting exercises. In fact, at this point, it is a good idea to encourage the images, the comparisons, the metaphors that occur to you as you write. As Elbow says, let your house become a prison, a palace, a garden, a playpen. At a later point in your writing, these metaphors will help bring richness to your prose.

EXERCISE: PRACTICING FREEWRITING 1

HAVE STUDENTS TAKE OUT PAPER AND DO 10 MINUTES OF FREEWRITING, REMEMBERING THE GUIDELINES.

AFTER 10 MINUTES, SOLICIT REACTIONS TO FREEWRITING EXPERIENCE.

You may remember times in the past when you have written freely, almost naturally--when ideas have come pouring out so rapidly that you can barely get them down on paper before they escape you. That's the sort of experience we want to produce here. You will, by practice of freewriting, get used to producing words, to writing what is in your head, to writing your thoughts in your own voice without

traditional concerns for form and style. When you get to that point, you will begin to get a bit more satisfaction from the writing task.

A word of caution. Although the connotations of the word suggest it, you won't necessarily find it easy to freewrite; you will find yourself tired after one or two exercises. Your hand may begin to feel cramped, and your mind will probably feel drained. You must counter that fatigue with the reminder that you have produced some prose--something you may have been unable to do in the past.

EXERCISE: PRACTICE FREEWRITING 2

HAVE STUDENTS DO 10 MINUTES OF FREEWRITING, REMEMBERING THE GUIDELINES.

AFTER 10 MINUTES, SOLICIT REACTIONS.

Take a look at what you have written. You will find that some of what you have written is garbage--right? It is a good idea to review what you have written and decide what is good and what is garbage. If an image or thought strikes you as fresh and interesting, or if you have found a particularly good word to help express an idea, note that. But recognize the bad stuff for what it is and don't try to fool yourself that it is good.

One of the good things about freewriting is that you soon learn that you can write more. So if you have to throw some of your prose away, you know that you can write more if you need to. Try to rid yourself of the notion that because you labored so long and hard to write something, you must use it, whether it is good or bad. Be

willing to throw it away when it is bad.

Let me read you someone else's freewriting.

READ PASSAGE FROM ELBOW (1973) TO CLASS.

> I think I'll write what's on my mind, but the only thing on my mind right now is what to write for ten minutes. I've never done this before and I'm not prepared in any way--the sky is cloudy today, how's that? now I'm afraid I won't be able to think of what to write when I get to the end of the sentence--well, here I am at the end of the sentence--here I am again, again, again, again, at least I'm still writing--Now I ask is there some reason to be happy that I'm still writing--ah yes! Here comes the question again--What am I getting out of this? What point is there in it? It's almost obscene to always ask it but I seem to question everything that way and I was gonna say something else pertaining to that but I got so busy writing down the first part that I forgot what I was leading into. This is kind of fun oh don't stop writing--cars and trucks speeding by somewhere out the window, pens clittering across peoples' papers. The sky is still cloudy--is it symbolic that I should be mentioning it? Huh? I dunno. Maybe I should try colors, blue, red, dirty words--wait a minute--no can't do that, orange, yellow, arm tired, green pink violet magenta lavender red brown black green --now that I can't think of any more colors--just about done--relief? maybe. (p. 4)

ASK QUESTION: Are your freewritings similar to that?

C. How Freewriting Can Help the Writer

Freewriting can help you with your writing in two ways. First of all, it can help you get started and produce something, even if what you produce does not look or sound like the traditional piece of writing you have envisioned. Instead of wasting time worrying about what to write, instead of smoking a cigarette or fixing a cup of coffee

and mulling it over, you start writing. You get something down on paper. That fact is important. Once you have ideas on paper, you can rethink, rewrite, and edit.

Secondly, you will find as you work with the exercises that they can help you through "stuckpoints" (Elbow's term). You have a piece of writing taking shape, you have produced some good ideas; but you are not certain about where those ideas should go, about how you should continue or conclude your paper. Freewriting can help you in this case too because the freewriting exercise allows you to explore ideas freely without editing, without worrying about the finished product. The problem is that the editing you do while you are in the process of writing blocks the creative process. As Elbow says, it's not that editing is bad--in fact, eventually you have to do it. But trying to edit and trying to create at the same time is not likely to lead to the development of new ideas.

REVIEW 4 GUIDELINES FOR FREEWRITING

D. Homework

ASSIGN: Four 12-minute freewritings: two today, two tomorrow.

FW Training Session #2

TAKE ATTENDANCE.

COLLECT HOMEWORK (Look it over quickly while students are doing exercises. Return it at end of class, after having recorded compliance with assignment).

A. Review

ASK QUESTION: What were your reactions to the freewriting you did out of class?

ASK QUESTION: What are the 4 guidelines for freewriting?

B. Focused Freewriting

What Peter Elbow calls "focused freewriting" is an extension of regular freewriting in which you attempt to keep focused on a particular subject. There are two guidelines for focused freewriting:

1. Follow the same rules that you do for freewriting, only hold a subject in mind.

2. If you digress, follow the digression, write it out, then return to the focus when you have the opportunity.

This method will help you when you have specific assignments or when you want to explore an idea that you have only vaguely formulated but that seems promising. In other words, you can use focused freewriting when you have the beginning of an idea but don't know where to go with it, what to write about it.

The rules for focused freewriting are the same as for freewriting. Write continuously, never pausing but never rushing. Don't stop writing once you have started. Don't worry about form or style. The difference is this: with focused freewriting you hold a subject in mind while you are writing. If your writing takes you away from the focus, let it; but when you have the opportunity, when you have exhausted the digression, use the opportunity to return to the focus. This is not, then, pure stream-of-consciousness writing, following your thoughts wherever they will take you. This is freewriting while attempting to shape the content to the extent that you try to focus on a single subject.

