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PRODDING THE MUSE:
THE EFFECTS OF INSTRUCTION IN RHETORICAL INVENTION
ON THE COMPOSING PROCESSES OF NINTH GRADERS

A Dissertation Presented

By

BRUCE MARTIN PENNIMAN

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

February 1985

Education

Bruce Martin Penniman

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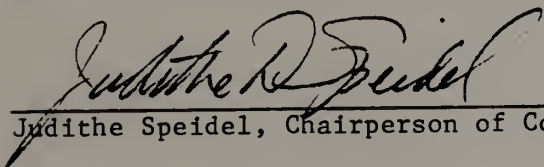
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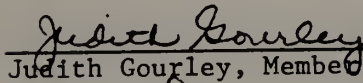
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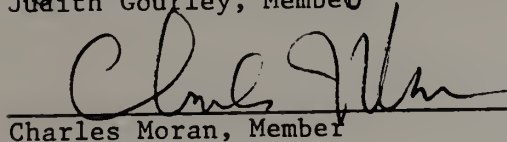
By


BRUCE MARTIN PENNIMAN

Approved as to style and content by:


Judithe Speidel, Chairperson of Committee


Judith Gourley, Member


Charles Moran, Member


Mario Fantini, Dean
School of Education

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ABSTRACT

Prodding the Muse:
The Effects of Instruction in Rhetorical Invention
on the Composing Processes of Ninth Graders

(February 1985)

Bruce Martin Penniman, B.A., University of Massachusetts
M.A., University of Massachusetts, Ed.D., University of Massachusetts

Directed by: Professor Judithe Speidel

Invention is the rhetorical art of discovery. This inquiry examines the role of invention in the composing of ninth graders and describes the effects on the composing process of instruction in rhetorical invention strategies. Forty-six students representing three levels of instructional grouping (basic, standard, and advanced) participated in the research, conducted at a regional junior high school in New England. Participants were taught several heuristic (discovery) procedures as part of a required writing course. A variety of sources was used to determine the impact of the instruction on their writing processes: questionnaires administered before and after, field observation of the students at work, and individual writing portfolios. In addition, ten students selected for case studies engaged in a series of interviews and oral-composing sessions.

The data analysis is presented in three stages. The first, which relies mainly on concrete description, consists of detailed individual profiles of three of the case-study participants. The second compares these three students' experiences and views to those of the remaining

seven. The third stage, which utilizes formal methods of analysis to evaluate some of the data, extends the discussion to the general results obtained from all forty-six participants.

Examination of the data gathered prior to instruction in heuristics showed that the participants did not ordinarily engage in deliberate searches for ideas; they depended on inspiration and suggestions from others. (Advanced-level writers exhibited more planning behavior than members of the other two classes.) In general, the students' composing procedures were halting and one-dimensional, and their sense of control over their writing was limited.

Evidence obtained during and after the instruction in invention revealed several significant effects. Participants' uses of heuristics varied widely, but students of all ability levels became more efficient and more effective in producing ideas. They engaged in more deliberate searching and planning as well as more substantive reformulation. Composing became in both perception and practice a more self-directed activity. This outcome has broad implications for the teaching of writing across the curriculum.

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C H A P T E R I

INTRODUCTION

The study presented here explores the nature of invention in the composing of ninth graders and documents the effects on the writing process of instruction in rhetorical invention procedures. Primarily descriptive in purpose, this inquiry is based on a variety of qualitative data: the subjects' reports of their own use of invention strategies, field observation of their composing processes, and analysis of their written products. Since the study has broad implications for the classroom, some consideration of curriculum and pedagogy are included in this report. But its focus is ninth-grade writers themselves and the methods by which they create written texts--before they are taught new heuristic techniques, while they are learning them, and after they are able to use them independently.

A word of definition is in order. "Invention," according to Richard Young, the foremost contemporary authority on the subject, "is the rhetorical art concerned with discovering the subject matter of discourse" (1976, p. 1). Young classifies invention as a rhetorical art--as opposed to a gift or a natural talent--because it encompasses skills that can be learned (and presumably taught). Invention relies on deliberate search for ideas, insights, and information, rather than on non-deliberate methods of discovery such as awaiting "the inspiration of the Muse." Writers who practice the art of invention probe their subjects and explore their own minds by means of various

flexible discovery procedures (called "heuristics") whose purpose is prodding the Muse.

In classical rhetoric the purpose of invention was solely to discover "all of the available means of persuasion." However, modern theorists (e.g., Burke, 1969b) have expanded the range of rhetoric to include all forms of discourse. Thus the aim of invention is no longer limited to bringing about psychological change in the reader. On the contrary, the primary emphasis of most current invention theory is psychological change in the writer. Heuristic techniques are designed not only to aid recovery of what the writer already knows but also to encourage discovery of new perspectives and knowledge.

It is tempting to think of "invention" as a synonym for "prewriting," the term widely used to designate the initial stage of the composing process. Invention and prewriting do have much in common, but there is good reason to distinguish these terms--and to prefer the former. To apply the label "prewriting" to such activities as exploring, discovering, and planning is to suggest that composing is merely a linear progression from thinking to writing--a conception which recent studies of the process have shown to be oversimplified (Hayes and Flower, 1980a,b; Perl, 1979; Pianko, 1979). Invention theory recognizes the interactive relationship of thought and language. Indeed, the term "rhetorical invention" implies deliberate creative activity with language.

To delve into the complicated interaction of thought and language involved in the production of written texts is the aim of this study.

In particular it examines the role--and potential role--of heuristics in the creative process. The composing of ninth graders, who are typically just entering the abstract world of academic discourse, provides rich insights into the complex process of invention.

Background for the Study

Despite the backlash of the "back-to-basics" movement, the overall direction of instruction in writing--at least as reported in the professional journals and at the annual conferences--has changed dramatically during the past two decades. Today's state-of-the-art composition course is the writing "lab" class, in which mechanical drills are all but abandoned in favor of multiple drafts, and the infamous red pen is replaced by the informal rewrite conference. Though yet hardly the norm in American schools, these innovations in pedagogy and curriculum signal a conversion from the traditional product-based paradigm of writing instruction to an emerging process-centered model (Young, 1978; Donovan and McClelland, 1980). That is, composition teachers are gradually shifting their emphasis from what students compose to how they compose. "Writing" is changing from a noun to a verb. Theorists such as Murray (1968) and Moffett (1968b) and researchers such as Emig (1971) and Graves (1975) have led this movement toward a new consensus on writing instruction.

The process paradigm is rooted partly in the psycholinguistic view of language development, which holds that language, itself a

reflection of underlying thought, develops into a powerful tool for directing thought (Britton, 1970; Smith, 1975; Vygotsky, 1962, 1978). The acquisition of literacy is a major development in this process. Written language, which is usually more explicit than oral language (Olson, 1977; cf. Wells, 1981), serves as a lasting record of thought. It eases the burden on short-term memory and provides its user increased flexibility and control. The meaning of written language develops as the writer interacts with the words he or she has produced on the page. The act of writing is thus itself a stimulus to thought. The writing process and the thinking process are inseparable (Murray, 1980; Smith, 1982).

Another important basis for the ascendant process paradigm is the recent revival of classical rhetoric and the development of various "new" rhetorics--each having an elaborate theory of invention (e.g., Burke, 1969a; Corbett, 1965; D'Angelo, 1975; Elbow, 1973, 1981; Moffett, 1981b; Rohman, 1965; Smith, 1974; Young, Becker, and Pike, 1970). That interest in writing as a process should develop simultaneously with the reemergence of invention as a rhetorical discipline is no mere coincidence, as Young (1976) points out: "Invention requires a process view of rhetoric; and if the composing process is to be taught, rather than left to the student to be learned, arts associated with various stages of the process are necessary" (p. 33).

The teaching of "arts" associated with the invention stage of the process is gradually becoming an important trend in composition

courses at all levels of instruction. The professional publications are filled with heuristic techniques "that work," and many of the new textbooks prominently feature a wide variety of "prewriting" exercises. These developments have created considerable controversy among teachers and scholars over which invention strategies are most effective and over how and even whether they should be taught. James Kinney (1979), for example, has classified the leading invention theories into three categories--empirical, rational, and intuitive--and called for a greater emphasis on non-rational heuristics, prompting (among others) Fulwiler and Petersen's facetious response that other "irrational" heuristics such as mumbling and staring should also be considered (1981). Janice Lauer (1979) has proposed a "metatheory" for judging the adequacy of heuristic procedures, but James Stratman (1980) is critical of her criteria. He argues that teachers should avoid prefabricated invention strategies and instead elicit students' own tacit heuristics for each writing problem. Charles Yarnoff (1980) takes the major invention theories to task, maintaining that their purpose is more to "fill up the paper" than to engage the student in a serious search for truth. Issues related to invention also dominated a recent international conference on the theme "Learning to Write" (Canadian Council of Teachers of English, 1979; see Freedman and Pringle, 1980).

Unfortunately, the great majority of invention theories (like most other aspects of teaching composition) still have inadequate grounding in research (Young, 1978). We know almost nothing about

their effects on the writer and the writing process and little more about their impact on the eventual written product. The present investigation does not close this gap but narrows it somewhat through close observation of ninth graders in the process of learning and applying various invention strategies. In addition, this study furnishes new data on the composing processes of fourteen-year-olds (an age group neglected by most previous studies) and attempts to provide a much-needed synthesis of invention theory and writing process research.

The Research Problem

Junior and senior high school students often complain of having nothing to say. Encouraged to write from their personal experiences, they lament having had very few of any interest. Asked to develop their own insights on a topic, they find they have nothing to add to what has already been said. Many young writers seem to lack effective methods of probing their own minds and discovering original thoughts and perspectives among their more commonplace ideas and feelings. According to many researchers and teachers (see, for example, Emig, 1971; and Macrorie, 1968), this handicap is largely the result of poor writing instruction.

The increasing popularity of prewriting activities and heuristic devices in secondary-level composition courses indicates a growing interest in teaching student writers how to think and create. This

trend represents a significant step away from the conventional wisdom that "some kids have it and some kids don't." But the teaching of invention to secondary students raises a number of important questions as yet unresolved by research. The present exploratory classroom study seeks to provide some useful answers.

In the first place, we need to know a great deal more about the ways in which secondary students compose written texts (i.e., before classroom instruction in rhetorical invention). To what extent can they describe the procedures that they follow? What heuristic devices (if any) do they employ? On what occasions? When, where, and how did they learn these techniques? How effective are they?

Too, we must find out what happens when students are taught new and "better" heuristic procedures. How do their composing processes change? Are they less likely to encounter serious blocks? Do they have more to say? Can they select from among their discoveries the most promising, original ideas? Can they develop these ideas into complete papers?

We cannot overlook the important effects of students' attitudes and self-perceptions. How do they feel about themselves as writers? About the writing they produce? Do their feelings change as they acquire new invention strategies? Do they become less fearful of writing? More confident of having something to say?

Finally, we must consider the impact of differences among writers and writing situations. We cannot assume that a given set of rhetorical invention strategies will produce the same effects in all

writers on all occasions. What is the range of student response? How do the results of instruction in invention compare among students of differing ability? Among students of equal ability? How do considerations such as audience and purpose relate to individuals' uses of heuristics? How can we account for these differences?

Problems beget problems. Each of the questions posed above suggests others. However, these twenty establish the broad objectives for the present examination of ninth graders in the process of learning heuristic strategies. All of these questions are complicated, and this investigation does not pretend to furnish definitive answers to all of them. But this study is only a beginning. Additional classroom research will be needed to test its conclusions and explore other aspects of the teaching of invention.

Purpose, Design, and Significance of the Study

Simply stated, the goal of this inquiry is to examine the effects of instruction in rhetorical invention on the composing processes of ninth-grade students at all levels of achievement. I chose ninth graders as the focus of the study in part for reasons stated earlier--that they are usually just beginning to work intensively with abstract, formal academic discourse and that their composing processes have received relatively little previous attention--and in part because, having taught ninth-grade English for eleven years, I was well acquainted with their typical behaviors, skills, needs, and

concerns. The study is an examination of student writers in the process of learning and applying a variety of heuristic devices and procedures based on (but not identical to) those developed by the leading invention theorists. Its purpose is not to place these heuristics in competition with each other and rank them according to their relative effectiveness or popularity with students. Teachers of writing would undoubtedly appreciate a reliable ranking of this sort, but the isolation of variables necessary to produce it could not readily be achieved in naturalistic classroom research. Rather, this study is designed to describe what actually occurs when ninth-grade writers employ heuristic techniques. Given the growing interest in teaching invention strategies in secondary-level composition courses, this goal seems timely, appropriate, and worthwhile.

The data were obtained in three ninth-grade composition classes--one each at the basic, standard, and advanced levels--at a regional junior high school in western New England during the second quarter of the 1982-1983 school year. The forty-six students who participated in the research were involved in a writing workshop program in which they were taught and encouraged to apply a variety of heuristic strategies. Data sources included questionnaires administered to all students at the beginning of the investigation, before they had received any instruction in heuristics, and at the end, after they had made substantial use of these techniques, as well as daily observation of the students at work and thorough examination of their written products (all of them--drafts, notes, outlines,

jottings, doodles). These whole-group data provided a background for information obtained from individual case studies. Ten students selected at random from the three classes participated in a series of in-depth interviews and audiotaped oral-composing sessions. Taken together with the classroom material, the interview transcripts and composing protocols served as the basis for a detailed analysis of these students' writing processes and of their experiences of learning and using rhetorical invention strategies.

The significance of this investigation resides, I believe, in three key features. First, it demonstrates a research design which utilizes ethnographic-interview and participant-observation techniques in combination with both the standard tools of classroom investigation (e.g., questionnaires and product analysis) and the innovative methods of composing-process researchers such as Emig (1971), Pianko (1979), and Perl (1979). Few (if any) previous studies of the effects of writing instruction have used this kind of eclectic approach. The study also contributes new details to the complex picture of the composing process emerging from research--a picture which leading authorities agree is still substantially incomplete (Cooper and Odell, 1978; Graves, 1981). In particular the study illuminates invention, the facet of composing least accessible to view. Of greatest significance, however, are the study's implications for the teaching of invention to secondary students. Many of the heuristic methods which are becoming increasingly popular in composition courses are, in the words of Richard Young, "more testimonials to our optimism than to

rigorous scholarship" (1976, p. 19). Few have been subjected to the kind of systematic classroom testing that is necessary if teachers are to make informed pedagogical decisions (Young, 1978). The present study, which documents the effects of instruction in rhetorical invention strategies on the composing of ninth graders, attempts to provide that kind of information.

Overview of the Report

The second chapter of this report is a selective review of the literature pertinent to this investigation: recent studies of the composing process, leading contemporary theories of invention, and previous studies of classroom instruction in invention strategies. Chapter III describes in detail the design of the present study, including its methodology, assumptions and research questions, participants, instructional methods and materials, instruments, and procedures for data collection and analysis. The results of the investigation comprise the next three chapters. Chapters IV and V describe in depth and compare the ten students selected for case studies, and Chapter VI extends the analysis to the entire group of participants. The study's conclusions and their implications for teaching and further research are presented in Chapter VII. Other relevant materials--the textbook and instruments used in the investigation, as well as sample writing protocols--are included in the appendixes.

C H A P T E R I I
R E V I E W O F T H E L I T E R A T U R E

The gradual emergence over the past two decades of a process paradigm of writing instruction (Young, 1978; Donovan and McClelland, 1980) has produced an extensive literature on the composing process and how best to teach it. In the first two sections of the review which follows, two broad areas of this literature are examined: (1) recent studies of the composing process, including the major theoretical statements and the growing body of research on the ways in which students actually write; (2) leading contemporary theories of invention, including those derived from classical rhetoric as well as those developed for the various "new" rhetorics. Both of these areas are basic to the present study. The first provides its rationale; the second supplies its substance. Recent research on the composing process has demonstrated the need for teaching student writers the art of invention. Current theories of invention offer a number of promising heuristic strategies, from which those used in this study are derived.

The third part of this selective review describes previous studies--the few there have been--of classroom instruction in invention strategies and summarizes what little we know about its effects on the writing processes of students. Inconclusive as these earlier investigations have been, they serve as a useful point of departure for the present research project.

Recent Studies of the Composing Process

The contribution of the many significant studies of the composing process produced in the past two decades is best understood when seen in the context of the traditional view which they attack. The product-centered paradigm, the basis of conventional textbooks such as Warriner's English Grammar and Composition, assumes that thinking and writing are discrete stages in the composing process. The act of writing, in other words, is essentially transcription of fully formed ideas onto paper. The art of invention has no place in this model and essentially none in the curriculum. According to the Warriner's Teacher's Manual, ". . . the ability to write well requires, among other things, accurate observation, a stimulated imagination, strong interest in words, and an awareness of logical thinking and clear organization. These are the intangibles of the writing art. To a degree they are teachable. . . . For the most part, however, they are acquired through broad personal experience and through the analysis and emulation of models of good writing." The implication is clear: important as these "intangibles of the writing art" may be, they are essentially outside the writing teacher's domain, which is more properly limited to the teaching of discrete skills. Warriner's again: "The ability to write well is acquired through the mastery of a great many individual skills, and textbook exercises provide practice in employing them. Through the teacher's guidance and insistence, students learn to carry over into all their writing the skills they

have learned from their textbook" (Warriner and Griffith, 1977, p. ix).

Warriner's is typical of the thinking that has governed composition teaching for well over a century. As Edward P. J. Corbett (1965) points out, when interest in classical rhetoric waned in nineteenth century schools, study of the forms of discourse and the elements of style took its place. Instruction "gradually deteriorated into a neurotic concern for 'correct usage' and . . . a rather negative approach to 'correct grammar'" (p. 566). Reinforced by the recent "back-to-basics" movement, which developed in the wake of widespread concern over declining test scores, this approach remains the dominant one in American secondary school writing programs (see Applebee, 1981).

The limitations of traditional methods of teaching writing skills are well documented and need no rehearsal here. What English teacher has not lamented his or her students' failure to apply in their own compositions what they have "learned" from their textbooks? The fundamental weakness of traditional writing programs is not the textbooks themselves, however, but the unsound theory of composition on which they are based. Conventional theory fails to recognize what every writer knows: that writing is a complicated process, not a simple two-step procedure of figuring out a meaning, then putting it into words. It is a complex interaction of language and thought through which the writer gradually discovers what he or she has to say. During the past two decades a new conception of writing has

emerged. Theorists such as Donald Murray and Frank Smith have described the writing process as organic rather than piecemeal, recursive rather than linear. Unlike traditional theories theirs are based on close observation of the way writers work, not mere analysis of what they have written.

Donald Murray, a professional writer turned teacher, is one of the key figures in the growing movement toward a process paradigm of writing instruction. His theory, originally set forth in A Writer Teaches Writing: A Practical Method of Teaching Composition (1968) and subsequently reformulated (1980), is that composing is a process whereby the writing "finds its own meaning," often independent of the writer's intent. Murray's present conception is that the process is made up of three interlocking stages--rehearsing, drafting, and revising--which are periodically repeated as the writer moves from exploration (in the early drafts) toward clarification (in the later ones). Rehearsing is the stage during which the writer "in the mind and on the page prepares himself or herself for writing before knowing for sure that there will be writing." It is a time "for experiments in meaning and form, for trying out voices, for beginning the process of play which is vital to making effective meaning" (1980, pp. 4-5). Drafting is the central stage of the writing process, when the writing "physically removes itself from the writer," creating a distance between them. Revising, the final stage, when the writer stands apart from the writing and interacts with it, is a beginning as well as an end, for "revision which does not end in publication becomes the most

significant kind of rehearsal for the next draft" (p. 5). And the cycle goes on.

The cycle is driven, in Murray's view, by two pairs of powerful countervailing forces--collecting and connecting, writing and reading--which interact with each other at all stages of the process. Collecting and writing predominate during rehearsal, whereas connecting and reading have the edge during revision. A draft occurs "when the four forces are in tentative balance" (p. 11), that is, when the powers of discovery and order are equal. It is the tension caused by the simultaneous action of these forces that brings forth the meaning of a piece of writing. The polished product does not reveal the struggle that produced it.

Frank Smith, who has written extensively on psycholinguistic theory and its implications for teaching the language arts (see, for example, Smith, 1975), has recently published a comprehensive "psychology of the writing act" entitled Writing and the Writer (1982). Like Murray, Smith believes that writing and writer are separate: "What we say is created out of our minds but was never part of our minds. The conventions of language can create a new world--or at least a different world--for ourselves as well as for other people" (p. 66). The writer may contemplate his or her product before or after it is written, but he or she has no real control over the spontaneous flow of words--beyond simply turning it off (cf. Britton, 1980). Meaning develops as the writer's thought and emerging text interact. Prewriting, writing, and rewriting, usually thought of as

stages in the composing process, may actually take place simultaneously, even though their functions are quite distinct.