EXERCISE: FOCUSED FREEWRITING

HAVE STUDENTS DO 12 MINUTES OF FOCUSED FREEWRITING, FOCUSING THEIR ATTENTION ON THE TITLE OF A SONG.

AFTER 12 MINUTES, SOLICIT REACTIONS TO THE FOCUSED FREEWRITING EXPERIENCE.

C. Reading and Reflecting

As you move to the focused freewriting experience, it is particularly important to read and reflect upon what you have written. At this point, you should notice your digressions. Notice where they occur. Notice their relationships to the other focuses in the freewriting. Is there anything significant about the digression itself?

This is the beginning of the "growing" and "cooking" experience.

If there is anything especially significant or effective, you might wish to incorporate that in your next freewriting.

Let us begin to work in sets of two units of freewriting. When you begin the next focused freewriting, use the most important or significant idea from your first writing as the departure point. But don't think of yourself as rewriting the first piece; think of yourself taking the first idea and shaping it into something new, something fresh; strive to say something more than you said before.

Remember here that the content is totally free--the idea may take you to something highly personal or to some exploration of a philosophical idea--either is okay. Everything is okay in the freewriting. It is only at the point of editing that we worry about how the finished product looks and sounds.

EXERCISE: FOCUSED FREEWRITING 2

HAVE STUDENTS DO 12 MINUTES OF FOCUSED FREEWRITING. USE MOST SIGNIFICANT POINT FROM PREVIOUS FREEWRITING AS POINT OF DEPARTURE.

SOLICIT REACTIONS AFTER COMPLETION OF FREEWRITING 2.

Your freewriting experiences may be somewhat frustrating. But please be patient; we've only just begun.

D. Homework

ASSIGN: 3 sets of focused freewritings.

Focus on sand, an item from your medicine chest, and something of your own choice.

Directions: Do one 10-minute focused freewriting. Read and reflect on what you have written; extract from what you have written the most significant item, the "center of gravity." Then do a second focused freewriting, using the "center of gravity" from the first as your point of departure.

FW Training Session #3

TAKE ATTENDANCE.

ANNOUNCE QUIZ NEXT CLASS ON GUIDELINES FOR REGULAR AND FOCUSED FREEWRITING.

A. Review of Freewriting Guidelines

B. "Growing" Ideas Through Writing: The Steps

Freewriting views writing as a developmental process, one in which you begin writing without knowing your meaning, one in which words change and ideas evolve as you write--your words develop into clearly expressed ideas much as a fertilized egg becomes an embryo, which becomes a fetus, which becomes an infant.

Think of words as able to grow. They grow in the process of being written. Think of yourself as standing out of the way of the growing/writing process: you provide the energy needed for growth, and continue to provide that energy as the growth-process happens.

If you have a particular period of time--say 4 hours--to write a paper, divide that time into 4 roughly equal parts, and follow these steps.

Step 1: Freewrite, focusing on your topic, for 40-45 minutes.

Step 2: Read and reflect, and extract a center-of-gravity statement (10-15 minutes). The center-of-gravity statement should be an assertion, something you can argue or demonstrate. The center-of-gravity statement should, in a sense, sum up what you have written;

but you should try to make it tell more than you already know.

Step 3: Focus freewrite for another 40-45 minutes. Start with your center-of-gravity statement as your focus. Write "from the perspective of" your first freewriting. If your center-of-gravity assertion is well stated, you should not find yourself repeating what you wrote before.

Step 4: Read and reflect for 10-15 minutes. (Repeat Step 2.)

Step 5: Focus freewrite again, using the most recent center-of-gravity assertion as your focus or departure point.

Step 6: Read and reflect. If your writing now has a clear center of gravity, it is time to edit. If it does not, repeat the 2-step sequence until it does.

Step 7: Edit. A brief note on editing (which we will talk about later): editing must be ruthless--you strip away to arrive at essentials. You have to be tough enough to insure that someone will actually read what you have written.

Some things take longer to grow than others. Repeat the 2 growing-steps with your writing, and your chances of ending up with a good piece of writing grow too.

C. "Growing" Ideas Through Writing: The Stages

This is the model of the stages in the writing process through which the steps take you:

Stage 1: Starting to write and persisting (Steps 1 & 2).

This is the most difficult stage, in that you are anxious, not warmed up, afraid to invest yourself in something you are not sure

will work. In this stage, you often write the wrong meanings in the wrong words; keep writing till you get the right meanings in the right words.

Stage 2: Chaos and disorientation (Steps 3 & 4).

Things have to change as you write, and continuing changes can cause feelings of chaos. Let digressions happen--they may help you to sort out what you are trying to say; they may be valuable for another paper; they may, if they never come together, signal that you are not really writing about what you want to say.

In the freewriting process, you give up control (in the traditional writing senses) of your writing. But out of this should emerge pieces of writing over which you have increasing control.

Stage 3: The "center" begins to emerge (Steps 4 & 5).

At this turning point, you begin to get at what you want to say.

If you have difficulty arriving at this point, force yourself to make "summings up" (Steps 2 & 4) even if they don't seem to be "just right."

Stage 4: Shaping it up (Steps 6 & 7).

When you have written something that has a clear center, when you have something to say, then you are ready to begin to edit.

D. "Growing": A Summary

Words and ideas grow into meaning and meaningfulness. There are no shortcuts in the growing process--you can't skip stages; you can't jump over steps. (Some people do report experiences, once in awhile, of "magic writing," writing which comes freely and easily and

says what you want to say. But such experiences are rare.) If you're frustrated while your words and ideas are growing, it's probably because you are trying to make your first attempt good when it needs more energy in order to develop.

CHECK IN HOMEWORK.

E. Homework

ASSIGN: 2 "runs" through the "growing" model, 1 today, 1 tomorrow.

1. For the first, use your favorite freewriting from the homework you did for today. Begin with Step 2--extracting the center of gravity--and continue through the other steps and stages.
2. With the second, assume that you are writing a letter to a dear friend on the mainland telling him or her what you've gotten out of your last five months at the university.

FW Training Session #4

TAKE ATTENDANCE.

GIVE QUIZ (Appendix E.3).

A. "Cooking" and Writing

"Cooking" is a process whereby one piece of material is transformed through interaction with another. "Cooking" can occur not only among foodstuffs, but among people and among ideas.

Cooking occurs at various times in the "growing" process. It occurs when you immerse yourself into conflicting words and ideas in order to extract a summing-up statement. You will probably find a contrast between the chaos of your words and the perspective on ideas found in your summing-up statement. Further cooking should help the words and ideas become an integrated presentation.

Elbow (1973) gives another useful example of how "cooking" can encourage growing. The contrast is between "you" and the "not-you," between you and the words you have produced on paper.

> You are building someone to talk to. This means two stages: first put words on paper as freely as possible, trying to be so fully involved that you don't even think about it and don't experience any gap between you and the words: just talk onto the paper. But then, in the second stage, stand back and make as large a gap as you can between you and the words: set them aside and then pick them up and try to read them as though they came out of someone else. Learn to interact with them, react to them. Learn to let them produce a new reaction or response in you. (pp. 55-56)

B. "Non-cooking"

1. Why it happens

"Non-cooking" can occur in 2 situations. In, for example, a group of people who all agree, there are no conflicting elements, no real interactions, and thus there is no cooking. In, on the other hand, a group of people with absolutely total disagreement, there is also no interaction, no cooking.

2. What you can do about it

You can "encourage" cooking by allowing yourself to explore ideas fully--even if you are not certain that you believe them. Let extremes get down on paper; you can work at moderation only after you have the extremes.

C. "Desperation Writing": A Strategy for Dealing with "Non-cooking"

When you find that you are not producing ideas that you can "cook," the first thing to do is admit that you are at a non-cooking stage. Then,

1. Freewrite on the subject which won't "cook" until you or the subject reaches exhaustion.

2. Read your freewriting with a pile of blank notecards or small pieces of paper next to you. Whenever you come to any "thought, feeling, perception, or image that could be gathered up into one sentence or one assertion, do so and write it by itself" on blank paper (Elbow, 1973, p. 62). Do this with all ideas, even the bad ones. Now is not the time to be making judgments.

3. Read over the assertions on the notecards until you are familiar with them.

4. Try to organize the cards into piles of items that belong together, even if you feel that you have to assert relationships.

5. See if you can form the ideas in a single pile into a single assertion, which may be your emerging center of gravity. OR, if you cannot yet find a center, use a single pile as the basis for more freewriting.

You may have to go through this process more than once. "Desperation writing" is the opposite of "magic writing."

D. Homework

ASSIGN: Freewriting of a letter (FORM A.3.1).

ANNOUNCE QUIZ NEXT CLASS ON THE "GROWING" MODEL AND ON THE RULES FOR "DESPERATION WRITING."

Form A.3.1

(See Appendix B.2 for accompanying materials.)

HOMEWORK: "EXTERNAL" THINKING OR "DESPERATION WRITING"

You are a writer working in the correspondence section of APASCO Products, Inc. Your job involves replying to all sorts of letters about APASCO products, using the signature which is appropriate for the particular product's advertising campaign.

Today you are working on letters about the Sonictone Hearing Aid. You plan each letter carefully, since your letter could mean the difference between a sale and no sale. You write, and sign each letter, as "Elizabeth Baines."

Everything you have to know about the Sonictone Hearing Aid is on page G-23 of the APASCO PRODUCT GUIDE (reproduced as part of this handout). Everything you know about the person to whom you are writing is contained, of course, in the letter the person has written to "Elizabeth Baines."

You must now draft a reply-letter to Buddy Taneshiro. Use the "growing" model described in class to draft your letter. If you have difficulty getting your work out of the "chaos and dis-orientation" stage to the "emerging center of gravity" stage, use the technique of "external" thinking (also called "desperation writing") that we learned in class today.

Please label each stage in the freewriting process as you work through it. Save all your work, even the "nutshell" statements that you make on 3 x 5 cards.

FW Training Session #5

TAKE ATTENDANCE.

RETURN QUIZ.

GIVE NEW QUIZ (Appendix E.4).

A. Review; Question & Answer Session

(During this part of the session, the trainer, responding to student requests, reviews the "growing" model, and in particular reviews the process of reflecting and formulating a center-of-gravity assertion. That freewriting is not, in later stages, merely rewriting is stressed.)

B. Using Freewriting in Other Situations: E.g., Essay Exams

The "Stages of Growing" model we have studied is a framework for viewing the writing process. The steps we have studied fit with the model when there is plenty of time for writing. When there is less time, the steps can be altered to fit with reality.

Consider how you might use freewriting in responding to an essay-exam question when you have 50 minutes for writing:

1. Do a focused freewriting, following the usual freewriting guidelines. If thoughts come particularly quickly, your freewriting might consist mainly of lists and free-associations. Allot no more than half of your available time for this.

2. Take 5 minutes or so to read and reflect. Cross out errors

in fact and interpretation. You might even add some new items which reflection suggests to you.

3. Formulate a center-of-gravity assertion.

4. Begin your final draft with the center-of-gravity assertion. Write carefully, presenting materials relating to your assertion in as organized a form as possible. Retain what is valuable from the focused freewriting, and develop points which are relevant but may not have been developed in the freewriting.

In short, Steps 1, 2, and 7 should be followed if at all possible; the steps in between might have to be abbreviated.