Murray suggests that a text is produced through a balancing of forces; Smith describes the creative act as an enactment of the writer's global and focal intentions, which may or may not be expressed in words. These goals--for the whole piece of writing and each of its parts--are the basis on which the text is formed. Smith refers to them as the specification for the text. The specification is not a detailed outline but a set of considerations that shape the writing. "The specification for a text sets out the problems a writer has to solve in the process of writing" (p. 114); the finished product represents a (but not the) solution. The specification changes continually as the text evolves. As Smith explains, "Creativity does not just shape a product, it shapes a producer" (p. 119).

The growing body of research on student writing, though far from conclusive, substantiates Murray's and Smith's (and others') process view of writing and calls into question writing instruction based on the traditional model. For example, Janet Emig's seminal study, The Composing Processes of Twelfth Graders (1971), is a searching examination of the way students write and a searing indictment of the way teachers teach. Using the case-study method, Emig investigated the writing processes of eight high school seniors and discovered that they did little thinking or planning before writing and little reformulation afterward. She also learned that her subjects had a great deal of difficulty expressing their feelings in writing. Emig

blames these disturbing phenomena on composition instruction which fails to treat writing as a process and restricts students' writing to a single mode of discourse. Her criticism is based on two significant findings about school-sponsored writing. First, she found that little attention (or even adequate time) is given to prewriting and rewriting; the teacher's role is generally limited to making the assignments and evaluating the finished work (often on its least significant features). Second, she found that most school assignments are written in the "extensive" mode; that is to say, they are essentially impersonal, other-centered writings whose primary purpose is to report and analyze information. Such writing, which frequently takes the form of the standard five-paragraph essay, is often dull and formulaic, because it has no importance to the writer. Emig advocates increased use of "reflexive" writing, which, because it is personal and writer-centered, is more likely to foster careful thought and preparation. Indeed, she found that her twelfth graders, who did little planning of school writing assignments, engaged in considerable prewriting and planning when doing their own reflexive writing. Emig concludes that school-sponsored writing, as presently conceived, is a "limited, and limiting, experience" (p. 97) and its teaching "essentially a neurotic activity" (p. 99).

Emig's findings on school-sponsored writing have been confirmed by two major research reports. As part of a comprehensive study of the development of writing abilities of eleven- to eighteen-year-olds, James Britton and several colleagues at the University of London

Institute of Education analyzed the functions and audiences of secondary school writing and found that the great majority of student papers, particularly those of older students, were "transactional" writings (i.e., in what Emig calls the "extensive" mode) addressed to "the teacher in the role of examiner." Expressive writing and writing for audiences other than the teacher were rare (Britton et al., 1975). In a recent study of writing in the American secondary school, Arthur N. Applebee (1981) reports disturbingly similar findings about the purposes of school writing. He also shows that, in spite of the developing professional consensus on a process paradigm of writing instruction, the traditional product-based approach still holds sway in most secondary schools.

The Composing Processes of Twelfth Graders broke new ground in composition research methodology and set the direction for subsequent investigations, too numerous to review in detail here, which have confirmed and extended Emig's findings. These include, for example, Terry Mischel's follow-up case study of a single twelfth-grade writer (1974), Donald Graves' important research on the writing processes of elementary school children (1975), and Lillian Bridwell's inquiry into the revising strategies of older students (1980). A number of studies have sought to determine the factors which distinguish good student writers from average or poor ones. Charles Stallard (1974) found that good writers spent more time prewriting and writing, exhibited more concern for finding the "right word," and engaged in more contemplation and rereading of the product. Sharon Pianko (1979), who

developed an extensive array of variables for analyzing her subjects' writing behaviors, concluded that good writers possessed a greater ability to reflect on their work (i.e., to pause, rescan, reread, rethink) than poor writers. She also found, like Emig, that students' attitudes toward school writing were generally negative.

Of particular interest is Sondra Perl's recent investigation of basic writing (1979, 1980), based in part on Emig's work, which demonstrates the high correlation between the quality of the student's writing process and the success of its eventual product. The basic writers she studied generally spent little time in prewriting activity, but they often returned to the planning stage later on, after they had begun composing. Unfortunately, neither planning nor composing, but editing, dominated their writing processes from beginning to end. Like the basic writers described in Mina Shaughnessy's Errors and Expectations (1977), Perl's subjects were severely constrained by their awareness of error. They could benefit most, she argues, from a "loosening" of the writing process. "One possible way to loosen the process, or to free students from some of the constraints under which they presently write," she suggests, "is to provide them with guidelines which draw on an experimental model of the composing process" with the following four main features:

- (1) Readyng oneself for writing.
- (2) Sustaining the flow of writing.
- (3) Shaping the discourse for oneself.
- (4) Readyng the discourse for others.

Perl calls these tasks features of the writing process, rather than steps or stages, because they are continually repeated: "the four are interwoven or alternating strands of the overall process itself" (1980, pp. 31-32). The experienced writer, she suggests, can move among these strands without losing his or her sense of direction and purpose. Most basic writers, on the other hand, cannot integrate these features in an efficient writing process. Their movement from one to another is involuntary, even unconscious; and performance of one of these tasks (especially the last) often overwhelms the others.

Perl's study, like previous research on composing, clearly demonstrates the need for helping student writers to develop a process of invention. If they are to be successful at "readying themselves for writing" and "sustaining the flow of writing," they must have available heuristic devices to help them discover what they have to say. Such techniques must not be rigid, step-by-step procedures, however. As Perl points out, basic writers (like all other writers) discover and plan intermittently throughout the writing process. To be useful, then, heuristic techniques must be flexible enough to accommodate the back-and-forth way in which writers work.

Another study of remedial writers suggests that instruction in rhetorical invention could capitalize on strategies students already possess. John Sweeder (1981), who used protocol analysis and follow-up discussions with participants to probe their writing processes, discovered that his six adult subjects used a number of heuristic techniques--role-playing, following routines, inventing

questions, letting the subconscious work; plus brainstorming, nutshelling, and other problem-solving devices--while composing aloud.

Sweeder's findings are consistent with those of Linda Flower and John Hayes, who have done extensive research on writers' individual problem-solving strategies and constructed a detailed model of the composing process. The model is based on a number of important conclusions about writing derived from their investigations:

- (1) Writing is goal directed.
- (2) Writing processes are hierarchically organized.
- (3) Some writing processes may interrupt other processes over which they have priority.
- (4) Writing processes may be organized recursively.
- (5) Writing goals may be modified as writing proceeds.
(Hayes and Flower, 1980c, p. 396; see also 1980a,b)

This conception of writing as a complex, recursive, goal-driven process is similar to Frank Smith's theory of "specification for the text." A good deal of Flower and Hayes' research has been directed toward understanding the differences between novice and expert writers. In one study (Flower and Hayes, 1980) they asked their subjects to compose an article for Seventeen magazine. Using protocol analysis, the investigators found that all participants discovered content for the piece by defining the rhetorical problem in their own terms. Unlike the novice writers, however, the experts responded to all aspects of the situation and established a rich network of goals for themselves, their texts, and especially their intended readers. Good writers were also more likely to revise their goals, their image

of the reader, and other aspects of the problem. In another study, an inquiry into the nature of planning (1981), Flower and Hayes sought to determine why writers pause in the course of composing. Not surprisingly, they found that their subjects often stopped writing to think of what to say next. Significantly, though, the researchers discovered that skilled writers were far more likely than poor writers to pause to consider larger rhetorical goals. Both of these studies show that, though all writers use problem-solving strategies when composing, some writers use them more effectively than others.

Flower and Hayes' findings, taken together with the conclusions of other composing-process researchers, lend support to demands for change from the traditional "skills" approach to the teaching of writing to an inquiry, or problem-solving, approach. Richard Young (1968) and Janice Lauer (1982), among others, have called for such a change. Drawing on cognitive dissonance theory, which holds that creativity is spurred by the discomfort which results from violations of the individual's image of the world, they argue that students should learn to use writing as a vehicle for formulating and resolving significant problems. Theories of invention, reviewed below, offer a variety of inquiry methods and alternative heuristic strategies.

Leading Contemporary Theories of Invention

Richard Young's landmark bibliographical essay, "Invention: A Topographical Survey" (1976), is still the best available synthesis of

invention theory. Young describes four major methods of invention: neo-classical invention, Kenneth Burke's dramatistic method, D. Gordon Rohman's pre-writing, and Kenneth Pike's tagmemic invention. These are useful categories, because they fairly represent the range of heuristic strategies available in the literature. However, it is possible to make a more fundamental distinction based on the theories' assumptions about the creative process, as Young himself notes elsewhere (1980). Some take for granted that creativity is natural if not squelched by premature preoccupation with form; others (and these are in the majority) assume that it must be developed systematically, through heuristic procedures which discipline the mind. All share the conviction that the writer can learn to stimulate his or her own imagination.

The "natural creativity" school of invention is founded on the beliefs that all human beings have within them creative energy waiting to be released and that writing is--or should be--essentially a form of self-actualization. Its adherents maintain that good thinking occurs naturally when the writer is freed from inhibitions and constraints and that simple heuristic procedures can trigger the process. The most influential approaches based on this philosophy are D. Gordon Rohman's "pre-writing" and Ken Macrorie's and Peter Elbow's "freewriting."

According to Rohman (1965) pre-writing is the period of groping toward meaning that precedes the actual composing. Its most important principle is discovery: "writers set out in apparent ignorance of what

they are groping for; yet they recognize it when they find it. In a sense they knew all along, but it took some sort of heuristic process to bring it out. When it is 'out', they have discovered their subject; all that is left is the writing of it" (p. 107). Rohman recommends three kinds of activities to help students develop an effective pre-writing capability: (1) the keeping of a journal, (2) the practice of principles derived from religious meditation, and (3) the use of the analogy. Journals provide a means for students to "collect themselves" and to develop the habit of introspection. Meditation gives them, says Rohman, "the experience of insight." It enables them to visualize their subjects in relation to their own lives. Analogies help students to find unusual angles on their topics. Creation, he points out, is the "re-presentation" of what is already known; and viewing the subject in terms of something else is a powerful means of discovering new relationships.

James Moffett, best known for his integrated language arts curriculum (1968a), advocates an heuristic method similar to Rohman's pre-writing in a recently published article entitled "Writing, Inner Speech, and Meditation" (in Moffett, 1981b). Moffett works from the premise that writing (i.e., real "authoring," not mere transcribing or paraphrasing) is "working up a final revision, for an audience and a purpose, of those thought forms that have surfaced to the realm of inner speech" (p. 134). Inner speech, he explains, distills the mind's various streams of consciousness; it is the product of continual rumination. But because its origins are sociohistorical

(cf. Vygotsky, 1962, 1978), inner speech is also a kind of "social hypnosis" which negatively affects the individual's creativity--which springs from a much deeper source. Moffett's approach, then, rests on a paradox: writers need both to develop inner speech (to achieve fluency) and to control it (to achieve depth). The means of control he proposes are various Eastern and Western forms of religious meditation. These include non-verbal techniques of gazing ("rapt absorption in outer object, eyes open") and visualizing ("imagining of inner object, eyes closed") and verbal techniques ranging from witnessing to focusing to suspending inner speech (p. 165). Teaching these procedures to students, Moffett suggests, will prepare them for writing in ways that mere "fiddling with form" can never do.

Rohman's and Moffett's heuristic devices are intended for use as pre-writing activities; how they connect to the actual composing is not entirely clear. Recognizing one's subject is everything, according to Rohman; then "all that is left is the writing of it." His approach is based on two assumptions which recent studies of the composing process, summarized in the previous section, have repeatedly called into question:

- (1) Thinking must be distinguished from writing.
- (2) In terms of cause and effect, thinking precedes writing. (Rohman, 1965, p. 106)

Moffett's position is a step beyond Rohman's: he acknowledges that writing can aid in the discovery of one's own mind. But he also maintains that true control of the mind can only be achieved by

stilling inner speech through meditation. Regarding the transition from thought to word, he asserts that "people who can suspend discourse think and speak better when they turn it back on. . . . Because their will is lined up behind their mind, and their thought is resolved, advanced meditators talk and write with a combination of depth and fluency . . . that demonstrates very convincingly how suspending inner speech benefits it" (Moffett, 1981b, p. 171).

Ken Macrorie and Peter Elbow share Rohman's and Moffett's beliefs about creativity, but they proceed from different assumptions about the relationship of thought and language. In Rohman's and Moffett's view successful writing is the result of deep thinking; the freewriting exercises that Macrorie and Elbow recommend are intended to produce deep thinking.

Macrorie (1968) maintains that originality of expression is a natural endowment frequently lost through years of stultifying school experience. Students learn to "play safe," and as a result their writing becomes increasingly dull. The remedy he prescribes is to practice "writing freely" for ten or twenty or thirty minutes at a time, first without focus and later with focus. The idea is to start writing and keep writing, without stopping to plan or edit: "As you dash off these writings, don't plan ahead. Write. Spill out whatever comes to mind and eye. Put down honestly what you feel and see. A day after you have finished them, read them over aloud and underline those sentences which you think say something alive for a reader. If you find no such sentences, don't despair. Keep writing. If you find

a great many consecutive lively lines, mark a vertical pencil stroke next to them in the margin. Soon you will be writing more and more good lines" (pp. 13-14). The freewriting exercise serves not only to stimulate the production of "good lines" but also to preserve them for future development and refinement. It is easier for a writer to decide on a focus, find an angle, and create a form, Macrorie argues, when he or she has something to work with.

Elbow (1973) goes a step further. In the model of the writing process he presents in Writing Without Teachers (1973), freewriting is not merely an exercise to begin with but a method to be used throughout. He claims that composing rapidly, draft after draft, results in better writing than can be produced by careful planning. "It happens because in those portions of your freewriting that are coherent--in those portions where your mind has somehow gotten into high gear and produced a set of words that grows organically out of a thought or feeling or perception--the integration of meanings is at a finer level than you can achieve by conscious planning or arranging" (p. 8). Elbow names the mysterious processes by which this integration occurs "growing" and "cooking." Growing is the gradual movement out of chaos toward an emerging "center of gravity," a locus of meaning which the writer discovers as the writing progresses. Cooking is interaction--between people, between ideas, between words and ideas, between genres and modes, and so on. Its energy comes from the tension produced by contrasting or conflicting material. Together, Elbow maintains, the processes of growing and cooking

produce insights which the writer never dreamed of having.

Elbow's second book, Writing With Power: Techniques for Mastering the Writing Process (1981), is intended to serve as both gardening manual and recipe book. Larded with advice on getting words on paper and revising, it also considers the important role of audience in an effective writing process. The book explains to the would-be powerful writer how to create the proper conditions for optimum "growing" and "cooking"; how these processes actually work remains a dark mystery, though. Elbow maintains that power in writing derives in part from a kind of "magic." Magic abounds in the language of children, but it is often lost as they learn the pragmatics of social speech. To recover this magic, the writer must find and develop his or her own "real voice" and become adept at "breathing experience into words." To accomplish these goals, the writer (like the child) must pay more attention to what he or she is saying and less to how. The key point of Writing With Power is that virtually any writer can rediscover the capacity to work magic with words by continually "churning out" written language using the freewriting method.

Elbow's approach is based on a positive, almost romantic philosophy--a "believing game," as he calls it--that dignifies every individual's creative potential. Like Rohman's, Moffett's, and Macrorie's, Elbow's view is rooted in the assumption that this "natural creativity" need only be unlocked. Other current theories of invention are based on the opposite assumption--that creativity must be learned, not merely released. In place of freewriting exercises

they provide a variety of heuristic probes and questioning devices designed to bring out all important aspects of a given subject. Some of these methods are applications of modern linguistic theory; others are based on classical rhetoric.

In a sense all theories of invention have their roots in classical rhetoric, which was a standard school discipline until the nineteenth century and which has recently been "rediscovered" after a century-and-a-half hiatus. Among the leaders of the revival is Edward P. J. Corbett, whose Classical Rhetoric for the Modern Student (1965) synthesizes and explains clearly the most important classical sources: Aristotle, Cicero, and Quintilian. It remains the best single source on classical invention for the composition teacher.

In classical rhetoric the act of composing is the result not of inspiration, nor the mere release of natural creative energy, but of invention per se, the systematic discovery of "all of the available means of persuasion." Essential to the process are three steps: (1) formulation of a thesis, (2) selection of a strategy or mode of appeal, and (3) use of a set of "topics" to find and develop an effective line of argument.

Unlike freewriting, which starts in chaos, classical invention begins in control. Corbett explains with a familiar analogy: "the beginning of all good writing is a sharply defined subject. Just as it would be folly to set out by automobile from New York to Los Angeles without a sheaf of road maps in the glove compartment, so it would be futile to start inscribing words on a blank sheet of paper

without having carefully plotted one's direction and destination. This is the first lesson about writing that the student must learn. Until he learns it, he will arrive nowhere" (p. 38). To establish a direction, the writer must cast his or her subject in the form of a thesis statement, a proposition that can be supported with arguments. Then he or she must choose among three basic modes of appeal: (1) the appeal to reason (logos), (2) the appeal to emotion (pathos), and (3) the appeal of his or her personality or character (ethos). This choice is governed by the writer's understanding of his or her intended readers, and it governs in turn the method of argument used to persuade them. The next step is to discover appropriate arguments by using a set of common topics, which serve as heuristic probes. Some of these topics (definition, comparison, cause and effect, etc.) are included in writing handbooks as methods of paragraph development, but their purpose in invention is larger. By providing the writer with a set of standard lines of argument, they enable him or her to see the subject in a variety of ways and to choose from among them the one best suited to the purpose.

Classical rhetoric is limited in that its sole purpose is to aid the writer in discovery of all of the available means of persuasion; it does not take into account the other forms of discourse. It also assumes that the writer has in mind when he or she sits down to write not only a subject but also a position. This, of course, is not always the case. A thesis is sometimes the result of writing, not the cause.

Along with the revival of classical rhetoric as one of the liberal arts has come renewed interest in its traditional detractors, who allege that rhetoric, because it has no moral basis, is nothing more than the art of manipulating audiences by appealing to their emotions. John Mackin (1969), drawing on Plato's anti-rhetoric dialogues Gorgias and Phaedrus, calls for a shift in emphasis away from persuasion toward the Socratic goal of "inclining men and oneself toward higher values by discussion" (p. 41). The fundamental purpose of the Socratic rhetoric he proposes is the pursuit of truth; therefore its primary appeal is to reason. Its essential activity is not argument, but dialogue; and its end is not the transport of audiences by verbal display, but the solution of problems by careful definition.

One of the key elements in the art of Socratic definition is the use of dialectic as a means of testing value premises for soundness. The interplay of ideas that characterizes dialectic also recommend it as an aid to invention. Instead of restricting the writer to a single point of view, dialectic enables him or her to entertain several at the same time--even contradictory ones--and encourages the synthesis of ideas which is essential to creativity. By alternately supporting the opposing sides of an issue, for example, the writer may develop a new understanding of the problem that draws on both perspectives but goes beyond them.

Socratic invention differs from traditional classical invention in two principal ways, then: (1) it shifts the emphasis from

persuasion to problem-solving, and (2) it promotes a dialectical interplay of ideas. These differences significantly broaden the scope of rhetoric; they also help to insure that the writer is engaged in a serious search for truth, not a mere exercise in verbal display.

Besides the revival of classical rhetoric the past several decades have seen the development of a number of new rhetorics, each with its own theory of invention. Of these, three of the most widely discussed and one that is lesser known but unusually promising are reviewed below: Kenneth Burke's dramatistic method, Frank D'Angelo's conceptual theory, Kenneth Pike's tagmemic invention, and Charles Kay Smith's rhetoric of re-perception. All these share with classical invention the assumption that critical thinking is a skill, the learning of which is facilitated by the use of a set of topics or heuristic probes. They also share a conviction that contemporary rhetoric must be flexible enough to accommodate purposes and modes of discourse other than persuasion.