C. Homework

DISTRIBUTE HANDOUT: "Out-of-class Writing" (Appendix B.2).

ASK QUESTION: Have you any questions about the writing assignment?

Please keep the homework which you did for today. It should help you to write a better letter.

FW Training Session #6

TAKE ATTENDANCE.

COLLECT HOMEWORK: "LETTER" PLUS PREVIOUS RELATED HOMEWORK PLUS ANYTHING ELSE DONE IN CONJUNCTION WITH PREPARATION OF THE LETTER.

ANNOUNCE IN-CLASS WRITING FOR NEXT CLASS--TOPIC UNANNOUNCED.

RETURN QUIZ; REVIEW ANSWERS; RE-COLLECT.

A. Review: Freewriting in Different Situations

Remember that

1. freewriting is a strategy for invention which can be flexibly applied to a number of writing situations;

2. you create ideas by writing;

3. your writing must go through stages--you must experience the chaos and disorientation stage in order to arrive at a "center of gravity";

4. going through as many of the 7 steps as you can will help you to create, develop, and refine your ideas.

REVIEW PROCEDURES FOR IN-CLASS WRITING COVERED DURING LAST SESSION.

B. Editing

Step 7 in the freewriting process requires that you edit your material for your audience. Several reminders can help you with editing.

Make certain that you have your center-of-gravity assertion somewhere near the beginning of your essay. (This assertion is sometimes called you thesis, main idea, or controlling idea.) Make certain that you develop your assertion with supporting points from your freewriting or with points that occur to you as you are revising during this final stage. And make certain that your supporting points are arranged in logical order.

Think of editing as a positive venture. You are cutting away weak words, and wordy passages. You are tightening (Macrorie, 1970) your writing in a positive way. And you have to be positively ruthless, because freewriting tends to produce wordy prose. Look for ways to sharpen your prose. Substitute the precise word or phrase for a vague one. And be concerned with those matters of grammar and mechanics which you have learned over the years.

In sum, think of yourself as writing something that will compel reading.

DISTRIBUTE AND COLLECT CONFIDENCE AND FEELINGS SCALES (Appendix F.2).

DISTRIBUTE RANKING-OF-WRITING SCALE (Appendix D).

You have done this before. But read the letters with a fresh

mind, rank them as best you know how, and list your reasons as specifically as you can.

COLLECT RANKING-OF-WRITING SCALE.

DISTRIBUTE COMPLIANCE FORM (Appendix C.2); DISTRIBUTE BARRON'S COGNITIVE COMPLEXITY SCALE; BOTH TO BE RETURNED NEXT CLASS.

APPENDIX B

Stimuli for Writing Measures

B.1. Pre-intervention "Article" Stimulus

Name: ID number: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

English 100 In-class Writing

Use the attached pages to write in response to the situation described below. Please write on one side of the paper only.

ASUH (The Associated Students of the University of Hawaii) is going to begin to publish a new column called "Student Survival" in Ka Leo, the student newspaper. You have been assigned the job of writing one of the "Student Survival" columns. The topic you are to write on is "How to Survive Registration."

You must turn your article in at 11:15 this morning.

B.2.[1] "Letter" Stimulus

OUT-OF-CLASS WRITING DUE WEDNESDAY, 2/20

Over the next few days, prepare the final draft of a letter to Buddy Taneshiro in response to his letter to "Elizabeth Baines." Remember that you will be writing the letter, and signing it, as "Elizabeth Baines."

On Wednesday, 2/20, you should be prepared to hand in

1) the final draft of the letter, typed double-spaced. (There are typewriters for student use--free--in Campus Center Room 211--the room that says "Information" on the door.)
On the upper left-hand corner of every page of your letter, please put the last 4 digits of your ID number. Please do not put your name on the letter.

note

2) all of the materials which you created in preparing the final draft--early drafts, idea lists, practice paragraphs, etc. These materials will, of course, not be graded--only the typed letter will be graded. But the materials you submit might help us with our research.
Please put the last 4 digits of your ID number on each page of preparation material that you hand in.

Please use the techniques of invention you have studied over the past two weeks as you write your letter to Buddy Taneshiro.

---

[1] The materials included in this exercise are adapted and expanded from a "case study" in Menning and Wilkinson, 1972, pp. 187-188.

43-117 Lapaholo Lane
Pearl City
Hawaii 96754

Dear Miss Baines:

I never thought I'd be writing a letter to anyone like you, but I'm afraid I'm too embarrassed to talk with anyone around here about my problem. I figure you folks must get lots of letters, and maybe somewhere along the line you've gotten one from someone like me; maybe you know what to do.

I'm 24 years old, and on the coaching staff at Moanalua High School. I think I may be hard of hearing. It all started last winter when I had this bad cold and an ear infection. I thought the problem would go away, but, you know, either people are speaking softer nowadays or else I still have the problem. It's not too hard out on the playing fields, because the kids usually yell and scream alot. But it's pretty embarrassing after coaching staff meetings--I try to lip-read a little, but sometimes I just don't know what's being said, and now the other coaches are kidding me about having a bad memory. (If I "forget" many more things, they just might fire me!)

You know, maybe I could tell Coach Souza about my problem--he's a pretty good guy. But I'm really afraid what the kids would say behind my back if I started wearing a hearing aid! Besides, when one of my uncles went to a doctor once and got a hearing aid, he hardly ever wore it because he said it gave him headaches because it made everything so noisey. So I haven't gone to the doctor because sometimes it's noisey enough as it is in the gym without a hearing aid!

Also, since you're a woman, I can tell you that I'm getting embarrassed about going out with girls anymore. Usually they talk sort of low, you know, and I can't say "Pardon me?" all the time, and sometimes when I don't answer them because I don't know what they said, then they look at me funny. So you see, I can't win.

Sorry to go on and on like this--you're the first person I've told all this to. When I saw your ad in Parade last Sunday, I thought I might as well give it a try. So please tell me if you think the Sonictone could help me, or whatever you think I could do. Thanks a lot!

Mahalo,

Buddy Taneshiro

Hearing Aids, cont.

A. #746-T3,G-23, Sonictone hearing aid

B. Description of unit: Small (half-ounce) hearing aid worn entirely around the ear (no wires connecting to body-attached microphone). Uses self-contained power units (which last about 1 year) rather than batteries. Circuitry: Integrated circuits (ICs); no transistors. Frequency response: 500-4300 cycles per second. Built-in volume control, on-off switch; 4 earplugs included. Sound moves from flesh-colored case behind the ear through short plastic tube and into the earplug. Instruction book accompanies unit.

C. Styles & Accessories: 2 styles--plain flesh-colored model; imitation pearl model. Accessories: replacement earplugs and power units are available by mail (see p. T-64 of this catalog) or from hearing-aid and optical shops across the country.

D. Conditions of sale: Mail-order only. Filled-in hearing chart signed by physician required before unit will be sent (we provide chart--see G. below). Refunds only when request is accompanied by letter from physician certifying that Sonictone has not improved buyer's hearing.

E. Costs: Flesh-colored Model 746-T3a, $179.95, power unit included.
Imitation-pearl 746-T3b, $195.95, " " " .
COD or $50 down, remainder in 12 monthly installments @12% interest. Payment-options description sent to each inquirer.

F. Sales technique(s): Ads placed in mass-circulation publications, primarily Sunday supplements (e.g., Parade magazine). Ads typically note that 800,000 Americans suffer from hearing loss; show pictures of tiny Sonictone; invite reader to write about his/her problem to "Elizabeth Baines" at 7500 Birchwood Avenue, Chicago IL 60625.
Booklet called "Future Living" describes living with a Sonictone; shows pictures of happy users, with testimonies from users aged 8 to 88; describes hairstyles for users of hearing aids; provides information on units available and product specifications (but not on cost, since cost is subject to change).

G. Handling inquiries: Inquirer always receives personal letter from "Elizabeth Baines," describing appropriateness of Sonictone and conditions of sale, along with cost. Enclosures: "Future Living"; hearing chart; payment plan description.

B.3. "Speech" Stimulus

Name: ID:

English 100: In-class Writing

The high school from which you graduated is having a "Live Now for Your Future" Day next month for all sophomores. An assembly will be held on that day for all sophomores. It will feature as speakers graduates of the high school who are now in different walks of life: an engineer, a hair stylist, an apprentice electrician, an employee of the state housing office, and a college student. Each of the featured guests will give a short speech entitled "If I Had My High-School Days to Live Over Again. . . ." The speeches will be followed by a question-and-answer session.

The sophomore class advisor has asked you to give a short speech as "a college student." The advisor wants you to make a statement about how your life in high school would have been different if you had known then what you know now.

Please write your short speech during the next 40 minutes. Do all of your work on the attached pages. Put an arrow next to the line where your actual speech begins. You will be graded only on the material which follows the arrow. But we may look at the other mark which you do if looking will help us with our research.

PLEASE WRITE ON ONE SIDE OF THE PAPER ONLY!

APPENDIX C

Charts for Self-Report of Compliance with CAPS and FW Heuristics

C.1. CAPS Compliance Chart

Last 4 digits of ID: _ _ _ _

WHAT YOU DID WHILE WRITING

(Note: Your responses here are for research purposes only. What you write will not be available to the persons who grade your writing, and will in no way affect your grade for either the most recent paper or for the course.)

On the attached page, there are 42 squares which represent points in the writing process at which you could have used a part of the problem-solving approach to writing which you have been studying.

In each square, please put one of the following marks with respect to the writing assignment you just turned in:

O --I omitted this step with this concern.

M --I did most of what was suggested for this step in my mind.

M-P --I did most of what was suggested for this step, part in my mind, part on paper.

P --I did most of what was suggested for this step on paper.

Planning Your Essay: Fill In the Pukas

GO THROUGH EACH OF THESE STEPS ↓

TO COME UP WITH ANSWERS TO EACH OF THESE QUESTIONS

	A. Topic?	B. Why?	C. To whom?	D. Who?	E. Thesis?	F. What?	G. How?
1. Avoid habitual, self-defeating responses							
2. Define the specific problem							
3. "Brainstorm" to discover many alternative possibilities							
4. Evaluate each of the alternatives (pros and cons)							
5. Choose the alternative most likely to solve the specific problem; rank other alternatives							
6. Test your choice in the world of evidence and experience							WRITE!

C.2. FW Compliance Chart

Last 4 digits of ID: __ __ __ __

WHAT DID YOU DO WHILE WRITING?

(Note: Your responses here are for research purposes only. What you write will not be available to the persons who grade your writing, and will in no way affect your grade for either the most recent paper or for the course.)

On the attached page, there are 15 squares (plus 4 optional squares, for those who used desperation writing) which represent points in the writing process at which you could have used parts of the freewriting approach to writing.

In each square, please put one of the following marks with respect to the writing assignment which you just turned in.

Y --I followed the guidelines for this step very carefully.

C --I pretty much followed the guidelines for this step.

L --I followed the guidelines at this step a little.

O --I omitted this step.

WHAT DID YOU DO WHILE WRITING?

Last 4 digits of ID: _ _ _ _

	Freewriting 1	Reflect and extract Center of Gravity 1	Freewriting 2	Reflect and extract Center of Gravity 2	Freewriting 3	Editing
A. Start writing, keep writing, but don't rush.						
B. Follow ideas wherever they lead you.						
C. Don't worry about form and style.						
D. Don't stop to revise, rethink, or rewrite.						