Burke's method is set forth in two key books, A Grammar of Motives (1969a) and A Rhetoric of Motives (1969b). In the former he outlines his famous Pentad, or five key terms of dramatism: Act, Scene, Agent, Agency, Purpose. The purpose of the Pentad is to provide a "grammar" for analyzing human motives in the drama of life. Each of its terms represents a probing question: "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). These questions may be subdivided and interrelated to produce a multiplicity of responses

which reveal all facets of a given situation. In A Rhetoric of Motives Burke shows that rhetoric pervades all aspects of life and all modes of discourse. To its traditional purpose of persuasion Burke adds the motive of identification: "All told, persuasion ranges from the bluntest quest of advantage, as in sales promotion or propaganda, through courtship, social etiquette, education, and the sermon, to a 'pure' form that delights in the process of appeal for itself alone, without ulterior purpose. And identification ranges from the politician who, addressing an audience of farmers, says, 'I was a farm boy myself', through the mysteries of social status, to the mystic's devout identification with the source of all being" (p. xiv). Taken together, Burke's Pentad and his concept of identification provide a thoroughgoing, reliable system for analyzing human behavior, which, after all, is the writer's main business.

Burke's theory of motivation, while not a method of invention per se, has several useful features for writers. First, it is adaptable to a wide range of composing tasks, from simple narrative to literary criticism. Second, it readily elicits a variety of information about the subject under examination, virtually guaranteeing the writer something to say. Another asset is versatility: Burke's probes can be as basic as the journalist's discovery procedure (who? what? where? when? why? and how?) and as complicated as the writer is willing to make them. Given these advantages, it is surprising that Burke's dramatistic method has not made a greater impact on composition instruction.

Frank D'Angelo's conceptual approach, which has exerted considerable influence on the teaching of writing (at least at the college level), is derived and developed in a slim volume entitled A Conceptual Theory of Rhetoric (1975). D'Angelo's theory is an imaginative synthesis which draws together the concepts of traditional rhetoric and the principles of modern psychology and linguistics. The system of invention he outlines in the book is eclectic: it includes a hierarchical arrangement of the classical topics (under the headings "static," "progressive," and "repetitive") plus a number of "non-logical" topics such as imagining, symbolizing, and free association. D'Angelo's aim is to integrate logic and intuition in a single heuristic which accounts for both types of mental processes.

Another important feature of D'Angelo's theory--and a significant departure from classical rhetoric--is that it interconnects all elements of the rhetorical process. The patterns of thought encompassed by his system of invention also serve as patterns of arrangement and style. Enumeration, for example, a "static logical topic," is also a "static logical pattern of arrangement" and a "static logical element of style" with several sub-elements. In other words, the structures of discourse and even the structures of individual sentences are related in fundamental ways to the mental structures activated by the topics of invention. In D'Angelo's view the process of invention informs the entire composing process, which is "holistic and organic" but also "a movement from an undifferentiated whole to a differentiated whole" which "repeats in

microcosm larger evolutionary processes" (p. vi).

While Burke's and D'Angelo's methods are essentially extensions of classical rhetoric, Kenneth Pike's tagmemic theory is a conscious departure from it, with a different basic purpose. Classical invention stresses confirmation of present beliefs; tagmemic invention, the imaginative discovery of new facts and relationships (Young and Becker, 1975). Consequently, they use fundamentally different heuristic procedures. Classical rhetoric provides "a taxonomy of effective rhetorical arguments which a speaker can use to attain specific ends with specific audiences" (p. 132). Tagmemic invention, on the other hand, provides "an epistemological heuristic, a method based on assumptions about how we come to know something" (pp. 131-132), and one which gives the writer conscious control of the creative process at a much earlier stage.

Tagmemics, which is a branch of linguistics concerned with describing grammatical structures larger than the sentence, contributes two key principles to this heuristic. One is that knowledge of something is dependent on observing three aspects of its existence: (1) its contrastive features (how it differs from everything else), (2) its variations (how much it can change and still be itself), and (3) its distribution (how it fits into larger systems of which it is a part). The other key precept is that anything (whether concrete or abstract) can be viewed from three perspectives: (1) as a particle (a discrete entity), (2) as a wave (a process), and (3) as a field (a system). Assembled in a grid with three rows and

three columns, these two sets of items produce an heuristic framework with nine leading questions, each of which probes a different aspect of the subject (Winterowd, 1975, p. 124).

The framework's nine questions constitute a comprehensive and highly productive set of topics. Applied rigorously to any subject matter or issue, they provide a wealth of information, a wide range of perspectives, and abundant new insights, at the same time honing the writer's critical thinking skills. Flexibility is another strength of the method. It can be used with equal effectiveness to examine an oak tree, interpret an event, or analyze a poem. The heuristic procedure is derived, explained, and demonstrated in Young, Becker, and Pike's Rhetoric: Discovery and Change (1970). A "revised tagmemic heuristic" which reduces the original from nine "cells" to six and uses simpler terminology is presented by Charles W. Kneupper (1980).

Charles Kay Smith's rhetoric of reperception, elaborated in Styles and Structures: Alternative Approaches to College Writing (1974), is less a systematic discovery procedure than an acquired habit of mind. "The premise of this book," Smith writes, "is that patterns of writing enact patterns of thinking, that by finding and practicing different ways of writing we can literally think different things" (p. ix). Different is the operative word in this premise, for Smith's goal is to teach student writers to view experience unconventionally, to re-perceive it from unaccustomed perspectives, unobstructed by outmoded definitions, assumptions, and criteria. In short, his aim is to teach them to think creatively.

Smith lists five key cognitive skills possessed by effective thinkers and writers:

- (1) the ability to adapt alternative descriptive and narrative techniques to different subjects and audiences;
- (2) the ability to use definitions as writing structures and tools of intellectual inquiry;
- (3) the ability to find assumptions underlying opinions in order to discover relationships and organize writing;
- (4) the ability to question conventions and generate new ideas in writing;
- (5) the ability to judge the significance of new ideas according to alternative sets of criteria. (p. ix)

Acquiring these skills enables the writer to execute mental operations which are in themselves heuristic probes. For example, performing a series of transformations on a piece of conventional wisdom may yield new--even contrary--ideas. Similarly, in the process of defining a key term, the writer may discover fresh insights about his or her subject.

An important feature of Smith's rhetoric of reperception is that it is rich in alternatives. A writer may bring to bear on a problem all five of the critical thinking skills or only one. Indeed, the skills themselves each represent a range of possibilities. Instead of prescribing a single method of definition, for example, Smith outlines several among which the writer may choose the most useful in any particular situation. Styles and Structures is larded with exercises and suggestions for stimulating creative thinking, but it contains no rigid procedures or required sequences. Unlike Burke's, D'Angelo's,

and Pike's heuristic methods, Smith's is based on an open-ended set of topics.

The literature reviewed in this section clearly shows that there is no shortage of well-wrought contemporary invention theory. Some methods rely on intuition and the writer's natural creativity; others depend on systematic problem-solving procedures. All offer flexible heuristic strategies designed to stimulate imagination and insight and to facilitate inquiry and discovery. There are, of course, in addition to these methods, a great many other promising approaches which are based on or related to one or more of the major theories (e.g., Autrey, 1982; Flower and Hayes, 1977; Johannessen, Kahn, and Walter, 1982; Larson, 1975; Lauer, 1980; Maimon et al., 1981; Moffett, 1981a). To review them all here would be impractical if not impossible. It suffices to say that the literature on the art of rhetorical invention is at present exceedingly rich in alternatives.

Previous Studies of Classroom Instruction in Invention Strategies

Unfortunately, none of the host of contemporary theories of invention has yet been adequately tested by appropriate classroom research. Testimonials by writing teachers (most at the college level) exist in great numbers, but systematic investigation of the effects of instruction in heuristics is limited to a handful of experimental studies which, taken together, give strong support for

some kind of instruction in invention but no clear indication of what that instruction should include.

The earliest major study of an heuristic procedure in classroom use is D. Gordon Rohman and Albert O. Wlecke's Pre-Writing: The Construction and Application of Models for Concept Formation in Writing (1964), which describes an experimental college writing program based on the pre-writing method. Course instructors used the journal, the meditation, and the analogy to teach their students the "rhetoric of the mind" (instead of the more conventional "rhetoric of the word"). The investigators employed a variety of measures to evaluate the course in comparison with control sections: student critiques, instructor critiques, blind scoring of writing samples, and subjective evaluation of sets of papers from experimental and control groups. The results give broad support to the pre-writing approach. Student and teacher comments were largely positive. Even more important, product ratings yielded statistically significant differences (in favor of the experimental group) in writing quality. Analysis revealed the nature of the differences: papers from the pre-writing sections were more original and imaginative (i.e., they showed more involvement on the part of the writer) than those from the control group.

Kenneth Pike's tagmemic discovery procedure, the most frequently tested invention theory, has been the focus of several experimental studies, all of which have yielded equivocal results. Lee Odell (1974), summarizing research undertaken for his doctoral dissertation,

gives tentative support for use of the tagmemic heuristic. He predicted that the posttest essays of college freshmen to whom he taught the procedure would reveal (1) greater use of the operations contained in the heuristic, (2) fewer conceptual gaps, and (3) increased problem-solving skill. The second hypothesis was not confirmed; the first and third were, but only in part. The students did use tagmemic operations more often than in their pretest essays, but they did not use more of them. Their final papers did provide more supporting evidence for assertions, but, contrary to expectations, these essays did not contain fewer questionable statements or omissions.

Odell's findings are generally consistent with those reported in a more systematic study carried out by Richard E. Young and Frank M. Koen (1973), who used a series of tests to assess the effects of instruction in the tagmemic discovery procedure on twelve college seniors (all of whom were engineering majors). Quantitative data did not support the hypothesis that students trained in the use of the heuristic would be able to identify problems in their environment more efficiently and in greater numbers. Qualitative measures, on the other hand, did show significant improvement in the students' ability to state and analyze problems, test hypotheses for adequacy, and marshal persuasive evidence. The papers they wrote at the end of the experimental course were longer, more complex, and more understandable. Young and Koen were unable to establish that these improvements resulted directly from training in Pike's heuristic

procedure, but their study does provide substantial justification for the use of a problem-solving approach.

A wholly different set of problem-solving strategies was the focus of Carol Matheson's (1980) study, which involved two groups of seventh-grade students. The experimental group was taught a systematic tree-diagramming heuristic for descriptive writing, while the control group studied models of description by established writers. Holistic and analytical scoring revealed that the posttest essays produced by the treatment group were significantly better in all regards (except organization, in the case of below-average students) than those written by the control students. Matheson also found that students in the experimental group developed more positive attitudes toward writing than their control counterparts. The results, she concludes, are a clear indication of the benefits of teaching writing as a problem-solving process.

Two fairly recent comparative studies which sought to determine the relative effectiveness of systematic problem-solving heuristics and freewriting exercises reached nearly opposite conclusions. Nancyanne Rabianski (1980), whose investigation focused on tenth graders, found the tagmemic heuristic a superior means of producing ideas for writing, particularly for students with a low conceptual level, who reported that freewriting was "too confusing." Contrary to expectations, freewriting did not prove more useful for students at a high conceptual level, either. Rabianski's study, like Odell's, Young and Koen's, and Matheson's, lends support to the position that

students should be taught systematic rhetorical invention strategies.

Thomas Lee Hilgers' (1980) research on college composition students contradicts this minor trend. Half of the subjects in his study were trained in heuristics based on communications-awareness and problem-solving theory; the others practiced Elbow's freewriting technique. Posttest essays from both groups were rated holistically and analytically by paid independent readers. The results indicated that the freewriting students were the more effective writers. Student surveys revealed a higher rate of compliance with the freewriting method than with the problem-solving approach and no significant difference in confidence level between the two groups. These findings suggest a provocative question: "Is reason, for the writer, less potent than intuition?" (p. 305). It is clear, Hilgers concludes, that freewriting deserves more serious consideration from researchers than it has been given previously.

The same may be said of most other leading invention theories. None has yet been adequately tested in the classroom; a number have yet to be tested at all. Which types of strategies work best, for whom, and under what conditions are important concerns for students and teachers, but research has barely begun to answer them--especially at the secondary level.

In a sense these questions are premature. In seeking to establish the adequacy or superiority of particular methods of invention, the investigators cited above have left aside more fundamental problems concerning the effects of heuristics instruction

on the student's writing process. Invention is, of course, a feature of the process, yet most previous studies of invention instruction have relied primarily on analysis of final products. These studies report significant improvements in what students trained in heuristics compose, but they fail to take note of what changes occur in how they compose.

Susan Monroe Nugent's (1980) investigation, a comparative analysis of Odell's tagmemic heuristic and Rohman and Wlecke's pre-writing method, is a noteworthy exception. Unlike previous experimental studies, Nugent's included, in addition to the usual pretest and posttest essays, analysis of participants' writing protocols. Through these protocols Nugent was able to examine the writing processes of her college-age subjects and thus gain a better understanding of their writing than she could have developed from product analysis alone. The results of her study were mixed. In general, students who learned the Odell heuristic showed greater improvement in writing quality than those who learned the Rohman-and-Wlecke method. Both groups showed increases in the frequency of cognitive processes while writing, but for different reasons: the pre-writing method activated a greater number of cognitive processes, but the tagmemic heuristic activated them more efficiently. Thus neither approach demonstrated absolute superiority.

Nugent's findings reflect the inconclusiveness of all previous studies of teaching invention and suggest that the appropriate direction for further research, at least for the present, is not

toward determining which of the principal invention theories is best but toward understanding how invention strategies of all sorts affect the writing processes of individual students. The primary purpose of the present study is to move significantly in this new direction.

Implications for the Present Study

The studies reviewed in the first part of this chapter reveal the contributions of current theory and recent research to our understanding of the composing process. Unlike the authors of conventional writing textbooks, who assume that writing is essentially transcription of fully developed ideas onto paper, contemporary theorists such as Donald Murray and Frank Smith describe composing as a complex, recursive, meaning-making process based on interaction of thought and language. Research studies of student writers such as Janet Emig's pioneering investigation of twelfth graders, Sondra Perl's work on basic writers, and Linda Flower and John Hayes' inquiry into the problem-solving aspects of writing substantiate the theorists' process view and make clear the inadequacy of traditional school writing programs. The evidence supports the emerging process-centered paradigm of writing instruction and suggests an approach based on inquiry and invention rather than mere acquisition of skills. Recent studies of the composing process thus provide a rationale for the present research project: they demonstrate the need for writing instruction which attends to the creative aspects of

composing and suggest that the teaching of flexible heuristic strategies could enhance students' creative abilities.

The survey of contemporary invention theory which comprises the second part of this chapter attests to the variety of heuristic techniques currently available in the literature. To recapitulate briefly, the leading theories fall into two main categories: those which assume creativity is natural and those which assume that it is learned systematically. Pre-writing and freewriting, both of which aim to release the writer's creative potential, belong to the former category. Pre-writing uses the journal, religious meditation, and the analogy to spur the thinking process, whereas freewriting relies on the writing itself. The second category can be divided into two groups: recent revivals of classical invention and new rhetorics based on modern language theory. Neo-classical invention includes both use of the traditional topics to discover "all of the available means of persuasion" and the dialectical approach inspired by Socrates' anti-rhetoric. The new rhetorics include Burke's dramatistic method, with its Pentad of terms for analyzing human motivation; D'Angelo's conceptual theory, with its integration of logical and non-logical topics; tagmemic invention, with its multiplicity of viewpoints on a given subject; and Smith's rhetoric of reperception, with its emphasis on developing new ideas with definitions, assumptions, and criteria. This vast array of heuristic methods supplies the substance of the present inquiry: all of the strategies used in this study are derived from these leading invention theories.

The findings of the few previous studies of instruction in heuristics, summarized in the third section of this chapter, indicate how little we presently know about the effectiveness of the various invention strategies. Taken together, these studies suggest that teaching heuristics improves students' writing, though there is conflicting evidence as to which approaches are most useful. Intent primarily on establishing the adequacy or superiority of particular methods of invention, previous researchers have relied almost exclusively on experimental designs and product analysis. They have generally left aside important questions concerning the effects of instruction in rhetorical invention on students' writing processes. To begin to answer these difficult questions is the aim of the present investigation.

Leading authorities on writing research have called for more in-depth investigation of the various aspects of the writing process and the ways in which they are taught and learned (Cooper and Odell, 1978; Graves, 1981). As the foregoing survey of the literature indicates, process studies of invention and invention instruction are especially needed. The project described in this report is a tentative first step; many more strides will be required to establish the proper role of heuristics instruction in secondary-level composition courses.

C H A P T E R I I I

DESIGN OF THE STUDY

This study was designed to examine the effects of instruction in rhetorical invention strategies on the writing processes of ninth graders. Forty-six students in a regional junior high school in western New England participated in the research, which took place during the second quarter of the 1982-1983 school year. The students were taught a series of relatively simple heuristic procedures as part of a ten-week writing workshop (the second half of their required ninth-grade composition course). A variety of data sources was used to determine the impact of this instruction on their composing processes: questionnaires administered before and after instruction, field observation of the students at work, and individual writing portfolios (which contained notes and rough drafts as well as completed compositions). In addition, ten students selected at random for in-depth case studies engaged in a series of audiotaped background interviews and oral-composing sessions. Since the purpose of the study is primarily to describe the effects of instruction in invention, the data obtained from these sources are treated qualitatively in this report.

The descriptive approach taken by this inquiry is unprecedented in research on the effects of instruction in heuristics. Previous investigations, all having experimental or quasi-experimental designs, have relied primarily on quantitative analyses of data on written

products (see pp. 40-46). Such methods have little place in a study of students' writing processes. However, some of the techniques employed by these studies to assess students' attitudes and evaluate their compositions seemed to have considerable descriptive potential and were consequently adapted for use in the present research project. The data-collection and data-analysis procedures which treated the participants as a group were based in part on the work of other heuristics-instruction investigators.

The case-study aspects of the research design were derived in part from methods established by recent composing-process research. Investigators such as Emig (1971), Graves (1975), Pianko (1979), Perl (1979), and Hayes and Flower (1980b) have demonstrated the usefulness of the case-study approach in examining how students write, and leading authorities in the field have called for additional research of this type (see Cooper and Odell, 1978). The interviewing and oral-composing procedures developed for previous studies seemed particularly applicable to research on invention; hence similar methods were used in this study to obtain a variety of data from the ten students selected for in-depth analysis.

In a recent review of the literature on children's writing, Donald Graves (1981) states the need for research on composing which considers the full context of the writing act--the classroom, school, and home environments that exist at all stages of the process. He maintains that experimental studies which attempt to eliminate these "variables" have little significance for real-life teachers and

students. Graves' comments echo Elliot G. Mishler (1979), who argues that educational research which fails to consider context is essentially meaningless. The importance of context in a study of rhetorical invention is obvious: because it is impossible to see the mind, the creative act can be understood only through examination of its context.

To explore the contexts in which its ninth-grade participants learned and applied invention strategies, this study employed interview and participant-observation techniques similar to those used by ethnographers and other social researchers (see Agar, 1980; Lofland, 1971; Spradley, 1979, 1980). Application of these methods in educational research has increased significantly in the past several years (Wilson, 1977), and their appropriateness for studies of reading and writing has recently been asserted (Kantor, Kirby, and Goetz, 1981). These techniques were useful for examining the classroom contexts of the ninth graders' invention and for gathering background information to illuminate their creative processes.

To use a wide range of research methods in a single study is, of course, to complicate the collection and analysis of data. My aim in doing so was to develop a variety of data sources which would balance and check each other. As indicated in the plan of analysis outlined in the final section of this chapter, results obtained from the whole group of participants provide perspective on the data from the ten case studies which form the core of the research, and evaluations of documentary evidence by paid independent readers serve as a check on

my own observations of the students' work. Thus none of the project's major conclusions is based on a single set of results.

Assumptions and Research Questions

The design of this study was determined in part by several key assumptions about writing and teaching writing. These assumptions are rooted partly in theory and research and partly in my eleven years' experience teaching English to ninth graders.

The first has to do with the practical aspects of teaching invention at the secondary level. Given the manifold demands already placed upon English teachers and their students, it would be unrealistic to assume that complicated heuristic procedures which took a great deal of time to learn and apply would ever receive much serious consideration from either group. To study their effects on students' writing processes would therefore be of little value. Some of the methods that were tested in previous studies took several months to teach, but each of the strategies used in this investigation is simple enough to introduce in just a few days.

A second major assumption relates to the conclusion of composing researchers such as Perl (1979) and Hayes and Flower (1980c) that the writing process is recursive, not linear. Writers do not simply think, then compose, then revise. The process is much more tortuous and untidy: disharmony in what has been composed stimulates revision, and revision often enacts new patterns of thinking (Murray, 1978).

And so it goes. The writer "senses forward" by "reaching back" (Perl, 1979). In order to be useful, then, an invention strategy must be more than a prewriting activity. It must be flexible enough to be employed at any stage of the process (cf. Lauer, 1979). All of the methods used in this study are that flexible.