(optional) Desperation Writing

A. Freewrite exhaustively.
B. Extract & put ideas on cards.
C. Organize cards into categories.
D. Use categories as basis for Freewriting 4.

APPENDIX D

Ranking-of-Writing Measure

Name: ID number: __ __ __-__ __-__ __ __ __

You are in charge of advertising for Prestone Scientific Industries' new product Tool-Guard. You are about to launch a mail-campaign in Hawaii, and you have to choose a letter to be sent to all households in the state. Your staff has produced five ad-letters, typed on the attached sheets.

In the space below, please rank each of the ad-letters. (Use 1 for best, 2 for second-best, etc.) Below each ranking, please mention 3 or 4 elements you considered in making your decision.

____ Rank for Script A
Things considered:

____ Rank for Script B
Things considered:

____ Rank for Script C
Things considered:

____ Rank for Script D
Things considered:

____ Rank for Script E
Things considered:

Script A

Have you been bothered by inflation lately?

Look at your tools. Are they younger than they look? Would you like to double or even triple their useful life? Maybe they need to be protected with Tool-Guard, a new invention.

Many times people find that rust and wood-rot make them have to throw away their tools before their life should be over. But that doesn't have to be the case anymore. We here at Prestone Scientific Industries have developed Tool-Guard, a scientific miracle which can help tools to reach a ripe old age.

Tool-Guard is made of a special secret space-age formula. It keeps out wind, rain, snow, frost, heat, and humidity. As it protects, it saves you money. And that's something everybody wants to do today in these days of high inflation. Inflation is something that hurts us all, and we all ought to do something about it.

It costs only $19.50 for a gallon of Tool-Guard. And a gallon of Tool-Guard will protect up to 600 tools. So call us today at 826-4427 to order Tool-Guard. You'll be glad you did!

Script B

Hawaii's weather can be a real problem, especially when it comes to tools. How much money have you lost this year with tools rotting out or rusting before their utility was really ended?

Well, you can now save money and tools, thanks to Tool-Guard. Tool-Guard's magic scientific formula penetrates your tools' surfaces, making them impervious to the changing moisture conditions here in our islands. And Tool-Guard makes your tools easier to grip, too! There will be fewer accidents happening because of slippery grips.

Tool-Guard is easy to apply, dries quickly, and it is clear, preserving the original color of your tools. It is odorless and will not rub off on your hands, or crack or peel when you use your tools for heavy work.

One gallon of Tool-Guard, enough to protect up to 600 tools from deterioration, costs only $19.50. That's less than 3¼¢ per tool--pennies for protection.

Why not call us right now, at 826-4427, so that you can soon have Tool-Guard protecting your tools? That's 826-4427--we're waiting to help you.

Script C

I'm sure you want to get every penny's worth out of your tools. The only possible way for you to accomplish this is to extend the life of the tool. After all, people put a lot of money into tools, and probably you do too.

We have developed this new product named Tool-Guard and this product has been tested in all weathers on all types of tools. It was exposed to two years of weather, the natural element that proves to be most destructive to tools, tools' most harmful enemy. I'm sure that you will be pleased to know that after this two-year period, there wasn't the slightest indication of wear or deterioration on any of the tools! And no deterioration means extended potentialities for utilization!

Now you can equate the high prices with extended usefulness of the merchandise you purchase. One gallon of Tool-Guard will protect tools for an investment of only $19.50. Think of it--tools which won't rust out of rot because they are protected by Tool-Guard! And Tool-Guard won't increase taxes, which eat up more and more of our dollars, either!

Tool-Guard is a scientific formula which makes tools resistant and impervious to the ravages of rain, sleet, humidity, snow, and even ice--any weather you can imagine--and also makes the tools easier for the workers to grasp when utilizing them. It protects tools from rot, rust, mildew, and various other afflictions. And that means dollars saved. And a dollar saved is a dollar earned.

Tool-Guard can be ordered by calling 826-4277. Our operators are on duty 24 hours of the day, every day. Call to facilitate ordering now. That number is the key to protecting your tools and saving lots of money!

Script D

Have you ever had to throw away a hacksaw because the blade had rusted in Hawaii's high humidity? Or do you find yourself spending time with cuts and bumps at the first-aid-kit --time you'd rather spend finishing up that little repair job?

You can save money--and worry--by treating your tools with Tool-Guard, a space-age wonder which protects tools from weather and wear while it preserves their original grips.

Tool-Guard will work with almost all of your tools--with metal, plastic, leather, and wood. It keeps wooden handles from splitting. It keeps blades from rusting. Tests right here in Hawaii have shown that pliers, screwdrivers, and saws treated with Tool-Guard and left outdoors, exposed to over two years of sun, wind, rain, and salt-spray, will work as well as they did when they were new. And you'll find Tool-Guard quick-drying and easy to apply, too!

Tool-Guard can be protecting your tools for only $19.50 a gallon--the price of a decent saw. That gallon will provide protection for up to 600 of your tools, and added safety for all who use them.

Whether you're a home-handyman or a professional businessperson, can you afford to be without the protection of Tool-Guard? Call us right now, at 826-4277, and Tool-Guard can be working for you by this time next week.

Script E

How much does rotting and rusting cost you every year for tool repair and replacement? Too much, I bet.

This expense can be eliminated with Tool-Guard. Only 1 gallon of Tool-Guard will coat up to 600 of your construction and repair tools. The satin finish that Tool-Guard gives will stop wooden handles from splitting and rotting. That same satin finish will increase the life of your tools by at least 2 years.

Think about your tools. Maybe some of them were accidentally left outdoors during a storm. Maybe some have rusted when they weren't being used. Maybe handles have become slippery. Now imagine those tools after treatment with Tool-Guard. No rust, no split handles, no slippery grips. The tool guarded with Tool-Guard wins hands down! And that means you'll be a winner too!