The third assumption has two parts: (1) that the art of invention can be taught as a part of the writing process; (2) that it must be learned through individual practice. This study accepts what others have tentatively shown--that it is possible and desirable to teach students how to use simple heuristic procedures. Young writers need not be left to discover them on their own. On the other hand, it assumes that students will learn to apply these strategies only if they practice them on actual writing problems. The skills of invention cannot be developed in isolated exercises. The design of the investigation reflected these assumptions: heuristics were introduced to each class as a whole, but the students learned (or did not learn) to apply them individually as the need arose in their writing for the composition course.

Finally, this study assumes that the dichotomy which exists in the invention literature between theories that rely on natural creativity and those that are based on systematic heuristics presents, in reality, a false dilemma. Teachers and writers need not adopt one or the other of these positions, for both shed light on the creative process. It is certainly true that most human beings, like "mute inglorious Miltons," have abundant untapped creative potential. It is

also reasonable to assume that this potential is enhanced by a working knowledge of systematic discovery procedures. Opposing invention theories are thus actually complementary. Different methods serve better at different times (cf. Young, 1980). Students should be--and were, in this study--taught both types of rhetorical invention.

Though not designed specifically to examine these assumptions, this inquiry provided ample opportunity to evaluate them informally. Its primary purpose, however, was to explore various aspects of "The Research Problem" described in Chapter I (pp. 6-8). The following research questions served to focus the issues raised there and to establish a point of departure for the study. Other questions which emerged during the course of the investigation are discussed in the presentation of results.

(1) Do ninth-grade students have invention strategies of their own, or do they depend on inspiration--and, when inspiration fails, on the suggestions of others--to generate ideas for writing? Answering this basic question is no simple matter. Some students are unable to articulate clearly what they actually do when they write. Too, it is sometimes difficult to distinguish elaborate writing rituals from genuine heuristics. If students do, in fact, employ real invention strategies, a number of related questions arise: How did they learn these techniques? When do they use them? How effective are they?

(2) Does instruction in rhetorical invention affect the ways ninth-grade students compose? This question is the central problem of this investigation. Taken together, previous studies suggest that

teaching heuristics can improve students' written products, but the changes it makes in their writing processes have yet to be explored. Of particular interest are its effects on fluency: Do students trained in invention have more to say on a wider variety of subjects? Are they less likely to become blocked? If the answers to these questions are affirmative, other problems emerge: Can students make use of the materials they produce with heuristics? Can they select their most promising ideas? Can they arrange and develop these ideas in their compositions?

(3) Do ninth-grade students' attitudes toward writing change as they learn new heuristic strategies? This question is closely related to the previous one and just as important. Students' attitudes affect their abilities in writing as in all other areas. Two specific points can be raised about ninth graders learning the art of invention: Do they become more confident of having something worthwhile to say? Do they become more willing to treat the act of writing as a process?

(4) Do ninth-grade students' uses of heuristics vary from individual to individual and from one writing situation to another? This complex question is undoubtedly the most difficult to answer. If there are substantial differences among students' preferences of and results with heuristics, their causes need to be explored: Do these differences correlate with achievement groupings, or do they cut across ability levels? What other factors might be at work? Similar questions may be asked about individuals' varying uses of heuristics: Is the writer's mood the only consideration, or do the audience and

purpose for writing also play a role? Which factors seem to be most important?

The assumptions and research questions stated above serve not only to indicate the starting point of the present inquiry, but also to identify my own predispositions. Like previous researchers, I have proceeded from the belief that instruction in rhetorical invention can benefit student writers. Unlike most other investigators, though, I have no special interest in establishing the adequacy or superiority of a particular method of invention. And while earlier studies have sought to show changes in their subjects' written products, this one's purpose is to describe the effects on the students' writing processes.

Participants

Forty-six ninth-grade students at a public regional junior high school in western New England participated in this study. The school, which has a total enrollment of nine hundred in grades seven, eight, and nine, draws its student body from the university town in which it is located and three contiguous rural communities. Though the region is predominantly white and middle-class, it includes a significant multi-cultural population, due mainly to the presence of a large academic community. The local schools naturally reflect the diversity and academic orientation of the area. Most of the classes include students who represent a variety of ethnic and cultural backgrounds, and a substantial majority of the system's graduates go on to college.

Students in this junior high school are grouped for instruction (by teacher recommendation, subject to parent approval) into three achievement levels: basic, standard, and advanced. Placement in a particular level is made on the basis of past performance, skill level, work habits, and standardized test scores. An additional factor used to determine placement in ninth-grade English is a writing sample administered at the end of the eighth grade.

In order to include in this investigation participants with a wide range of writing abilities, I selected one class each from the basic, standard, and advanced levels to take part. The three classes, which were all taught by the same teacher, were in the second half of a required semester of composition at the time of the study (the second quarter of the 1982-1983 school year). Most of the students in the three classes--nine of fourteen in the basic group, seventeen of eighteen in the standard group, and twenty-one of twenty-two in the advanced group--agreed to participate in the research. One standard-level student who failed to secure parental permission had to be dropped from the study, leaving a total of forty-six.

I did not have access to the participants' standardized test results, but I did have the opportunity to examine their scores on the previous year's eighth-grade writing sample, a composition which had been rated holistically on a scale of 2 to 8, with 4 being the "passing" score and 5 the median. The mean scores of the students in the three groups were as follows: for the basic class, 4.1 (n=8); for the standard class, 4.6 (n=14); and for the advanced class, 6.7

(n=20). These scores indicate that by local standards the students in the basic- and standard-level classes were, on the average, slightly below grade level in writing skills, while the advanced-level students were somewhat above. The classes were not homogeneous, however; the forty-six students who participated in the study ran the whole gamut of writing abilities.

Ten of the forty-six were selected for in-depth case studies through a series of random drawings, which were conducted as follows. First, approximately one-fifth of the participants in each class (two in the basic class, three in the standard, and four in the advanced) were chosen by lot. Then, to insure adequate minority representation in the case studies, a tenth name was drawn from a pool of the non-white participants. Finally, when one of the students chosen initially declined to be the subject of a case study, an additional lottery was held to determine a replacement. The results of the selection process are summarized in Table 1 (see p. 58). The ten case-study students were asked to provide background information about their writing experiences, to describe in detail their writing processes (before, during, and after instruction in invention), and to compose (in most cases once) with a tape recorder running, verbalizing as many of their thoughts as they could.

The teacher of the three classes, a twelve-year veteran who had recently received a "merit" award from his school board, served as a key informant and research-team member (cf. Wallat et al., 1981). Though he had had relatively little previous exposure to invention

theory, he had expressed considerable interest in cooperating with this research project. He continued in his role of teacher of the three classes throughout the study, though he and I did work jointly to plan some instructional protocols and other class activities.

Table 1
Selected Characteristics of the Ten Students Chosen
for Individual Case Studies

Level	N	Male	Female	White	Non-White
Basic	2	1	1	2	0
Standard	4	2	2	3*	1
Advanced	4	2	2	3	1
Totals	10	5	5	8	2

*One of these students, a South American, was a native speaker of Spanish with a relatively good command of oral and written English.

Instructional Methods and Materials

While not its primary focus, the teaching methods used to instruct the participants in rhetorical invention strategies were nevertheless an important element of this investigation. The pedagogical plan which was followed in the study was designed in accordance with the four key assumptions stated earlier: (1) that heuristic strategies taught to secondary students should be simple, (2) that they should be useful at any stage of the writing process,

(3) that they should be learned in practice on actual writing problems, and (4) that they should include a variety of techniques, incorporating both systematic and unsystematic methods.

Another basic goal of the study's instructional plan was to disrupt the normal progress of the required composition course as little as possible. Thus, apart from the introduction of invention strategies, the course followed in most respects a conventional ninth-grade writing curriculum. Using a standard textbook (Levy and Tibbetts, 1972) as a guide, the students wrote weekly essays on topics of their own choice in the traditional rhetorical modes: definition, classification, comparison/contrast, cause and effect. The classes were generally conducted informally. They were organized into a workshop format which permitted the students to share their writing with their peers and to consult with the teacher while their work was in progress.

Instruction in invention was divided into two phases. It began with an approximately three-week introduction during which the teacher explained the uses of heuristics and demonstrated the eight heuristic methods included in the study (see below). The purpose of this large-group phase of instruction was to expose the participants to the whole range of invention strategies. The students were asked to experiment with all of the techniques, but they were not expected to master them at this point.

Much of the teaching of heuristic procedures was done individually during the second phase of instruction, which lasted

about four weeks. Throughout this period the participants were engaged in the classroom writing workshop described above. As the students encountered invention problems in their writing (primarily when getting started, but at later stages of the process as well), the teacher and I (in my assumed role of classroom aide) helped them to identify and apply suitable heuristic strategies. Students were encouraged to try as many of the techniques as possible; they were not required to use them all, however.

The vehicle for teaching invention strategies was a twenty-page booklet I prepared for the study entitled "Getting Started: A Handbook of Invention Strategies for Student Writers" (see Appendix A). Like the chapter on heuristics in a recent college writing textbook (Maimon et al., 1981, Chapter 2), it was designed to present briefly, in elemental form, a number of discovery procedures based on the leading invention theories. However, since it was not the purpose of this study to place these theories in competition with each other, I made no attempt to present their heuristics in "pure" form. I adapted and combined them to produce invention strategies which were--in my judgment--appropriate for ninth graders.

The booklet includes eight different heuristic strategies. Two are based on the theoretical position that creativity is natural and needs only be released: freewriting (cf. Macrorie, 1968; Elbow, 1973, 1981) and visualizing a subject through meditation (cf. Rohman and Wlecke, 1964; Moffett, 1981b). Two others are sets of topics designed to probe all aspects of a subject. One is based on the dramatistic

method (Burke, 1969a, 1978) and one on the revised tagmemic heuristic procedure (Kneupper, 1980). The fifth invention strategy, definition, draws on both classical rhetoric (Corbett, 1965) and Smith's (1974) rhetoric of reperception (see also Johannessen, Kahn, and Walter, 1982). The sixth, the use of analogy, is based on many sources, but especially Rohman and Wlecke (1964). The seventh, dialectic, is similarly eclectic. Rooted, of course, in Socratic dialogue (Mackin, 1969), it also draws ideas from Smith (1974) and Elbow (1973, 1981). The final heuristic strategy is not an invention theory per se: the use of tree diagrams and other graphic techniques for exploring the relationships among the various aspects of a subject. This strategy was included in anticipation of some students' having difficulty organizing the material they produced with the other heuristic procedures. This use of graphic representations (which serve, in effect, as two-dimensional alternatives to the linear formal outline) has been suggested by Autrey (1982), Flower and Hayes (1977), Maimon et al. (1981), and others.

A draft version of the invention strategies booklet was tested informally with two ninth-grade classes (neither of which was involved in the final research) in a two-week pilot study which I conducted with the help of a colleague. The results of this trial, including the comments of the student participants, indicated that the format and content of the handbook were appropriate for ninth graders. Student and teacher reactions also suggested the need for additional explanation and illustration of some of the strategies. These and

other necessary revisions were completed before the booklet was used in the main study.

Instruments and Procedures

This investigation utilized a number of data sources, including five different research instruments. Two of these were open-ended questionnaires administered to all participants in the study (one at the beginning and one at the end). The other instruments were informal interview schedules used in developing case studies. I conducted three interviews with each of the ten case-study students. The first and last followed up on the questionnaire results; the second served as a mid-study checkpoint. All five instruments were designed to provide information on the participants' writing processes and their attitudes toward writing. These data were intended to complement those obtained through observation of the students at work and analysis of their written products.

The questionnaires were developed in accordance with the recommendations of A. N. Oppenheim (1966). Both asked students to express their feelings about writing and about themselves as writers (giving reasons to the extent possible). Each also contained several items intended to aid students in articulating their own writing processes, with particular attention to their knowledge and use of rhetorical invention strategies. The first questionnaire sought to determine what strategies students had used before instruction in

heuristics. The second was designed to measure what changes (if any) had occurred in the students' writing processes as a result of the training. It also recorded the students' reactions to the various heuristic procedures they had learned. All of the questions were open-ended; the participants were encouraged to develop their answers in detail.

The interview schedules, which drew on the techniques of ethnographers Agar (1980) and Spradley (1979) as well as sociologist Oppenheim (1966), served to establish the direction and insure the consistency of the ten interviews conducted at each of three stages in the study. The first set followed the administration of the initial questionnaire. In these interviews I sought to achieve an in-depth understanding of the students' composing habits and to learn how (when, where, under whose influence, etc.) their writing processes had developed. The second set took place after the first phase of instruction in heuristic methods and focused on the students' reactions to using these techniques. The final set of interviews, which was conducted at the conclusion of the study, was designed to assess the extent to which the participants had integrated invention strategies into their writing processes. All of the interviews were conducted informally, more as structured conversations than question-and-answer sessions. The schedules served as guides rather than rigid agendas.

Because these instruments were used in part to investigate issues raised during the course of the study, their final form was not

determined until the research was in progress. Indeed, some of the most interesting items on the two questionnaires and three interview schedules were suggested by observation of the participants in the act of writing. All five instruments employed in the inquiry are included in Appendix B.

The study relied on three other main sources of data: (1) field notes based on my daily observations of the participants at work on writing tasks, (2) written products collected in their cumulative composition folders, and (3) transcripts of the case-study students' oral-composing tapes.

Serving, in effect, as a classroom aide, I had ready access to individual students in the act of composing, particularly as they confronted problems or blocks. But though I sometimes assisted in teaching the students strategies for tackling their writing assignments, my principal activity was learning from them their approaches and methods and reactions to the work. I assumed, as suggested by Agar (1980) and others, the role of a student, child, or apprentice. Field notes made from this perspective included brief descriptions of students' independent writing behaviors as well as explanations of the classroom context and a partial record of the participants' interactions with each other, with the teacher, and with me.

Students' folders included, in sequence, all of the writing they did for the composition course: notes, jottings, rough drafts, outlines, and completed papers. These were available for examination

throughout the study; in order to gauge each participant's progress, I reviewed and abstracted the contents of his or her folder after the completion of each writing assignment. I retained all the folders at the conclusion of the study for later analysis and comparison.

The case-study students provided an in-depth view of their writing processes by participating in individual oral-composing sessions. In these sessions the students were asked to "think aloud" as they worked in a room alone on various assigned writing tasks. Their verbalized "thoughts" were recorded on audiotape and later transcribed and compared with their written products. All but one of the case-study subjects (a foreign student whose pronunciation was difficult to interpret solely from a tape) completed oral-composing protocols--one each, except for one of the basic-level students, who completed two.

The exact procedures for collecting the data varied somewhat from class to class. To a certain extent they were determined by the kinds of relationships I developed with the three groups of participants and by the progress they made in learning and applying rhetorical invention strategies. However, the sequence of major events, set forth in the following timetable, was essentially the same in all three classes.

The introductory stage of the investigation lasted about two weeks. During this period I explained to the participants the purposes and procedures of the research, and the teacher established a number of guidelines for the students to observe for the duration of

the study. Chief among these was the rule that they preserve--in order, in their folders--all of their written work. The students then prepared an initial writing assignment, a paper on any subject of their choice addressed to an audience their own age, which served as a pre-instruction sample of their writing processes. They also completed the first questionnaire (described above) at this time, and the first round of interviews with the case-study students immediately followed. These papers, questionnaires, and interviews, together with my own initial observations, provided a variety of base-line data on the students' use of invention strategies.

The second stage of the inquiry, which included the first phase of instruction in rhetorical invention (see "Instructional Methods and Materials" above), occupied approximately three weeks. As the teacher introduced the various invention strategies, I noted and described, to the extent possible, the students' initial oral and written responses. At the conclusion of this phase of instruction I conducted a second full round of in-depth interviews with the ten case-study students. I had intended originally to begin the oral-composing sessions at this stage as well, but classroom time constraints prevented it. Even so, the data gathered during this part of the study documented to a considerable extent the immediate effects of teaching invention on students' composing processes and their attitudes toward writing.

The next stage of the research was the longest and in some ways the most important. Taking about four weeks of class time, it coincided with the second phase of instruction in heuristics. During

this period, the teacher (with some assistance from me) instructed students individually in the use of invention strategies as they worked in class on their essay assignments. At this point my daily classroom observations focused on the participants' application of the strategies to actual writing tasks. Another perspective on this complex problem was provided by the taped oral-composing sessions, seven of which took place during the third part of the study. Taken together with the students' written products, these data provided a good deal of information on the short-term impact of instruction in heuristics on the ways ninth graders write.

The final stage of the research, which consumed the remaining week of the term plus a few additional days, was devoted to a number of concluding activities. Students prepared a final piece of writing (intended, like the first one, for an audience of their peers) that served as a post-instruction sample of their writing processes. They also completed the second open-ended questionnaire. Three case-study students participated in oral-composing sessions, and all ten submitted to a final round of interviews. These sources supplied a rich variety of data which can be contrasted with those obtained at the beginning of the study to reveal a number of key effects of instruction in rhetorical invention strategies. Not least important, the final stage of the study allowed for informal discussion of the project among students, teacher, and investigator. This exchange provided me some interesting perspectives from which to interpret the results.

Data Analysis

In qualitative research studies, the processes of data collection and analysis usually go on simultaneously. The methods of analysis are frequently suggested by the data themselves. Preliminary analysis suggests, in turn, directions for additional data collection. At the heart of this approach is the process of inductive reasoning. Emerging patterns in the data provide categories into which the results may be sorted. These categories are continually redefined as new information is obtained. Eventually the researcher develops a number of tentative hypotheses. These must be checked against all relevant data and modified and rechecked and further refined. Data analysis is a meaning-making process, not merely a procedure for compiling results (Agar, 1980; Kantor, Kirby, and Goetz, 1981; Lofland, 1971; Spradley, 1979, 1980; Wilson, 1977).

This investigation is no exception. A preliminary analysis of results took place every time a new set of data was collected. Each of these informal analyses helped to determine the focus and to frame the questions for the next stage of the research. For example, my original interpretation of the information obtained from the first week's field notes, the first questionnaire, and the first set of interviews established a perspective from which to view the students' initial reactions to using invention strategies. And so on throughout the entire study. Casual comparisons produced partial insights which prompted new inquiries which added more details to the picture which

was gradually emerging from the research. Grouping the data suggested conclusions which called for more cross-checks which led to revisions and improved understanding. These on-going attempts to make sense of the results, though informal, subjective, and crude, provided a much-needed point of departure for later in-depth analysis.

However, the formal presentation of results requires a more systematic approach. In keeping with the recommendations of Donald Graves (1981), a leading composing-process researcher, the plan of data analysis outlined below represents a movement from specific cases to general rules--from an in-depth investigation of individuals' experiences in learning and applying invention strategies to a broad interpretation of the products and responses provided by the entire group of participants. As indicated in Figure 1, the plan of analysis adopted for this study takes the form of a pyramid, a structure which provides both depth and breadth. The pyramid's three levels represent three stages in the presentation and analysis of results. The first

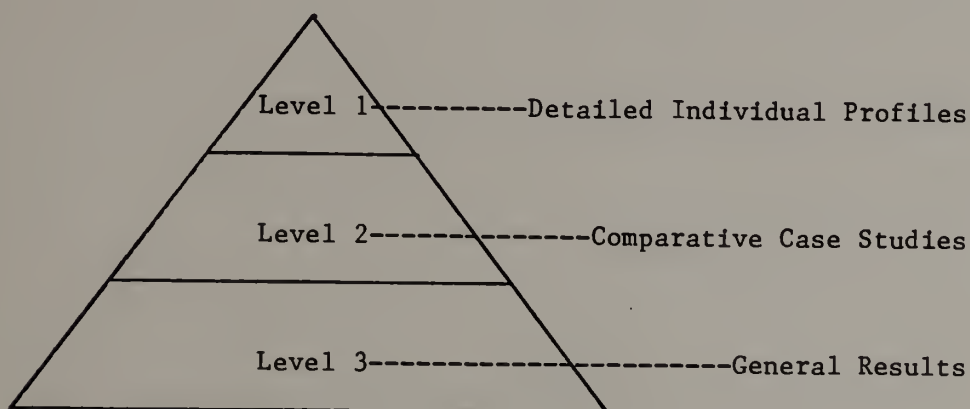


Figure 1. "Pyramid" design of data analysis plan.

is composed of detailed individual profiles of three of the project's ten case-study students. These profiles are presented in Chapter IV, the longest and most important of this report. Chapter V, which comprises the second level of analysis and interpretation, compares these three students' experiences and views with those of the remaining case-study subjects. The third level measures the case-study findings against the data obtained from all forty-six ninth graders who participated in the investigation. These general results are reported and reviewed in detail in Chapter VI.

All three stages of the data analysis are keyed to the four main research questions explained earlier: (1) Do ninth-grade writers have their own invention strategies (i.e., before instruction in heuristics)? (2) Does instruction in rhetorical invention affect the ways ninth-grade students compose? (3) Do the students' attitudes toward writing change as they learn new heuristic strategies? (4) Do ninth graders' uses of heuristics vary from individual to individual and from one writing situation to the next? Each of these questions is addressed several times in a process analogous to dropping a stone in a pool of still water: the initial direction is downward (as in the depth provided by the individual profiles), but the subsequent movement is outward in ever-widening concentric circles (as in the breadth provided by the comparative case studies and the general results). Both of these dimensions are necessary to the interpretation of results, for together they offer a comprehensive view of the issues that neither could provide alone.

The case-study chapters rely primarily on concrete description and careful comparison. Drawing heavily on transcripts of interviews and oral-composing sessions, the first profiles three ninth-grade writers in depth and relates their experiences in learning invention strategies. This chapter gives particular attention to the ways in which individual students developed (or failed to develop) the capacity to use heuristic procedures productively. To the extent possible it also takes into consideration the full context of each student's experience--the classroom, the school, the home, the community; past instruction, future goals; the influence of teachers, parents, and peers; plus anything else that might be relevant. The second case-study chapter compares the results obtained from all ten participants on each of the four major problems of the inquiry. The goal of this portion of the analysis is to highlight and account for significant differences that exist among the subjects' responses as well as to point out essential similarities. The case studies thus serve two overall purposes. First, they provide detailed, flesh-and-bone illustrations of what happens when students are taught how to use heuristics in writing. Second, they establish a basis for understanding the varying effects of heuristics instruction on ninth graders' attitudes and writing processes.

The chapter reporting the general results explores the study's four main research problems by integrating the various whole-group data. My own extensive observations of the forty-six participants' learning and work are placed alongside an examination of the students'

questionnaire responses and the documentary evidence contained in their writing folders. Formal methods of analysis were required to evaluate some of the more complex data. A coding system was used to compile and assess the results of the two questionnaires. To insure that the system would accommodate the full range of student responses, its categories were developed directly from the data. An additional check on my field observations was provided by paid independent readers, who (after training) examined selected writing folders and all of the initial and final writing samples for evidence of changes in students' composing processes. The aim of this stage of the data presentation is to scrutinize all of the general results in the light of the case-study findings. This chapter addresses as broadly as possible the four major research questions and attempts all-inclusive, if tentative, answers.

The foregoing plan of data analysis represents, as stated earlier, a movement from particular cases to general rules. It also involves a gradual shift from informal comparison of results to more systematic methods of evaluation. These progressions are linked, and both are in line with Agar's (1980) recommendations for qualitative research projects. The inductive process implicit in this approach helps to insure that conclusions grow out of the data rather than being imposed upon them.

C H A P T E R I V

INDIVIDUAL PROFILES

The case studies presented in this chapter and the next are based on an analysis of three sets of data: (1) the subjects' reports of their own writing experiences and behaviors, particularly their use of invention strategies, (2) extensive field notes describing these ten students' work in their respective composition classes, and (3) the documentary evidence provided by their written products. The first set includes the students' questionnaire responses, interview transcripts, and oral-composing protocols. The second consists of my own daily logs, supplemented by the classroom teacher's written comments. The third comprises all of the students' course writing: notes and doodles and outlines and drafts, in addition to finished papers. As indicated above, these sources provide distinct perspectives from which to evaluate the effects of instruction in rhetorical invention strategies. The system of categories used to examine these data is derived and explained in the following section ("Mode of Analysis").

This chapter presents individual profiles of three of the inquiry's ten case-study subjects. Three main criteria governed my selection of these students for in-depth treatment. One was the overall richness of their self-reports. In general, these three students proved better able than the others to explain in detail what they do when they write and to articulate and account for their

attitudes toward writing. Another criterion was completeness of participation. Only those students who had been absent infrequently during the study and who had completed all of their assignments and saved all of their work were considered for individual profiles. My final criterion was representativeness. I chose the three subjects who best--in my judgment--characterized the range of abilities, viewpoints, and experiences embodied by the whole group of participants. Avoiding both extremes, I selected neither the unusually successful nor the unusually unsuccessful. Thus, even though the three students to be profiled in detail below were in many ways exceptional as case-study subjects, as students and writers they were more or less typical of the forty-six ninth graders who took part in the investigation.

As noted at the end of the previous chapter, the three detailed individual profiles constitute the initial phase of the case-study data analysis. Examination of the case-study results continues in Chapter V, which includes a selective review of the seven remaining case studies and a systematic comparison of all ten. This segment of the data analysis notes similarities among the students, but its primary purpose is to explore key differences in their composing processes, attitudes toward writing, and responses to instruction in rhetorical invention strategies. Individual and comparative case-study findings are drawn together at the conclusion of Chapter V, which sets the stage for further scrutiny of the research problems in the broader context of the general results presented in Chapter VI.

Mode of Analysis

The aim of this section is to establish a basis for the presentation of the data from the ten case studies. The system of categories explained below and outlined in Figures 2, 3, and 4 (see pp. 76-78) is keyed to the study's four main research questions, set forth in Chapter III (see pp. 53-55). The categories were suggested in part by the work of composing-process researchers such as Emig (1971), Pianko (1979), Perl (1979), and Hayes and Flower (1980b), but they were derived primarily from an extensive analysis of the data obtained from this investigation. The broad issues were established at the outset of the inquiry, but their most important dimensions emerged from its results. Thus, though the system of analysis is presented before the data, it was actually arrived at inductively during the process of reviewing the data.

I have arranged the category system into an outline form solely for clarity and convenience of presentation. In reality its elements are not entirely separable; they interconnect and overlap in ways that a one-dimensional outline cannot show. The narrative form of the three individual profiles is intended to more accurately convey this complexity. Each of the profiles is a detailed account of one student's experience in learning invention strategies. The overall structure of each narrative is linked to the progression of topics in the analysis outline, but its order and emphasis more nearly reflect the attitudes, ideas, and experiences of its subject.

MODE OF ANALYSIS FOR THE CASE STUDIES

- I. The Role of Invention in the Composing Processes of Ninth Graders
 - A. Students' Awareness of Their Own Composing Processes
 1. Ability to articulate writing habits and procedures
 - a. statements on initial and final questionnaires
 - b. explanations given during in-depth interviews
 2. Seeming accuracy of self-reports
 - a. documentary evidence from writing protocols
 - b. empirical evidence from field observations
 - B. Dimensions of the Students' Composing Processes
 1. Range of observable features
 - a. extent and nature of prewriting/planning activity
 - b. extent and nature of reformulation and revision
 2. Continuity of progression
 - a. degree of recursiveness of composing-process features
 - b. frequency and length of writing blocks
 - C. Personal Sources of Ideas for Writing
 1. Dependence on non-deliberate discovery of ideas
 - a. extent of reliance on inspiration
 - b. extent of reliance on serendipity
 2. Use (if any) of rhetorical invention strategies
 - a. number and types of strategies used
 - b. frequency and circumstances of use
 - D. External Sources of Ideas for Writing
 1. Dependence on other people for ideas
 - a. extent of reliance on assignments from teachers
 - b. extent of reliance on suggestions from parents and peers
 2. Use of ideas from mass media
 - a. seeming influence of independent reading
 - b. seeming influence of television and films
 - E. Impact of Past Instruction on Students' Composing Processes
 1. Seeming influences on writing habits and procedures
 - a. requirements and comments of former teachers
 - b. practices and/or recommendations of parents and peers
 2. Sources (if any) of rhetorical invention strategies
 - a. formal instruction in techniques of writing
 - b. suggestions from others (teachers, parents, or peers)

Figure 2. Outline of topics related to the first research question.

MODE OF ANALYSIS FOR THE CASE STUDIES (continued)

II. The Impact of Instruction in Rhetorical Invention Strategies on Ninth Graders' Composing Processes

- A. Students' Progress in Learning Invention Strategies
 - 1. Initial phase of instruction in invention
 - a. degree of compliance with booklet directions
 - b. seeming level of understanding of the use of the various strategies
 - 2. Subsequent practice with invention strategies
 - a. range and variety of strategies attempted
 - b. extent of adaptation and/or combination of strategies
- B. Effects on Students' Production of Ideas for Writing
 - 1. Impact (if any) on efficiency of production
 - a. ease of starting on a writing task
 - b. number of viable ideas produced
 - 2. Impact (if any) on effectiveness of production
 - a. range of perspectives taken on chosen subject
 - b. depth of development of chosen subject
- C. Effects on Students' Writing Habits and Procedures
 - 1. Impact (if any) on composing-process features
 - a. the role of invention in prewriting/planning activity
 - b. the role of invention in organization and development
 - c. the role of invention in reformulation and revision
 - 2. Impact (if any) on continuity of progression
 - a. degree of recursiveness of composing-process features
 - b. frequency and length of writing blocks
 - c. ease of transition from production of ideas to production of text
- D. Effects on Students' Perceptions of the Composing Process
 - 1. Impact (if any) on awareness of their own processes
 - a. ability to articulate writing habits and procedures
 - b. seeming accuracy of self-reports
 - 2. Impact (if any) on notions about writing
 - a. dimensions of an effective composing process
 - b. methods of producing and developing ideas
 - 3. Perceived applications for invention strategies (if any)
 - a. anticipated role of strategies within composing process
 - b. anticipated uses of strategies beyond composition class

Figure 3. Outline of topics related to the second research question.

MODE OF ANALYSIS FOR THE CASE STUDIES (continued)

III. The Impact of Instruction in Rhetorical Invention Strategies on Ninth Graders' Attitudes Toward Writing

A. Effects on Students' Attitudes Toward the Act of Writing

1. Impact (if any) on general feelings about writing
 - a. assigned school writing tasks
 - b. self-initiated writing tasks
 - c. features of the composing process
 - d. continuity of the composing process
2. Impact on feelings about the use of invention strategies
 - a. general evaluation of the concept of invention
 - b. preferences (if any) for particular strategies

B. Effects on Students' Attitudes Toward Themselves as Writers

1. Impact (if any) on confidence in writing abilities
 - a. ability to produce a sufficient quantity of ideas
 - b. ability to produce a sufficient quality of ideas
 - c. ability to organize and develop ideas in compositions
2. Impact (if any) on satisfaction with written products
 - a. personal judgments of completed compositions
 - b. reactions to judgments of teachers, parents, and peers

IV. Individual and Situational Variations in Ninth Graders' Uses of Rhetorical Invention Strategies

A. Differences Among Individual Students

1. Extent and nature of individual differences
 - a. roles of invention in students' composing processes
 - b. types of invention strategies preferred
2. Factors accounting for individual differences
 - a. seeming influence of personal background
 - b. seeming influence of ability and learning style

B. Differences Among Distinct Writing Situations

1. Extent and nature of situational differences
 - a. types of invention strategies selected
 - b. manners of employing invention strategies
2. Factors accounting for situational differences
 - a. seeming influence of task dimensions (audience, etc.)
 - b. seeming influence of attitude toward task

Figure 4. Outline of topics related to the third and fourth research questions.

Figure 2 (see p. 76) enumerates the topics related to the first main research question: Do ninth-grade students have invention strategies of their own, or do they depend on inspiration--and, when inspiration fails, on the suggestions of others--to generate ideas for writing? The first step in exploring the role of invention in the students' composing processes is to determine the extent to which they are aware of their own composing processes. One measure of the students' awareness is simply their ability to articulate what they do when they write--the questionnaires and interview schedules were designed in large part to find this out. Two checks on the students' explanations are provided by the in-progress writing collected in their folders and my own observations of their work in class. Determining students' awareness of their composing processes is important for two reasons: (1) it establishes the extent to which they are reliable as informants, and (2) it suggests the degree to which they are in control of their writing.

It is beyond the scope of the present investigation to put forth an elaborate model of the composing process, but it is necessary to determine the overall dimensions of the ten case-study students' writing procedures before they were instructed in the use of rhetorical invention strategies. Drawing heavily on existing models of the process, the analysis addresses itself in particular to the range of features and the continuity of progression in the students' composing. To what extent do their writing behaviors encompass the various elements variously described by theorists and researchers such

as Murray, Smith, Emig, Perl, and Hayes and Flower? (See Chapter II, pp. 13-23.) To what extent are their processes recursive? To what extent are they interrupted by blocks? The answers to these questions establish the basis for assessing the effects of instruction in invention.

The central concern in this examination of ninth graders' composing processes is how they come up with ideas for writing. "Ideas" in this context is used in its broadest sense: insights, conceptions, opinions, and plans; but also impressions and possibilities, and even examples and reasons and details--in other words, all of the raw material of a piece of writing. The actual production of ideas is, of course, beyond any writer's direct control. The writer must be patient and wait for ideas to bubble up and break on the surface of the mind--though the waiting need not be passive. At issue in this inquiry is the extent to which ninth-grade students rely on "flashes of inspiration" and accidental discoveries to develop ideas for their compositions and whether they ever make conscious use of procedures which stimulate the imagination. If they do use any sort of invention strategies, two further questions arise at this point: (1) What are the features of these strategies, and how are they used? (2) How often and under what circumstances are they used? Also at issue is the extent of students' reliance on external sources of ideas for writing. Especially important is the question of how much they have learned to depend on their teachers to supply the content of their papers, but the roles of other influences--parents and peers,

independent reading, television, and films--are considered as well. In short, the main purpose of this part of the analysis is to determine how deliberately students search for ideas.

A related concern is the impact of prior instruction in writing (i.e., both formal classroom instruction and informal suggestions made by teachers, parents, and peers) on the students' composing processes. The actual import of any past teaching can only be guessed at, but students' recollections of what shaped their habits are significant pieces of data in themselves. Of particular interest, of course, are the sources of any rhetorical invention strategies the students use.

Figure 3 (see p. 77) delineates the dimensions of the second research question: Does instruction in rhetorical invention affect the ways ninth-grade students compose? This is the central problem of the inquiry. The process of answering it begins with an examination of the students' progress in learning invention strategies, from the initial phase of teacher-directed practice through the subsequent period of semi-independent experimentation. A number of factors related to this learning--how carefully the students followed directions, how well they understood the use of the strategies, how many of the strategies they actually tried, how much they adapted them to suit their own purposes--are important to understanding the effects of the instruction on the students' composing processes.

The categories used in the examination of these effects are related to those listed under the first research problem. The analysis focuses on three kinds of effects: effects on students'

production of ideas for writing, effects on their respective writing habits and procedures, and effects on their perceptions of the composing process. The first of these categories encompasses the most direct results of instruction in invention. Do the strategies help students to come up with ideas more efficiently? Do the strategies promote a richer development of ideas? No less important than these two key questions are the indirect effects on the overall pattern of a student's composing--on the range of features included in the process and on the continuity of progression through a writing task. Of particular interest is the possible impact of using invention strategies on the frequency and duration of writing blocks and on the ease of transition from producing ideas to producing text. The analysis also assesses the impact of heuristics instruction on students' perceptions of the composing process. Significant changes (if any) in the students' awareness of their own writing processes or in their general understanding of the way writing works are noted and discussed along with their comments about the potential uses of invention strategies.

The categories related to the remaining research problems are outlined in Figure 4 (see p. 78). The third question, like the second, is concerned with the effects of instruction in invention: Do ninth-grade students' attitudes toward writing change as they learn new heuristic strategies? This question is just as important as the last; as every teacher knows, attitude and performance go hand in hand. Two aspects of students' attitudes toward writing are explored

in this investigation: (1) their attitudes toward the act of writing itself and (2) their attitudes toward themselves as writers.

In reality each student has many attitudes about the act of writing. As Emig (1971) and others have shown, a useful distinction may be drawn between students' feelings about assigned school writing tasks and self-initiated writing tasks. Another way of looking at the problem is to examine students' feelings about specific aspects of the composing process. What attitudes do they express toward the various features of the process? To what extent are they even willing to treat the act of writing as a process? What impact (if any) instruction in heuristics has on these attitudes is analyzed alongside the students' evaluation of the concept of invention and their preferences for particular invention strategies.

Changes in students' feelings about themselves as writers can be examined from two distinct vantage points. One is the extent of the confidence they have in their own writing abilities. The abilities most germane to the present study are those having to do with the production, organization, and development of ideas. Another useful perspective on students' attitudes about themselves as writers is provided by their assessments of their own finished products. In interpreting these comments it is important to distinguish between personal judgments and reflections of or reactions to the judgments of others. Writers' self-concepts develop over years, so the effects of the students' learning of invention strategies on their feelings about their own writing can only be inferred. Despite this difficulty

evaluation of the impact of the instruction in invention on students' attitudes is one of the most important aspects of the data analysis.

The foregoing problems receive their most extensive treatment in the three individual profiles included in this chapter. The comparative case studies presented in Chapter V concentrate more heavily--though not exclusively--on the final research question: Do ninth-grade students' uses of heuristics vary from individual to individual and from one writing situation to another? Composing-process research has convincingly shown that there is no one writing process. Different writers use different approaches, and an individual writer may use various methods for various writing tasks. Therefore, there is little reason to expect ninth graders' uses of heuristics to be uniform. The analysis of their individual differences has two purposes: (1) to enumerate the essential differences in their uses of invention and preferences for particular invention strategies and (2) to identify the factors which may account for these differences--personal background, ability, and learning style. The same is true of the analysis of situational differences, but in this case the salient factors are the dimensions of the task (audience, mode of discourse, subject, purpose, time constraints, etc.) and the student's attitude toward it. Both kinds of differences have, of course, important implications for the teaching of writing in general and of invention in particular.

The category system presented in this section provides a comprehensive (but not exhaustive) mode of analysis for the case-study

data. Few of the many questions raised by this discussion can be answered with absolute certainty, but tentative answers to most of them can be reasonably inferred. Some of these problems receive additional treatment in the interpretation of the general results in Chapter VI; further analysis and exploration of other problems is left to future investigations.

Don, a Basic-Level Writer

Don* was a member of the basic-level (i.e., below-average) class, which was characterized by its teacher as an "exceptionally good" one--presumably because most of its fourteen students completed most of their assignments thoroughly and on time and otherwise exhibited generally cooperative behaviors in class. Don was one of the group's most active members. An enthusiastic participant in class discussions, he was often the first to respond to questions or problems posed by the teacher. He was obviously eager to please and be praised, but he appeared to be motivated by conviction as well: he frequently challenged other students and the teacher, persisting until they were completely convinced--or until they had persuaded him that he was in error. These exchanges were always congenial--even jocular. Don seemed to be on good terms with everyone in the class--his boyish effusiveness was irresistible--but he was especially friendly with two

*All of the names used to designate the participants in this inquiry are pseudonyms.

other boys who shared his passion for outdoor sports.

Don was the classic "learning disabled" student. Though verbal and bright, he had had many problems unlocking the secrets of written language. These problems were reflected in his ninth-grade schedule. Besides the basic-level English class, he was enrolled in a remedial reading course and a special education program stressing writing and study skills. A tutor from the program sometimes came to his classes to help him and others who had similar needs with their work. A veteran of many such special-needs programs, Don was well aware of his deficiencies in writing. His nemesis was spelling: he sounded out all but the most familiar words a syllable (or less) at a time, often with less-than-satisfactory results ("pucheweighion" was another of his main concerns). Despite these troubles Don seemed generally upbeat. He was especially pleased by his recent progress in spotting his own errors, and he saw even greater independence ahead.

That writing was not one of Don's favorite pastimes is hardly surprising. Among his earliest recollections about writing in school were episodes in which he had devised ways to avoid it. And yet his experiences had not all been negative. He recalled having been asked by an elementary teacher to keep a journal during a family vacation to Washington, D.C. Though unhappy about having had to do it at the time, he still enjoyed reading this record of the trip. He said he made plans to keep a journal every summer, but so far he had done so just one other time. Don's greatest thrill as a writer had occurred when a concrete poem which he had written for eighth-grade English had

been accepted for publication by a national sporting magazine. Submitting the poem (which was written in the shape of a sailboat) had been his father's idea--he had written for similar publications himself. Encouraged by this unexpected success, Don indicated that he might try to write (and sell) more poems.