Find out how you can protect your tools by calling 826-4277. You'll be pleased at the low price of only $19.50 per gallon. Can you afford not to use Tool-Guard? Call us at 826-4277, and Tool-Guard can soon be guarding your precious tools. Do it today, before your tools rot and rust any more!

APPENDIX E

Quizzes

E.1. CAPS Quiz 1

Name: ID: _ _ _ - _ _ - _ _ _ _

QUIZ

List, in order, the six steps of the problem-solving process. At each step, describe briefly what you would do in trying to solve a problem with finding a topic for writing.

E.2. CAPS Quiz 2

Name: ID number: ___ ___ ___ - ___ ___ - ___ ___ ___ ___

QUIZ 2

Part 1. There are 7 basic concerns which a writer should address in dealing with problems of invention. For each of the concerns, give

a) a "key word" which helps you to remember the concern;
b) a brief statement of the actual concern.

(Concern A is given as an example; you will list the other 6.)

A. a) Topic
b) What subject matter should I write about, given the demands of the writing assignment or situation?

B.

Part 2. List, in order, the six steps of the problem-solving process which you can use to deal with each of the writer's concerns. Describe briefly what you would do at each step.

E.3. FW Quiz 1

QUIZ 1 ID: _ _ _ - _ _ - _ _ _ _

1. What are the four guidelines for freewriting?
2. How does focused freewriting differ from freewriting?

E.4. FW Quiz 2

QUIZ 2 ID: _ _ _ - _ _ - _ _ _ _

1. Describe the steps in Elbow's "growing" model for freewriting.
2. Describe how to do "desperation writing" (external thinking).

APPENDIX F

Self-Report Motivation, Feelings, and Confidence Scales

F.1. Motivation

Name: ID number: _ _ _ - _ _ - _ _ _ _

SELF-RATING ON MOTIVATION

We would like to know how you rate your own motivation to work to improve your writing skills.

Please circle the number which indicates about where you fall on the "motivation line." Be as honest and as objective as you can. Your self-rating will not be revealed to your regular course instructor, or to anybody who has anything to do with your grade for this course.

I really don't care about improving my writing.				I'm motivated to improve, and will do some work to improve my writing.				I'll do almost any amount of work to improve my writing.	
1	2	3	4	5	6	7	8	9	10

F.2. Feelings and Confidence

Name: ID number: _ _ _ - _ _ - _ _ _ _

WRITING SURVEY II

Please circle your approximate position on the lines below.

1. How generally do you feel about having to do a piece of writing?

very negative			neutral			very positive
1	2	3	4	5	6	7

2. How confident are you of your ability to handle a writing assignment effectively?

lacking almost any confidence			half confident			very confident
1	2	3	4	5	6	7

APPENDIX G

Instructions to Paid Independent Raters

To: Nancy and Marie
From: Tom Hilgers

PROCEDURES FOR HOLISTIC EVALUATION OF THREE PIECES OF WRITING

You will be ranking three different sets of writing, each set containing 39 to 44 individual pieces of writing.

You will be ranking, in general, on the basis of your "general impressions" (Cooper, 1977)--that is, these holistic ratings will derive from your quick (yet considered) impressions rather than from an analysis of each piece of writing on several scales. In forming your "general impressions," please remember that, traditionally, graders see

as primary concerns (in no particular order):
- sense of purpose
- relevance of ideas
- appropriateness of organization
- governance of a dominant idea (thesis)
- concern for audience
- appropriateness of voice;

and as secondary concerns:
- grammar
- diction
- mechanics
- spelling.

Your rankings will be comparative rather than absolute, and will be distributed as is indicated on the attached sheet into 7 categories, the best papers being in category 7 and the worst in category 1. In arriving at your rankings, please use this procedure (suggested by Nunnally, 1978):

Work from both ends toward the middle. Spend an average of 2 minutes reading each paper. Place the first paper on the floor or table in front of you after you have read it. Place the next paper above, below, or on top of the first. You might begin with 4 piles of papers: superior, more-or-less better than average, more-or-less worse than average, and clearly inferior. After you have these 4 piles arranged (a procedure which should take about 80 minutes), return to the "superior" pile and select the 3 best for ranking in category 7. The remainder from the "superior pile," plus the appropriate number of "best" papers from the "better-than-average" pile, should constitute category 6. Then go to the "inferior" pile. Select the worst 3 for ranking in category 1. The remainder, plus the "worst" from the "worse-than-average" pile, should go into category 2. Finally, arrange the remaining papers into categories 3, 4, and 5, in the required numbers. After you have placed the required number of papers in each category, do a quick check to make sure that each paper is where you want it to be, rearranging papers if need be.

Please do not write on the papers themselves. (You will be doing other rankings on them later.) Instead, write your category for each paper on the tabulation sheet. Follow the schedule on the attached sheet, and please keep track of the number of hours you spend on the project.

p. 2

M, 3/3: 12:30--discussion of procedures; practice in ranking "speeches."

T, 3/4: Report rankings of "speeches" to Hilgers via phone.

W, 3/5: 12:30--meet to review "speech" rankings
OR--practice ranking "letters."

Th, 3/6: Give rankings of "letters" to Hilgers.

F, 3/7: 12:30--meet to review "letters" rankings
OR--meet for practice in ranking "articles."

Su, 3/9: Report rankings of "articles" to Hilgers via phone.

During the week of 3/10, we may rank the pieces of writing on special scales.