Don proved a particularly interesting subject. Owing, perhaps, to his years in "analysis" in special education classes, he seemed to be exceptionally well aware of his own composing processes. His questionnaire and interview accounts of his writing habits and procedures were thorough, specific, and wholly in accord with my own observations of his work in class. His slow but methodical development of lists, notes, and drafts left an unusually easy-to-follow paper trail in his writing folder. And his ability to verbalize his thoughts while composing was unsurpassed by any of the other case-study students. The protocol resulting from his initial attempt at composing aloud was so illuminating that I asked him to produce another (see excerpts below).

Pre-instruction writing methods

The first piece of writing Don produced for the study (the assignment was to write something for an audience his own age) was the following short story, entitled "The Gang":

I felt the force of an explosion; my partner went flying over the hood of our police car. Unfortunately he was on the wrong side and I was on the right side. I dragged him into the car. I turned on the lights, and the siren and burned rubber, I didn't slow down until I reached the

hospital. The doctors took him into the emergency room.

I called into the station and told them what had happened. I sat down in the waiting room and waited. My partner and I were responding to a call that told us that a gang was terrorizing a neighborhood. The Doctor came out of the emergency room and said he was o.k. and the only real problem was that he had a severe shock, from the explosion. The Doctor said also that he wanted him to sleep over at the hospital and then he could go back on duty again.

I came back to the hospital in the morning. My partner was all scratched up, but other than that he looked ready to go. We got in our police car and started our patrol. We saw one of the gang's members go into an old storage house. We stopped our car and got out. We looked in the storage house. We saw ten guys in there and they all were from the gang. I said to Lenny "We've got them on two charges now, because they've got drugs in there." Lenny busted in the back way and I went in the front, we caught them red handed.

Don's choices of a subject and genre for the piece were governed in part by his understanding of the audience--he felt that his ninth-grade peers would enjoy an exciting story--and in part by his own and a classmate's interests. Asked where he had gotten the idea for the story, he replied, "I don't know. Next to boats--I really like boats, but if I didn't like boats so much I'd probably want to be a policeman or something like that because I like fighting for justice, . . . so I just decided to write about this, and I came up--I wrote about Lenny as my partner because he wants to become a policeman."*

The procedures Don used for developing "The Gang" revealed a good deal about the nature of his composing process before instruction in

*Unless otherwise noted parenthetically or in context, quotations included in this chapter and the next are from my interviews with the case-study students.

invention. He engaged in very little overt prewriting activity; once he had come up with the idea for the story, he immediately began working on his rough draft, even though at that point he had made no plans beyond the first paragraph. When he reached a block in his composing of the narrative, he paused for a considerable time (several minutes), apparently to develop ideas for the next segment of the piece. This pattern of alternately planning and writing continued until he had completed the entire draft. In general, the pauses were characterized by what appeared to be intense concentration; the episodes of writing were frequently slowed by struggles to sound out the spellings of words. Revising played a minimal role in the composition. With some help from his tutor Don corrected his spelling errors, inserted a word or a phrase here and there, and joined two paragraphs--then copied the story over. In substance the version presented above is identical to the original draft.

In short, Don's procedures for writing seemed limited--limited to a relatively narrow range of activities, and limited to consideration of immediate concerns (composing the next sentence, spelling the next word). His initial self-reports reinforced this impression: he described his composing as a process of coming up with a viable idea for a paper, planning and drafting it a section at a time, and making improvements in diction and mechanics. Extensive preparation and reformulation were clearly not among his preferred writing methods. He did report, though, that he sometimes worked up lists of facts as an aid to developing detailed rough drafts.

Don's use of listing as a technique for getting started was (by his own account) generally restricted to expository papers on required topics. For stories and informal writing assignments, he preferred to rely on the sudden inspiration, the "terrific idea that pops into my mind." He noted, however, that depending on inspiration has its risks: sometimes "terrific" ideas fail to come, and sometimes they "pop out" before they are caught. In fact, he acknowledged that getting started on a paper--thinking about what he was going to write--was for him the most difficult part of the composing process.

Don seemed to have developed over a number of years a variety of strategies for getting past his frequent and frustrating blocks. Most involved turning to external resources, particularly trusted adults: his teachers, his tutor, and especially his mother, a social worker, on whom, he admitted, he had once been almost totally dependent for ideas. Don's reliance on the suggestions and assistance of others is hardly surprising given his circumstances. Surrounded continually by concerned adults, he had simply learned to take full advantage of their proffered help. He indicated at the beginning of this inquiry, however, that he had recently developed much more independence in overcoming initial and in-progress writing blocks. He attributed the improvement in part to his increased awareness of the conventions of school writing and in part to his increased ability to cull information and ideas from published sources on his own. That he had also learned to make use of ideas from the popular media is evident in the cop-show format of his story.

By far the most interesting--and the most self-reliant--of the idea-producing strategies in Don's repertoire before instruction in invention was a simple but useful heuristic of his own devising. The goal of this procedure was to gain a broad perspective, or as Don wrote on the initial questionnaire, to "back out and take a general look at the subject." He elaborated during our first interview:

I really back out of the subject; I don't zero in. I back out and look at all the aspects of it, like "that's part of it" and "that's part of it" and--things people wouldn't regularly think of, and I try to get--I try to make my papers as different as I can, just kind of think of the aspects far away.

In providing alternative approaches to a problem by placing the subject in a larger context, this technique is somewhat similar to parts of the tagmemic heuristic (Young, Becker, and Pike, 1970). Don indicated at the time that he made use of "backing out" primarily when "zeroing in" failed to work. As the study progressed he refined the procedure and seemed to use it both more deliberately and more often (see below). Thus, though reliant on a fickle Muse and especially on assistance from others to produce ideas for writing, Don also possessed at least one effective, certifiable invention strategy.

To sort out the effects of past writing instruction on the composing process of someone who had had such a variety of instructors would be virtually impossible. Teachers and tutors and both of his parents had played significant overlapping roles in Don's development as a writer. His own analysis of their respective influences was suggestive, though. He reported that his teachers had generally

stressed format: introduction/body/conclusion and the like. His tutors, on the other hand, had emphasized process: the collecting of data, the making of lists. From his parents he had learned the importance of drafts: that the first was for getting ideas down on paper, the rest for improving the language and correcting errors. Don acknowledged that his various writing instructors sometimes offered him contradictory advice, but he seemed undisturbed by it, feeling that it gave him a license to choose. He characterized his overall experience of learning to write as a process of "making a lot of mistakes" and of having help available when he needed it (initial questionnaire).

Don could recall no formal classroom instruction in anything resembling a rhetorical invention strategy. Asked what his previous teachers had recommended for generating ideas for writing and planning out papers, he replied with an interesting Freudian slip: he said that they had concentrated "moanly" on making outlines, a technique he had never found particularly useful. The less formal method of "brainstorming" lists had apparently been suggested in his special education class. In general, though, the concept of invention (i.e., that of deliberately and systematically searching for ideas with the aid of a reusable heuristic) was something entirely new to him.

Applications of heuristic strategies

Don's initial response to the eight invention strategies presented in class was exceedingly positive. His comment in class

upon using the freewriting technique for the first time was typical of his effusive reactions: "Hey, this is awesome! I didn't know I had all these ideas!" His remarks were probably made in part for the teacher's and my benefit, but they seemed genuine nevertheless. Don was able, at least, to enumerate what he felt were the most useful features of the strategies and to suggest several possible applications for each of them.

The teacher was especially concrete and clear in explaining the eight strategies to the basic-level class. His thoroughness undoubtedly contributed to the success of Don's first attempts at using the techniques, in which he followed the instructions in the handbook to the letter. In general, these trial runs revealed understanding as well as compliance. Don was somewhat confused about the function of analogies (he created comparisons of very similar entities such as "walking" and "biking"), and he indicated that he had had problems understanding the modified tagmemic heuristic (though his practice exercises revealed none), but otherwise he seemed to have grasped completely the procedures and purposes of the strategies. He recognized many of the mental processes inherent in the various heuristics and saw that any of the techniques could be used to develop an effective list (indeed, all of his subsequent attempts at the strategies were made in the form of lists). In other words, he immediately made a number of connections between these new approaches to producing ideas and methods he had learned and used successfully in the past.

The most interesting of these connections was between the visualizing technique Don had just learned in class and the "backing out" heuristic he had previously developed on his own. The classroom instruction gave him a name for his strategy, but it also brought forth a much more elaborate description:

I can think well inside my head, but when it comes to putting it down on paper, it's kind of hard, so I use visualizing a lot. I write down some notes and some things about the subject sometimes, and I zoom out and zoom in, like I concentrate and see if I get anything there, then I zoom out and look at all the broad perspectives, you know, like, let's say . . . it's something to defend your client in Law [Don's current social studies class]. You can zoom out and think about his past or his future or what he's doing or how honest he's been, or you can go off to wide side-ranges, you know, that you wouldn't look at before, and then you can zoom in on something that you haven't done before.

Besides the addition of a concrete example this version includes a more flexible procedure. Here the mind's camera is equipped not only with a zoom lens, but also with wheels on which it moves back and forth across "wide side-ranges." The result is a far more comprehensive heuristic. Whether this change represents a refinement in the technique itself or merely in Don's consciousness of it is open to question, but in either case the impetus appears to have come from his initial work with invention strategies.

Students in the basic-level class were required to write four more papers (approximately one per week) after their introduction to invention. Three of these (a cause-and-effect essay, a definition essay, and a comparison/contrast essay) were preceded by brief whole-group lessons on the appropriate modes of development. In each

case the students were free to use one of the topics suggested by their textbook (Levy and Tibbetts, 1972) or to devise their own. The final assignment, like the first, was to write a paper in any form for an audience of the students' own age. This entire segment of the composition course was conducted in the workshop format described in Chapter III. Instruction in invention was strictly individual. The students were encouraged and expected to experiment with the various strategies, but no specific distribution requirements were imposed.

Don made extensive use of the strategies in completing the four compositions. He used a different heuristic for each piece but followed the same pattern for all four. He spent the largest portion of his time on the strategy itself, working through it until he was satisfied it was complete. Then, using the list or lists he had compiled, he wrote a complete rough draft. Finally, after careful editing, he prepared a final copy. All of the topics Don wrote on were his own. All but one, the first, reflected his love of the outdoors.

Don's original choice of a topic for the cause-and-effect essay was the process of building a house. He used the freewriting technique (three times) to develop an extensive list of the steps involved and their cumulative effect: "a comferdable place in which humans live." But then he came up with a better idea, which was triggered, apparently, by an item on his list about the effects of construction on the neighborhood. He decided to write a fictitious piece about a neighbor with a messy house. He completed another

freewriting exercise (in two columns this time: "causes" and "effects") from which he eventually developed his paper, "The House That Made Me Move!" The significant element in this sequence of events is his radically reformulating the subject after doing considerable work. During our first interview Don had made clear that he rarely took such a step.

Don's next paper, a definition essay entitled "A Good Vacation," was the occasion of his first oral-composing session. He chose as his invention strategy "making an analogy" and proceeded to assemble a planning sheet with four columns, each representing one element of a good vacation (see Figure 5, p. 97). When I pointed out to him that he was not actually creating a comparison, he changed the heading to "diagramming" (another of the strategies in the invention handbook). Don completed the two outside columns first, fairly quickly, then proceeded to the sub-topic "friends" (later changed to "friend"), which gave him a good deal more trouble. He became blocked after coming up with the first three items and decided to try "zooming out":

Let's see. I'll zoom out for a minute here and see what else I can get (15-second pause). See what else I can get. Think about what I like--what kind of friends I like (8-second pause) like--I like them to talk (writes) to--to talk, and I also like them to just kind of be quiet (writes). Those are two different things, being quiet and talking. Let's see, how could I rephrase it? Two different things. I like them to talk, and I like them to be quiet sometimes. I like them to make nice conversation (writes). I don't know. Maybe I should cancel that (crosses out item). That's what I think I'll do. "I like them to be quiet sometimes." What else do I like my friends to be? (8-second pause). Zooming out isn't helping much--looking at a broad subject--so I zoom in and think of experiences of friends I've had and see what kind of friends I like. I

can't think of anything more. This is probably the--the hardest one out of the four, telling what your friends like to be--compared to the feeling or the things I like to do or the atmosphere and environment. The things to do in the camp or whatever or next to the lake. You can swim or--let's see.

At this point Don decided to move to the "things to do" column and

Making An Analogy diagramming			
Good Vacation land			
Feeling (2)	Things to do (3)	Friends (4)	atmosphere/ envierment (1)
--no reasopons- buitles	--swim	--to like to do things I do.	--temp. 70-90
--You feel great--no injuries or illnesses	--bike	--they don't call other people names or hurt them	--wind 5-20 knots
--you like everybody, feel like you can take on the world, mentally very strong.	--hike--(expore)	--I like my friends to nice and considerate	--doesn't rain offen
--giving off lots of warmth	--conue	--I like them to talk (to make nice	--hiking trails
	--sailing (Raft)	--I like them to be quite sometimes	--biking trails
	--make fort out no man made materels		--big clear lake
	--good books (lots)		--5-10 miles nice swiming beach
	--shop--little store--little villege--restur- notis		--lots of woods
	--built fires		--mountians
			--camp sites
			--no bugs

Figure 5. Don's completed planning sheet for the definition essay.

quickly wrote down several items, stopping twice to review his list. He concluded that he had covered the daytime activities when he had listed six; but when he tried to come up with examples of things to do at night, he soon reached another block. Again he elected to use his visualizing strategy, this time "zooming in" on specific vacation experiences. The final two items on the list were the result--and enough to satisfy Don that his planning was complete.

The transition to producing a draft seemed quite easy. Drawing on what he had learned earlier in the school year, Don decided to use classification as a method of organization for the paper and to transform each list into a body paragraph. He decided on the order of presentation while composing the introduction and numbered the columns accordingly. As he did so, he thought of other "things to do" and added them (in parentheses) to the list. But when he began work on the paragraph on "environment," he worried that he had too much material to write about (the paper was due the next day). He came up with an interesting syntactic solution: "I'm going to try to scrunch up my sentences with a lot of details." As the final draft shows, he was successful in doing so (though he also eliminated some of the items he had listed):

A Good Vacation

I love a good place to spend a vacation. A good vacation should have; a nice environment, a good feeling in you, lots of things to do, and a great friend.

The environment is one of the most important things in a good vacation. The temperature should be from 70°-90°F and the wind 5-20 knots. I would like it if there was lots of hiking and biking trails as well as a big clear lake with a

nice beach. Finally I would like lots of mountains covered with trees and cabins next to the big lake.

You should feel like you could take on the world. You have no responsibilities and you feel free as an eagle. How strong do you feel mentally? Like a roaring lion.

In a good vacation there should be lots of things to do so you are not bored. You should be able to swim, bike, hike, canoe, and sail. There should be lots of good books that you can read at night. Finally there could be a little town near by that has all different kinds of stores that you can shop in.

I would like a friend to spend the vacation with. He should like to do most of the things I like to do. I would like him to be nice and considerate too.

This would be an awesome vacation for me.

The finished version is a careful--if slight--revision of the original draft. Don made a number of small meaning changes (including eliminating "land" from the title), inserted missing function words, and corrected most of his spelling errors before recopying the essay.

Several observations can be made about Don's composing of "A Good Vacation." One concerns his erroneous selection of "making an analogy" as an invention strategy. What appears to have attracted him to this particular technique is its use of columns to group related ideas (see handbook example in Appendix A). This format provided a spatial order which seems to have enabled him to brainstorm more freely and effectively. Of related interest is Don's integration into the diagramming heuristic his own procedures for visualizing a subject. In this instance, at least, the strategies proved complementary. Two aspects of his drafting of the piece are also noteworthy: (1) he worked quickly, encountering few blocks, for the difficult problems of invention had been solved; (2) he was able to choose among alternatives, for he had at his disposal an abundance of

material. In both these respects the composing of this paper was markedly different from the production of his first piece, "The Gang."

Don's comparison/contrast essay explained the relative advantages and disadvantages of large sailboats and small sailing dinghies. His selection of a heuristic was more appropriate this time: he picked the technique of "creating a dialectic." He opted for a two-column format again, making a case for buying the smaller boat on the left side of the paper and a case for the opposing point of view on the right. These skeletal arguments were matched point for point. The "synthesis" he reached at the bottom of the page was actually a choice between the two positions based upon the weight of the evidence: "I think the better choice is to buy the small boat. It's easier to take care of; with paying taxes and work needed on the boat. You have to find a crew with the big boat and you can't sail very well at all in most lakes, because the lakes are too small." This conclusion became the final paragraph of the paper, but the data from the lists were completely rearranged into a paragraph on similarities and a longer one on differences. In this case Don elected not to follow the structure provided ready made in the diagram.

For his final paper (and his second oral-composing session) Don wrote another short story, "Getting Lost at Sea." This time he decided to begin his composing by using the visualizing strategy in the handbook, and he found that it worked exceedingly well. He closed his eyes, relaxed his muscles, and narrated the following with hardly a pause:

Let's see, there's--I'll be a kid about twelve or fourteen years old--twelve years old, and I'm sailing for the first day off the coast of Maine in my family's dinghy that we have, and suddenly a fog sets in, and I'm lost off the coast of Maine, and I don't have a compass, and I've only got a lunch aboard, and I'm trying to think of some way to get back in. The--the fog's getting thicker and thicker. Let's see if I can make it longer than this. Okay, I see a boat off in the distance, and I start sailing towards it, trying to catch it, but I realize it's going way out to sea, and it's lost in the fog pretty soon, so I take the opposite direction, since it was going out to sea. Pretty soon an island comes into sight. It looks like an island. I beach my boat there, pull it way up on shore, and walk around the island. There's nobody on the island. I have to--I find some nuts and berries there, luckily, some blueberries, and there's--there's a old apple tree or something to get apples off of. I ate already part of my lunch. It's getting darker, so I decide to stay there and pull up my boat even further, and I decide I shall take a heading way off north to see if the fog's going to clear--right off the--the side of the other island--keep the direction that I was going from the boat. The fog's cleared a little bit, but it's still really foggy, and I can't see very far. I--I push my boat off, jump on, and--collected a little--I took my sandwich bag that was empty and collected blueberries. I started sailing towards the shore. "Oh, yes! I see the land! Awesome!" And then I--I see land and I come in and--I come in and bum ten cents off of a--a man walking down the street and call my parents, and they come over and get me and the boat. That's what I'm going to write about.

Immediately after screening this mental movie, Don began compiling a list of what he had seen. Some of the items were specific details, but others represented entire scenes. He worked back and forth in developing the rough outline, alternately advancing to the next episode of the narrative and reaching back to record a suddenly remembered detail. In the process he made several changes in the story, including both additions and deletions of facts. He made additional alterations when drafting the piece. Many of these revisions were obviously intended to improve the texture and flow of

the narrative, but some were apparently designed primarily to enhance its plausibility. For example, Don decided to make this adventure the protagonist's fourth--not his first--solo sail. And contrary to his practice in previous papers, Don even made a number of substantive changes when preparing his final draft of the text.

Effects of instruction in invention

The ease with which Don produced ideas for his story "Getting Lost at Sea" and the extent to which he subsequently reworked the piece stand in sharp contrast to the course of his composing when he wrote the first story, before instruction in heuristics. Taken together with the evidence of growth in his composing of the other papers, these changes suggest that Don was a much improved writer (i.e., in terms of his writing process) by the end of the study. It would be presumptuous, of course, to attribute all of his gains to instruction in rhetorical invention; the experience of writing several papers alone would undoubtedly bring about some change. It is reasonable, though, to infer a significant role in Don's improvement for his learning the use of invention strategies, particularly in view of the fact that the instruction emphasized practical application of the strategies.

The most obvious effects of Don's work with heuristics were on his methods of producing ideas. He became more deliberate in his searching for material, pushing and probing instead of just waiting for the next inspiration to come. He adapted the invention strategies

in the booklet so they meshed with procedures he had used in the past--listing and his own visualizing heuristic. Together, these various devices provided techniques to suit virtually all situations. As Don indicated in our final interview, some helped with the problem of finding a subject:

You see, I kind of like find a topic, and if I can't find a topic, I might set it aside, do other things, and it'll come to me. It always does in a matter of years (or a matter of minutes)--or, if you want to do it in the quick way, you can always do freewriting, and it'll help you get a good idea.

Visualizing, too, seemed to ease getting started, because, like freewriting, it is based on what Peter Elbow (1973) calls a "believing game"--a suspension of judgment of emerging ideas. Don indicated that his previous use of "brainstorming" had really not been brainstorming at all, because he had always stopped to evaluate each item as it was produced. Banishing the editor had had a liberating effect on his capacity for idea generation. The more he wrote, the more he could write:

When I do them [the strategies] again and again, I get more detailed. Like I come up with a great idea for a story the first time, and then I get a great idea for within the story, for like a paragraph, and then I get a good idea for a sentence. Like if I go over it more and more, I get more ideas. They just come to me naturally.

In other words, these strategies helped him to become more efficient at producing material for his papers. Others, such as diagramming and creating a dialectic, enhanced the effectiveness of his production by encouraging him to vary his perspective: to "zoom in" and "zoom out" and to move across "wide side-ranges." In his mind and on the page

subjects took on a two-dimensional form which facilitated his treating them in depth and breadth. Don's understated summary of the effects of the strategies was "they just kind of filled in my essays" (final questionnaire).

Perhaps the most significant results of the instruction were its effects on the overall texture of Don's composing process. Prewriting and planning activities became predominant, whereas they had played only a small role before. Don himself noted this important change:

It's really neat that I learned this [invention], because I used to just kind of think about things and just write . . . I never used to write an outline, actually. I'd just write a rough draft and maybe come up with some more ideas, then wrote a final draft. . . . These invention strategies put another step in, but I'm glad to have that step, because I think it makes my writing a lot better.

In particular, he found that the listing technique which he had used on occasion in the past could serve as a useful step in the development of any piece of writing. The lists he developed with the aid of the various invention strategies provided not only the material for developing his ideas in depth, but also alternatives for organizing them. That he may sometimes have erred in choosing his details or the structure of his paper is less important than that he had choices to make. At the beginning of the study he had apparently felt that he had to take whatever he could get. Another significant change in his composing was the increase in the role of revision. There was evidence of extensive reformulation in all of his planning sheets, and in the last paper alterations in content appeared in his drafts of the story as well. Early in the study Don had said that

rewriting was solely for the purpose of improving diction and mechanics. By the end he had changed his mind: "You can make your story a lot better with doing that [revising]. You can come up with ideas when you're reading it over . . . and make it and do a real better story." Rewriting, he added, "edits your ideas." Though it is impossible to say for certain what altered his view, it is reasonable to surmise that improved idea-generating ability and the ineffable luxury of being able to choose were significant contributing factors.

The use of rhetorical invention strategies seems also to have improved the continuity of Don's composing. His tutor commented that he was developing a smoother pattern of writing, one characterized by both reliable forward movement and productive periodic recursion. He appeared to be bothered by blocks far less often. He noted, in fact, that he found the heuristics particularly useful for "getting unstuck." Then too, he had remarkably little serious trouble making the transition from producing ideas to producing text. In essence, the art of invention reduced the randomness of Don's writing process. Actually it became the driving force of the process, its dominant feature.

This is not to say, of course, that Don was miraculously transformed from a basic writer into a potential Pulitzer Prize winner. As he himself acknowledged on the final questionnaire, "I have a lot to learn and I make a lot of mistakes." But his basic perception of writing had changed. He had gradually come to see idea production as a process which he could control. His final description

of his own visualizing heuristic is a good illustration of his growth. At the beginning of the study this strategy had consisted solely of "backing out and taking a general look at the subject." By the middle, the mind's camera had been mounted on wheels, enabling Don to investigate "wide side-ranges." By the end the technique had been even further refined:

It's like a T, actually. I might get in deeper, but then at the top there might be some things, so . . . I zoom out again, I start right back where I started again and . . . go right across the top of the T looking at all the subjects that could possibly go under that one heading, and that's in the middle of the T, like, and then you can go down from there in depth, so you kind of have like lines going down. That's how I picture it, anyways. . . . I think that some of your T's have long trunks, so to speak, where you can go really in depth in some stories, and short tops, . . . where you can go really in depth and not so much across; and then you can have short trunks, where you can go--there's a whole varying range.

Don went on to give an example of an argument paper that required a "short-trunk T." The point is that he was more than just aware of his own invention process; he was able to adapt it to suit changing needs--not only in the course of producing a single paper, but also from one writing situation to another. Similar effects on Don's handling of other dimensions of the composing process--especially organization and revision--were noted earlier. In general, he became a more disciplined writer and therefore a more independent one. It is not surprising, then, that Don predicted that he would continue to make use of invention strategies, particularly visualizing, freewriting, and diagramming, the techniques he had found most effective.

Closely related to the effects of the instruction on Don's perception of the composing process was its impact on his attitudes toward writing. His responses to questions on his feelings about writing on the two questionnaires suggest an important change. At the outset his comments were generally non-committal: "Sometimes I feel like writing a good piece of work and other times I just don't want to take the time." The subtext which might be inferred from this statement is "I'm not sure that writing is worth all the pain." By the end of the study he seemed to find the act of writing more personally fulfilling: "I like to feel like I have completed a piece of art or a full report." He had also developed an interest in writing to make an impression on readers. As he explained in our final interview,

When I write I want to create not only a story that people like but get them into it so they feel like they're in it, creating in their minds so that they don't have to really think about . . . what the environment's going to be like or anything. They're just going--they can just feel the nice environment. . . . From reading a thing on a cold desk, they get the warm feeling of a good vacation and stuff.

Don gave impression that he had suddenly discovered the potential of his own written language.

Accompanying these changes in his feelings about writing was a much greater willingness to treat writing as a process. Don never lost faith in the magic of inspiration ("Suddenly this great idea pops in my mind, and that does it all"), but he came to see the value of a more deliberate approach. His final evaluation of the project was very positive; he felt that the concept of invention should be

stressed beginning in elementary school. But his initial enthusiasm for all eight of the strategies had been tempered by the experience of actually using some of them. His favorites turned out to be those which most readily fit in with the patterns of composing he knew--visualizing a subject and creating lists.

No less significant than the other developments was the apparent growth in Don's confidence in his own writing abilities. Having established by the end of the investigation a comfortable, consistent pattern of composing, he felt that he could reliably produce solid work:

Instead of coming up with a good story and then writing a really, really bad one, it's like I'm just kind of just flat-out good. . . . I mean, it's like I come up with great ideas evenly. I don't know how to explain it, but instead of just coming up with a whole bunch of great ideas and writing this great paper and then writing a real bad one, I'm just . . . developing a way of thinking so that they come more evenly, and I can just write better papers.

Don also became far less fearful of blocks. On his final questionnaire was this interesting comment: "You're never stuck; just not ready to write about something." Secure in the knowledge that he had it in his power to get himself ready to write, he had no need to worry about having enough to say (indeed, on at least one occasion, he worried that he had too much material). Clearly these two statements stand in sharp contrast to his earlier view that producing ideas was the most difficult and unpredictable aspect of writing. Don attributed this remarkable change in self-confidence to his use of invention strategies.

Despite the many important gains he had made during the course of this study, Don was by no means complacent at the end. At the start he had said flatly that he was not a good writer, or at best "pretty good" for his age. On the final questionnaire he gave himself "four" on a rating scale of one to ten. And he repeated the comment he had made at the outset that he still had "a lot to learn" about writing. Don's exceptional capability for self-analysis and his willingness to listen, experiment, and change, demonstrated again and again in this inquiry, left little doubt that he would continue to grow.

Melissa, a Standard-Level Writer

Melissa, like Don, was a fascinating subject, but her story contrasts with his in many significant ways. In the first place, they presented very different personalities. They were clearly not cut from the same emotional cloth. Outwardly, at least, he was always upbeat, whereas she displayed a much wider range of moods. Nor did they have many interests in common. While he was still preoccupied with outdoor play, she seemed far more concerned with social relationships--especially within her immediate peer group. Melissa also proved a much different sort of writer. The composing methods and attitudes toward writing which she revealed during the study obviously reflected abilities and experiences quite unlike Don's. But the most important differences between these two ninth graders, at least for the purposes of this investigation, lay in their responses

to the work with invention strategies. In general, Don found the techniques very useful; but Melissa, in the final analysis, did not.

The standard-level class of which Melissa was a part was a chatty but generally well-disciplined group of eighteen students with varying abilities. Though by no means a leader, Melissa was nevertheless an active participant in most class discussions. Her performance on compositions and other assignments, at least insofar as it was reflected by her grades, was about average. She seemed to have a number of close friends in the class and always sat near them, even when she needed to work quietly. During a typical class period she would alternately write and engage in desultory conversations about music, school dances, parents, and friends--and occasionally the task at hand.

Melissa's teacher once commented that her work was often characterized by both sparkling wit and inadequate development. The duality of this assessment is suggestive of the paradoxical feelings about writing which she expressed throughout the study. On the one hand, she valued and enjoyed writing as a means of creative expression. From the age of seven or eight, when she had composed a series of short stories about a dog as well as a number of four-line poems, she had entertained notions of becoming a writer. She noted that at one point her parents had also had "visions of an authoress." On the other hand, she often found writing upsetting. School writing especially was a source of distress; she frequently felt pressured and confined, she said, by the short deadlines and narrow topics imposed

by her teachers. She longed for what she imagined to be the unlimited freedom of the professional writer. But she speculated that even if she became a famous author, she might soon become bored with the grind of composing, or worse--she might be panned by the critics ("I just couldn't handle it," she admitted).

Melissa displayed an unusually clear understanding of the power of written language. This insight had developed in part in the aftermath of her brother's accidental death several years earlier:

I think that I really realized how much of an impact writing has when my brother had died, and he had written some things before he died, and it just really told everybody in our family, I mean, a lot about a person. I mean, it wasn't anything personal. It was just something, but you could really realize a lot about the person by the writing. I think that's what made me realize that writing expresses the person, you know, when somebody reads it later. Like if somebody picks up something that I write and they read it ten years from now, they may know exactly what I was like, you know. I think that's what got me interested, really into writing, because I realized, you know, so much that that good writing really summed up my brother's personality, and that really got me interested to know that ten years from now I'll still be able to remember what kind of person he was just by the piece of writing. It was just a paper, so short and everything, but it was really--it was definitely him. And my whole family thought that way.

But while this event had raised her interest in writing, it had also increased her anxiety. Knowing that others (especially teachers) could and would judge her by her compositions, she felt that she had to choose her words very carefully lest she be misunderstood. At the same time, she feared being too much exposed:

Everything that I write on my own is something personal to me. If somebody came along, "This is terrible! This--no sense at all!" I think I'd be very hurt.

Given these feelings of vulnerability, it is not surprising that Melissa preferred to do her expressive writing in private. She reported that her favorite school writing assignments were research papers, presumably because they are written over a long period of time and require a minimum of personal involvement.

Her candor in discussing these complicated attitudes about writing made Melissa an especially valuable subject. Our interviews apparently did not constitute a threat, for she knew I would not be evaluating her work. In fact, these sessions seemed to provide a release: her feelings gradually unfolded as she spoke. A similar unraveling process occurred in connection with her awareness of her own complex composing process. Her reports of her overt writing habits and procedures were generally clear and precise from the start, though they often revealed contradictory practices. In contrast, her awareness of the mental processes involved in writing seemed to increase as the study progressed (this point is discussed in more detail below). In spite of this change, her oral-composing session was a failure. She was unable (or perhaps unwilling) to verbalize her thoughts while she wrote. She would have agreed with Frank Smith that "we cannot simultaneously attend to something and attend to ourselves attending to it" (1982, p. 42). Nevertheless, the protocols contained in her writing folder, coupled with my own observations of her work in class, provided substantial confirmation of her composing-process self-reports.

Pre-instruction writing methods

Melissa had trouble selecting a focus for her initial writing sample. Like many of her classmates, she appeared unaccustomed to writing for an audience of peers. The first words she committed to paper were a list of four possible topics: video games, popular songs, upcoming concerts, and the past weekend. All of these subjects had been mentioned in casual conversation with her friends on the day the assignment was given. After some deliberation she chose the first and quickly produced the following "rough copy":

Friends of the video world. Lately the surgeon general has been investigating video games, cigarettes just wernt enough. He has determined that video games are dangerous to our health.

Well as a video fan I've come up with a few simple questions for Mr. surgeon general. Firstoff, when was the last time he got the urge to go into his local arcade? What does this dude know about Pac-man fever?

Now that Mr. surgeon general has determined video games dangerous what does he plan to do? Wake up Mr. Surgeon General the awsome reality is that you cant put a warning lable on a video game. Why dont you leave us kids alone!

Melissa's argumentative approach to this topic was undoubtedly influenced by earlier discussions in her social studies class on the merits of video games. But despite her apparently strong feelings on the subject, she was obviously dissatisfied with the draft she had written. When the teacher reminded the students the next day that they could abandon false starts without prejudice, she immediately did so and decided to write an informal "note to a friend" instead. But what may have begun with a serious intent soon became a parody of teenage talk (the teacher had earlier approved the use of slang in

this assignment). She completed a draft and had enough time left over in the class period to begin her final copy, which, aside from some relatively minor changes in wording, turned out much the same as the original version. The result:

Bets,

Whats up? Not much here. Sorry to here you're fighting with your parents. Parents can be such bone heads sometimes. My mother is being a total jerk. Oh well enough about that.

So what are you doing over the weekend? I'll probably hang around at the mall, play some games and blow some money. I can tell this weekend is going to be totally hurting, Complete washout. Whats playing at the movies? Last weekend I went to see First Blood, totally awesome movie. The part where the guy falls and splats himself on a rock is totally cooking. I almost had to spew! These hurting scuz-bags sat right in front of me, they ate like pigs and dressed Kmart style, oh gag me out.

Speaking of Kmart style have you heard from Judy lately? Or should I say Drill bag? She's been calling this eighth grade girl and telling her all this crap about Frogger. She's a total barf out!!!

Do you remember Oak Knoll last summer? Drill Bag comes bouncing or rolling down. What a scuz.

Have you seen that cooking Camaro in town? You know that black one with silver striping Bloby might be getting a brand-spanking-new trans next summer. That would be so ex, but of course he'd have a spaz if anyone went near his machine.

So hows Paul? Still working at the boat? Does "Nuke" still miss you? I hope Paul gets the ship into going before the weekend so he can cruise down here. Annie's got a real "thing" for him, but shes so young. Well you and Paul and me and Dave will have to get something going for one night this weekend OK?

Hope so.

Best Wishes

Your Best

Love Allways

Kit

Melissa was (justifiably) disappointed with her "letter." "It didn't come out the way I wanted it to," she said later, but acknowledged

having made no real plans for the piece. For content she had used the first ideas that had come to mind. She complained about having felt pressured to write something quickly, though she had failed to take advantage of the teacher's offer of additional time to complete the assignment.

Melissa's composing of this initial writing sample left the impression that her method of writing was rather unsystematic. But when asked to describe her usual composing process, she was able to identify several important features. These included considering the expectations of the audience, generally one of her teachers:

I know if you're writing and your teacher's going to read it, you're not going to write, you know, something that's really interesting to you and your friends and they're not going to know anything about, so usually just write the way I would think that an adult would read it.

Melissa indicated that the actual production of text was preceded whenever possible by extensive mental planning and followed by a certain amount of reformulation. She explained her procedure for writing papers as follows:

I think about it [the assignment] usually on the way home, and a lot of times, if . . . I know I'm going to have to write it the night before [the due date], I like just kind of lay there in bed. I go to bed and think about it, kind of work it out in my head, then the next day I just, you know, think of something, think of the way I want to word it out, and then I write it. Then I read it over and pull out all the words that don't fit in or aren't as good, and I use something else more descriptive or something that sounds more exciting or something.

Her primary consideration in making revisions seemed to be what impression she would make on the reader: she said that she sought to

find words that were both interesting and easy to understand.

Although Melissa's description of her own writing procedures delineated three discrete stages of composing, there was evidence of frequent, sometimes major, recursion, especially during the process of drafting: "I think of what I want to write and then kind of do the sentences in my head and erase things in my head and put another thing and write them down." In other words, she closely monitored her emerging text and modified it as it was being produced. And if she became sufficiently dissatisfied with the way a draft was developing, she sometimes completely abandoned it, as in the case above. She said, however, that she was unlikely to take this drastic step unless she could start fresh on another subject.

Melissa indicated that she often became blocked for as long as several days when trying to come up with ideas for a paper. She felt that the only good solution to this problem was simply to wait for the "urge" to write:

Like everybody says, "Don't wait till the last minute to write something. Don't wait till the night before." Well, sometimes I do, and it may turn out to be five pages long or whatever, and people don't really realize, you know, that it took me--it was overnight, because a lot of times I need to wait to the last minute to do it, because that's when the idea comes to me. So, I mean, it works out better for me that way sometimes--just to wait, and all of a sudden it comes to me, and it's really good, as opposed to if I'd started way before and done ten drafts and I got terrible still. So I feel a lot better if I just wait till it comes to me instead of being pressured into throwing something out on paper.

In this statement and on numerous other occasions, Melissa made clear that she relied heavily on inspiration to produce ideas for writing.

She believed that her best ideas came without effort when she was patient enough. Of course, she could not always afford to be patient; imminent deadlines often pressured her into "throwing something out on paper." In these instances she was apparently forced to use whatever material was most convenient.

Sometimes, when the assignment would permit it, she would "try to think of a life experience and then spice it up" (initial questionnaire). That is, she would select an appropriate episode from her past and extend it or exaggerate it or alter its outcome to transform it into an interesting story. This common procedure was one of two heuristic devices which she had previously employed on her own. The other was a strategy for writing book reports. She had found it was easier to "describe the plot" if she tried to "see everything from the character's point of view." The basis of both of these simple invention strategies was role playing--the technique of visualizing oneself in a part.

In addition to her personal sources of ideas, Melissa made extensive use of outside help. This was sometimes supplied by the assignment itself:

Like in social studies, if they give you something to write on, it's a lot easier--an idea, a subject or something. They usually--I mean, it's not an English class, so they don't just say, "Write something." . . . They give you outlines and stuff so it's easier to do that.

At other times she turned to various published materials, particularly articles in national magazines. But the external sources of ideas she valued most were her friends. The extent of her need for peer

interaction and approval was revealed in the cause-and-effect essay which she wrote toward the end of the study:

Some teachers feel a silent class room during a work period is better for the student. As a student I feel that the silence is a distraction. During these silent times I feel very pressured to throw something on paper, something I won't be happy with. But the biggest distractions are the sniffles and pencils tapping, chairs squeaking and paper crumpling. The faces of my peers are as blank as my own, no doubt their minds are blank too. The silence is a pressure to think and produce, the silence holds no ideas. It is important to share ideas with our peers and seek approval. The paper written in silence is a pressured one that the writer has many doubts about. The grade received for a paper could be effected by the silence. So maybe it is the silence that influences our writing, the tense thoughts and mental pressures. Could it be that the remedy is actually the problem? For this student silence in the class is the cause of writing blocks and stifled thoughts.

The concluding sentence is an obvious overstatement--Melissa reported elsewhere that she sometimes needed silence--but it indicates forcefully how deeply she feared to confront the blank page by herself.

The foregoing description of Melissa's composing process, based primarily on her writing and self-reports before instruction in rhetorical invention, is replete with apparent contradictions. She seemed to possess a clear sense of procedure, but in practice her work habits often appeared random. She worried obsessively about readers' reactions, and yet she submitted a piece with which even she was not satisfied. She said that required topics hemmed her in, creating a paralyzing amount of pressure, but they also provided an easy way to start. To produce ideas effectively, she seemed to require both solitude and society. Of course, all writers work differently at

different times. But there was more involved in Melissa's case: the inconsistencies in her composing methods appeared to reflect her ambivalent feelings about writing. On the one hand, she nourished romantic dreams of authoring best-selling books. On the other, she faced an unpleasant reality of assignments that had to be gotten through somehow. Thus, though she aspired to create works of art, she was often content to catch the nearest way.

Melissa reported that her methods of composing were the product of instruction by several former teachers, though she had found none of their individual approaches completely satisfactory. She recalled having written in a journal (and hating it) as early as first grade and later having "published" a number of illustrated stories ("totally corrected" by the teacher). She indicated that her sixth-grade and eighth-grade English teachers, who taught her "to think and organize," had been the most important recent influences on her writing. From the former she had learned how to brainstorm lists of "really creative words" to include in descriptions, though her current use of this particular strategy seemed not to involve any listing on paper. From the latter she had learned how to use a topic sentence as the basis for developing an entire piece of writing. Once again, she had made the process entirely mental: she created "an outline thing in [her] head and then put it down on paper."

Applications of heuristic strategies

Melissa received her first formal instruction in the use of

rhetorical invention strategies during the present investigation. Her initial run through the eight heuristics in the booklet was highly successful; in general, she followed its directions very closely when completing the various practice exercises. Her results made it clear that she had developed a firm grasp of the concepts underlying virtually all of the strategies. Freewriting brought forth the most interesting material, three pages of personal views about war; but the other techniques produced good ideas, too. Any of her exercises could most likely have been used to develop a successful piece of writing.