There are 42 speeches. These should be distributed thus:

CATEGORY	1 worst	2	3	4	5	6	7 best
Number of papers	3	5	7	12	7	5	3

There are 39 letters. Same categories, with this distribution:

3	5	7	9	7	5	3

There are 44 articles; they should have this distribution:

3	5	8	12	8	5	3

To: Nancy and Marie
From: Tom

EVALUATIONS BASED ON SPECIFIC SCALES

The next stage in evaluation operations will involve ranking the "letter" on 6 criteria. You will continue to use the sorting procedure which you used in making your holistic rankings.

Since you may well tire over the course of ranking the same pieces of writing 6 more times, I'd like to leave the order in which you take up the criteria to chance. Please put pieces of paper with the numbers 1 through 6 in a cup; draw them out one at a time, recording the order in which the numbers are drawn out. That order will be the order in which you take up the criteria.

Remember: no more than one ranking per day!

The criteria are these:

1. relevance of the ideas/materials included in the piece of writing to the writer's purpose and the audience's needs;

2. attention to the specific needs of the audience;

3. effectiveness of the organization of a piece of writing--how successful is the writer in making the ideas/materials accessible to the reader/hearers? how appropriate is the arrangement of materials for the writer's purpose(s)?;

4. development of a central idea or theme which in effect controls the choice and arrangement of ideas/materials;

5. clarity and appropriateness of the writer's voice, given the writer's purpose and the audience's needs;

6. attention to conventions of grammar, mechanice, and spelling.

We will meet on Monday at 12:30 for a long "practice session." Otherwise, please continue to put your latest set of rankings into my mailbox, or phone me.

APPENDIX H

Post-Intervention Participant Questionnaire

Last 4 digits of ID: __ __ __ __

EVALUATION QUESTIONNAIRE

Dear students,

Your answers on this questionnaire will help us to interpret whatever we may find in reading your papers. Your responses will, of course, be treated confidentially, and will in no way affect either your paper or your course grades.

We have enjoyed working with you. A big "Thank you" to each of you for your work in responding to questionnaires such as this one. We hope to be able to get back to you late in the semester with a report on our research.

Tom Hilgers Joy Marsella

The word invention is used several times in the questions below. Invention here refers to planning for writing and, in general, those things that you do before you write and edit your final draft.

---

1. What did you find most helpful in the approach to invention? Why? (Be as specific as you can.)

2. What did you find least useful in the approach to invention? Why? (Be as specific as you can.)

3. What in general seem to you to be the biggest strengths of the approach to invention?

2

4. What to you seem the weaknesses of the approach to invention?

5. From what you now know about invention, how important does careful work at the invention stage seem to you with respect to the overall effectiveness of a piece of writing?

1	2	3	4	5	6	7
Not very important at all.			somewhat important, but no more than work on other aspects of writing.			terribly important --more important than work on any other aspect of writing.

6. How does the ranking you just made (Q #5) compare with the ranking you would probably have made 3 weeks ago?

1	2	3	4	5	6	7
would have rated invention much less important 3 weeks ago.			would have been the same.			would have rated invention much more important 3 weeks ago.

7. How much were you concerned with invention in the writing you did up to the time we began studying invention about 3 weeks ago? (con. = concerned)

1	2	3	4	5	6	7
generally not con.	sometimes somewhat con.	usually somewhat con.	always somewhat con.	sometimes very con.	usually very con.	always very con.

8. What techniques did you use to deal with your concerns with invention up to 3 weeks ago?

3

9. How likely do you think you are to be using the approach to invention in writing you will have to do in the future?

1	2	3	4	5
unlikely in any writing	unlikely in most writing	likely in some writing	likely in most writing	likely in all writing

10. With what specific kinds of writing tasks are you most likely to use the approach to invention?

11. With what specific kinds of writing tasks are you least likely to use the approach to invention?

12. What criteria do you think most people use to evaluate the quality of a piece of writing?

13. What criteria do you use to evaluate the quality of a piece of writing?

14. What other comments about the approach to invention do you have?

15. What comments about the classes on do you have?

16. What general suggestions do you have?

17. Have you tried using the problem-solving steps in other (non-writing) problem-situations? If yes, in what kinds of situations? What have been the results?

18. Do you intend to try using--or continue using--the problem-solving steps in other problem-solving situations? If yes, in what kinds of situations?

APPENDIX I

Analyses of Covariance Involving "Letter" and "Speech"

I.1. "Letter": One-Way ANCOVA

Source	df	MS	*F*	p
Covariate	1	12.570	1.397	--
Treatment	1	37.441	4.160	.05
Error	36	9.000	--	--

I.2. "Speech": One-Way ANCOVA

Source	df	MS	*F*	p
Covariate	1	55.524	6.576	.01
Treatment	1	6.516	0.772	--
Error	36	8.443	--	--

APPENDIX J

Analyses of Covariance Involving Six Component Scales

J.1. Audience Awareness

Source	df	MS	F	p
Covariate ("Article")	1	13.000	1.262	--
Treatment (Group)	1	0.079	0.008	--
Error	36	10.303	--	--

J.2. Controlling Idea

Source	df	MS	F	p
Covariate	1	31.232	3.601	.07
Treatment	1	12.523	1.444	--
Error	36	8.673	--	--

J.3. Voice

Source	df	MS	F	p
Covariate	1	20.313	2.245	--
Treatment	1	0.012	0.001	--
Error	36	9.046	--	--

J.4. Conventions

Source	df	MS	F	p
Covariate	1	46.100	6.311	.02
Treatment	1	48.854	6.686	.01
Error	36	7.307	--	--

J.5. Appropriateness of Materials

Source	df	MS	F	p
Covariate	1	0.032	0.004	--
Treatment	1	77.468	9.406	.004
Error	36	8.236	--	--

J.6. Organization

Source	df	MS	F	p
Covariate	1	12.148	1.355	--
Treatment	1	23.130	2.580	--
Error	36	8.964	--	--

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