Despite these initial good results with the strategies, Melissa found most of them "a pain in the neck," just something she had had to do. Only three of them held any noticeable appeal for her: freewriting, visualizing, and diagramming. She felt that freewriting might help her whenever she had to write something in a hurry. She saw the technique as a useful refinement of the "take-whatever-comes" method she had already used in pressure situations. The visualizing strategy was in many ways similar to the role-playing heuristics she had used on her own, and she liked its key feature: think first, and then write. On the other hand, she was attracted to the diagramming technique because it "made it easier to see everything, instead of just thinking in your head ten lists." Although the remaining five strategies did not especially interest her, Melissa did see potential uses for them. She thought that defining might work in research papers and that any of the others might aid organization. But she remained firmly committed to her own preferred method of composing.

In fact, it was after she had tried the invention strategies for the first time that she seemed to fully realize that she had a preferred method of composing:

I . . . like to think of something on my own and just--and, you know, it may take you five or ten minutes, and then you just think about things and try and word it out in your head and then put it on paper, as opposed to using a system. I guess that's my system, you know.

She obviously doubted that rhetorical invention could play a useful role in her system.

In the standard-level class, five more papers were required after the introduction to invention strategies. These included four essays (definition, classification, comparison/contrast, cause-and-effect) and the final paper, to be written for an audience of peers. As in the basic-level class, work on each essay was preceded by a brief textbook lesson on the appropriate rhetorical mode. Writing sessions followed the same workshop format, though in general the standard-level students seemed to require somewhat less direct help from the teacher. Much of the individual instruction that was given concerned the use of invention strategies.

Though skeptical of the strategies' potential to help, Melissa did use them in the process of developing all of her remaining papers, in two cases extensively. But unlike Don, who always worked methodically from a single invention strategy to a rough draft to a final copy, Melissa followed no set pattern. Sometimes she used the heuristics to start, but sometimes she used them after listing ideas. She sometimes used one and at other times two; sometimes exactly as

presented in the handbook, but often in adapted or abbreviated form. In all but one case she composed a rough draft which incorporated ideas from the invention exercises, but in no case did she actually complete the rough copy before moving on to write the final draft. Consequently, there were always substantive differences between her initial and final versions, though the former showed very few signs of revision. She apparently made most of her additions and changes while in the process of rewriting.

Melissa's topic for the definition essay, "A Hero," was one of several possibilities listed in her textbook. She began working on it, appropriately enough, by selecting the defining strategy from the handbook and completing three paragraph-length definitions. To come up with the first, she made the obvious move of looking up "hero" in the dictionary; but the second definition seemed to be a reflection of her personal values, and the third was the product of her imagination:

Definition by classification. Websters dictionary definition. A man, a warrior, A person of distinguished valor. Taking part in an admirable or remarkable event.

[Definition by measurement.] People say a hero is somebody who does something brave risking life and limb to save others A hero saves the day by his/her actions. A hero is somebody who forsakes his/her own personal safety to save others.

[Definition by comparison.] A hero is like a gem, very precious and so few. There are many types of heroes and many types of gems but there are so few heroes and so few gems. Heroes in their own way have the brilliant sparkle of a true gem, a hero is strong yet appealing. A true hero shines and sparkles no matter the condition And so does a gem sparkling in the rut.

Melissa's next step was a freewriting exercise which took an entirely different tack:

As a popular television show once stated "A hero is somebody cold enough, hungry enough and tired enough not to care what happens to himself." Is this true, aren't heroes just people who reacted to an extraordinary circumstance the way anybody else would? A hero is nothing more than a person who happened to be in the crowd. It is true that some people put self before others in case of danger, but is this not the survival instinct? So maybe a hero can be defined as the only person in the crowd that had guts enough to move. What kind of hero was Superman?, he supposedly had all kinds of super power, so in actuality the guys got no guts at all. Let's take away his suit and shove some kryptonite in his pocket and then let's see how brave he is!

Once she had finished this exploratory piece, she immediately began the task of selecting and integrating the best material from the two invention strategies. However, after composing only two paragraphs of a rough draft, she abandoned it and wrote out a complete "final copy":

As a popular television show once stated "A hero is somebody cold enough, hungry enough and tired enough not to care what happens to himself. Webster's dictionary defines a hero as somebody of great valor, or somebody taking part in a remarkable event

To me a hero is like a gem. There are so few and each is so precious, just like a gem. Heroes in their own way have a spectacular sparkle to be compared with the finest of gems. A hero seems strong and unyielding to even the most difficult situations, just as a gem. A true hero sparkles in any conditions as does the perfect gem in the rut.

Although we consider heroes to be super and almost inhuman, they are people. A hero is a special type of person, the type that gives of themselves unselfishly.

For most people it is extraordinary to hear of the actions of a heroic person. But a hero knows what holds back the everyday person from becoming a hero too, it is the survival factor. In a dangerous situation most people consider whether they will be injured or killed, this often stops them from performing the monumental act of heroism. But a true hero will consider nothing before dashing into the action and boldly ignoring all the dangers to fulfill his/her heroic destination.

To me a hero is not Batman, or Superman or even Wonder Woman. To me a hero is the person who has that special deep courage that saves lives, courage most people do not have.

The paper which Melissa submitted to the teacher contained several cross-outs in the final three paragraphs, suggesting that she had edited her text as it was being produced. Her failure to produce a more polished version may simply have been due to a lack of time.

Melissa was clearly quite successful in using defining and freewriting to generate ideas for "A Hero." Both of the strategies produced good material, most of which eventually found its way into the essay. The process of drafting, though apparently somewhat rushed, seemed to be far more systematic and smooth than the hit-or-miss effort which produced the initial writing sample. The result was certainly much more cohesive and clear, and presumably more personally satisfying as well. In spite of this positive outcome, however, Melissa remained unconverted. Only one of her four subsequent papers grew out of as rigorous a use of invention strategies as that which produced this essay.

In fact, her composing of the very next paper, a classification essay on the problem of toxic wastes, involved only minimal use of heuristics. She began by preparing an informal outline of facts she had gleaned from various news reports, then completed a very brief freewriting exercise which incorporated about half of the items on the list and added some material on the government's response. She took the procedure no further, however. Instead of underlining her most provocative ideas and repeating the process with a sharpened focus (as she had previously been instructed to do), she simply revised what she had already written, tinkering with wording and altering some

material. Having done so, she revised the composition again, filling in needed details and correcting mechanical errors. The result was a polished but very short essay. Melissa's procedures for composing this paper were reminiscent of the process she had described in our first interview. The main difference, of course, was that here she produced a rough draft by freewriting instead of by waiting for an inspiration.

In contrast to her classification essay, Melissa's next piece, a comparison/contrast paper entitled "The Diamond and the Zircon," was based on extensive preliminary work. After selecting her subject for the piece from among the three possible ones she had listed, she developed a comparison of diamonds and zircons by means of a "dialectic diagram." Using the two-column format suggested in the handbook, she enumerated the principal features of the gems in parallel order. In place of the customary synthesis at the end, she gave reasons for the relative worth of the stones. All of the material she produced with this strategy was factual. Her next step, on the other hand, focused on feeling: using the freewriting technique once again, she discussed in some detail the symbolism of the diamond and pondered the "meaning" of the manufactured gem. Her musings incorporated some material from the dialectic, but their aim was poetic, not analytical. When she had completed the freewriting exercise, Melissa went over it and underlined key points, then compiled a list (in no particular order) of sentences which summarized the main ideas from both invention strategies. From these she

assembled a single draft of the paper, moving from the essential similarity of the stones to the difference in value and the reasons therefore. As in the case of the definition essay, her having deliberately developed ideas with the aid of invention strategies seemed to transform the process of producing text from a desperate struggle to fill up the page into an orderly procedure of selecting and integrating the most promising ideas.

Returning at the end to what was most familiar, Melissa selected the visualizing technique as a means of coming up with material for each of her last two papers. The first of these was the cause-and-effect essay on "silent classrooms" cited above. She began work on this piece with a visualization suggested by direct observation of the class:

The class room is quiet, no talking allowed. It is a work period to write our reports. The silence is terrible and uncomfortable. The only noises are pencils tapping, paper crumpling and little sniffles. I look around the room and see my classmates all feeling the same way. I try to write my report but its no use, the quiet is a distraction. The tense atmosphere begins squeezing my mind. I see the teacher grading papers, not minding the silence at all. He spots the kid whos talking and gives him a stern glance to warn him that talking is not allowed. All of this silence is so stifling I just can't think the period ends with a blaring bell I leave the room with a blank paper

Next she prepared a brief analysis of the scene, separating the causes from the effects. After this she developed a partial rough draft by eliminating the narrative framework of the original exercise and replacing it with the apparatus of expository prose. In the final version (see p. 118) she extended the conclusion: it grew from a

solitary sentence to six, nearly half of the still-very-brief finished essay.

The final assignment--to write once again for an audience of peers--provided the occasion for Melissa's unsuccessful oral-composing session. The record of this session contained a number of large gaps, for Melissa was unable to verbalize her thoughts until she had them sorted and settled in her mind. She pondered the problem of selecting a subject for several minutes and finally chose "How to Outsmart Your Parents." After a pause she began to brainstorm ideas, writing down three or four items at a time, then stopping to review them and to think of others. This process continued until she had listed twelve. In the meantime she had decided to use the visualizing strategy to make these techniques of "outsmarting your parents" more vivid for herself and her readers. In the previous essay she had employed this heuristic primarily to generate the content of the piece. In this case she began by creating the content and then used the heuristic to generate a form. Selecting individual items from her list, she imagined appropriate domestic scenes and recorded them in brief vignettes. However, she quit after completing only two and went on to begin composing a rough draft. Both of the items she had already worked on were included, but stripped of the narrative contexts she had created. In essence, the rough draft was little more than a rearrangement of the original list of ideas. And the final, which follows, was a word-for-word copy, with two sentences added by way of conclusion:

Teenagers today have many problems, but the biggest problem is parents. So here are some tips on how to handle your parents in a sticky situation. When you leave the house and your parents ask where you're going out it's proper to say "out." This shows your parents you're in control of the situation. When you're angry with your mom you always call her mother, with an impatient tone of voice. Dad is the stand by when mom says no, while begging it is appropriate to call him daddy. The term daddy is limited to begging only. Any other time it shows immaturity. In the midst of a battle with mom and dad never look them in the eye or cry. The teenage way to handle an argument is to hem, ha, tap your feet, and show that you're bored. If sometime you happen to accidentally run up the phone bill it is helpful to have a little sister to blame.

As a teen it is most important to never let your parents know you're in love. Parents often have that habit of bragging to friends of your puppy love. And last but not least never let anybody see you in a grocery store. Teens belong at the arcade, movies, mall, or at a friends house.

Teenagers today must be skillful when it comes to parents. Somehow they just don't understand the teenager of the eighties.

It is evident that her use of the visualizing strategy ultimately had little to do with Melissa's composing of this paper. In effect, she rejected the approach it offered when she began drafting the piece.

Effects of instruction in invention

Because she made such varied use of the strategies, the effects of the instruction in rhetorical invention on Melissa's composing process are not easily summarized. Her experience was, in a word, mixed. At times she appeared to be much changed in her methods: her definition and comparison/contrast essays, though both submitted in less-than-polished form, were nonetheless products of a systematic, coherent, deliberate process of idea generation, selection, and development--a process much different from that in evidence at the

start of the study. At other times she seemed to have modified only slightly her earlier methods of producing papers: her classification and cause-and-effect essays, as well as the final writing sample, were developed according to procedures which, though more efficient and more open to view, were similar to her previous unpredictable practices. On at least two occasions she abandoned the process of invention midway and resorted to straightforward generation of text. Unlike Don, whose gains from the use of the strategies were immediate and unmistakable, Melissa had intermittent and more equivocal success. The complexity of her response was reflected not only in her writing protocols, but also in her comments on the second questionnaire and during our final interview. On both occasions she readily acknowledged that using invention strategies was "fun" and had a number of benefits, but at the same time she insisted that in general, for her, the heuristic techniques did not work.

The most obvious benefit of using the strategies was increased efficiency in producing ideas. Like Don, Melissa found that freewriting sometimes eased getting started:

I had never really tried just writing down, you know, whatever. . . . Nobody'd ever said, "Write down garbage," you know, and it really--I mean, that's very good to do if you don't really have an idea.

She reported that other heuristics occasionally helped her to order her ideas:

When I was unsure, they kind of helped me to organize my thoughts, and some of them helped me to really organize and then put them down. I think it came out better that way. If I didn't really have a thought or I had a bunch of

thoughts, and then I would use an invention strategy, it would help me to organize my thinking and then go on to write. I think that way it gave me some ideas.

The strategies thus enabled her to overcome troublesome initial writing blocks. They were also quite helpful, she said, when ideas came quickly but randomly:

Like when I was starting to write and then just, say, "Hey, there's an idea!" and another idea would pop into my head--"Oh, that's an idea!"--and then all of a sudden I'd just have to sit down and say, "Okay, now put these ideas down." . . . One or two of them [the invention strategies] really helped me to stick them down, you know, write them in something and then go from there. That really was good, and I think I'll probably use that all through school now.

Melissa produced more material on paper by using invention strategies, especially when she used them in tandem, as she did in preparing the definition and comparison/contrast essays (her longest compositions of the term). But she also produced a wider range of material, representing a variety of perspectives on a subject (as in her multi-layered definition of "hero"). In short, her production of ideas was at once more efficient and more effective with heuristics than without them.

Similar observations were made above concerning the effects of instruction in invention on the overall character of Melissa's composing process. On those occasions when she made substantial use of invention strategies, her writing procedures were significantly altered, in most cases for the better. In the first place, her extensive prewriting activity became more deliberate and more overt. Instead of merely mulling a subject over in her mind, she explored its

dimensions systematically on paper. Secondly, her organization and development of ideas became a matter of consciously choosing among alternatives. Instead of just waiting for each idea to emerge and then simply accepting or rejecting it, she selected and combined her most promising ideas in an effort to develop a coherent text. On the other hand, her efforts at reformulation seemed to lag when she used the invention strategies. Perhaps she felt that they obviated making multiple drafts for the sake of revision. More likely, the extra time she spent on producing and developing ideas was stolen from the polishing stage of the process. On the whole, though, her methods of writing seemed improved by extensive application of the various theories of invention. At the very least the strategies enhanced her power to direct and sustain her own composing process.

Why, then, did Melissa repeatedly claim that the strategies were "not very useful"? Apparently because they conflicted excessively with her established writing habits. Unlike Don, who was able to combine the heuristics with procedures he had used in the past, she found that they clashed with her preferred writing method, which she described in our final interview as follows:

When I go to write [something], I've already thought of what I want to write. . . . I already have everything in my head--have all the general ideas. It's kind of like I make an outline in my head. . . . I kind of, I guess, hear myself, you know, thinking, running over the subject, and then just think of ideas that would be backing up my topic. And then I start thinking how I'd word it, and then it's kind of like I can just hear myself what it would be like if I had written it down and I was reading it. And then I just go and I write it down. And that's the same thing. Then I read it back and whatever doesn't sound right, I just take

out the words and stick in other ones. So it works out better that way. I get a better feeling about the writing.

The most significant feature of this composing process is its emphasis on mental rehearsal, on what James Britton calls "getting it right with the self" (Britton et al., 1975, p. 26) before committing thoughts to paper. This pattern was disrupted by the use of invention strategies:

It was like going through my brain, reversing the whole thing of setting up an outline, and doing it all on paper and then going back and, you know, doing the whole thing back over again. It's like a tape recording, now reverse and then forward, back on another piece of paper. By the time I got back to the paper, I was going crazy because, you know, it just reversed it.

As a result, Melissa felt unable to make a smooth transition from producing ideas to producing text:

For me it was like two separate things. It was, you do the invention strategy, and then I'd do the paper; and it was more work to look at the invention strategy, pick out the things, and just stick them into the paper. So for me it was more like pick-and-stick, you know. . . . It was like this is one paper and this is another paper. . . . I did them, but then my writing.

The advantages of using a process of invention, many of which she had seen for herself, could not justify, apparently, the additional effort required nor the loss of continuity in the progression from thinking of what to write to drafting the actual text.

In the end, however, it was fear of change that most significantly affected Melissa's attitude toward invention strategies. She admitted as much at the conclusion of our final interview:

It's kind of like riding a bicycle, you know. You can learn other ways of doing it, but you're always going to go back

to the way that you first knew how to do it, because it's safe, you know. You know, even if it doesn't work, you know that that's you, that's your feelings. And I think that that's maybe the way I am, really pigheaded about learning new things. And after a while I realize, "Hey! I could have used that!" and call it back, but . . . some things just take you a little longer to accept, because, you know, you're not as comfortable with that and you think, "I have to go back and I have to relearn it, and I have to be back at the beginning again, right at the bottom."

Her reluctance to accept the entire concept of invention was apparently related to the feelings of vulnerability she associated with "public" school writing. While private, self-initiated expressive writing often provided her emotional "relief," school writing was generally a source of anxiety. Her intense and persistent dislike of "pressured" assignments seemed to stem in large part from her fear of exposure: in her eyes, implicit in every comment and grade was a judgment of her personal worth. Consequently, Melissa had learned to play safe--to do adequate work with a minimum of risk. She was confident of her ability to produce papers which her teachers would find acceptable: "I've got enough talent to get me through school," she commented on the final questionnaire. Under the circumstances, her unwillingness to abandon familiar methods in favor of uncomfortable new approaches in the hope of achieving unspecified long-term gains is understandable.

Although Melissa's reaction to using invention strategies was basically negative, her working with them had one unmistakably positive effect: she became far more conscious of the mental procedures involved in her own composing process. This awareness was

initially triggered by the conflict between the heuristics and her established writing methods:

I know I didn't, before this, just think about, you know, "Oh, I'm writing something." And then when I had to sit down and think about doing the writing strategies, I mean these invention things, it was like, "I'm going crazy here. I have my own system."

The realization that she had a mental system for writing (in addition to a number of physical habits) enabled her to articulate her composing process more clearly and ultimately afforded her a greater sense of control: "Now [that] I know what it is, I can keep, you know, calling on it."

Consciousness and control, while valuable in themselves, are also prerequisites for change. Though reluctant to alter her "safe" writing methods, Melissa gave several indications by the end of the study that she was ready to consider alternative approaches--even voluntary use of invention strategies. That she planned to continue using the freewriting and visualizing strategies was no surprise; as shown above, these techniques were somewhat similar to practices she had developed on her own. But she also suggested (on the final questionnaire) that she would eventually return to strategies she had not liked so well: "Sometime in the future I hope to be able to use them all." She noted, in fact, that she had already done so in writing a social studies research paper. In other words, increased awareness of the composing process brought about by instruction in invention seemed to reawaken Melissa's dormant desire to do more than merely adequate work and raised the possibility that she would begin

to take risks in order not only to improve her writing methods but also to fulfill her creative ambitions.

Sarah, an Advanced-Level Writer

In one sense, the profile of Sarah which follows is very different from the previous two. She was clearly a more fluent and more competent writer than either Don or Melissa, and her methods of composing contrasted with theirs in many significant ways. On the other hand, she shared many of their feelings about writing. Like them she valued writing as a means of creative expression. But she, too, had experienced frustration in school (though for somewhat different reasons). Her response to the instruction in rhetorical invention fell between Don's largely positive and Melissa's basically negative reactions. Initially skeptical of the strategies' usefulness, she eventually came to see them as valuable resources for directing her own composing process.

The advanced-level class of which Sarah was a member was the largest and most ethnically diverse of the three included in the study. Most of the students in the class were connected through their parents to the local academic community. Many had lived in other parts of the country; a number had come from other parts of the world. Though also diverse in their abilities as writers, on the whole these students had experienced success on school writing tasks. Whatever the source of their motivation--grade consciousness, parental

pressure, or a genuine desire to excel--they had generally proved able to produce written work which was satisfying to their teachers (if not always to themselves). A majority wrote with some sophistication, and a few with considerable flair.

Sarah was in many ways typical of her classmates. A hard-working student with consistently good grades, she was obviously serious about her intellectual pursuits. Besides a heavy load of academic courses, her interests included reading, playing flute in the school band, and especially acting, of which she hoped eventually to make a career. Outgoing and friendly, she was often quite talkative--even giggly--in class, but she seemed to be capable of disciplining herself to work when the time came to get down to writing.

In spite of her overall success as a writer, Sarah's feelings about writing and her own written work were mixed. Like Melissa, she enjoyed being "creative" with language: she often wrote poems and other expressive pieces in her diary. But she, too, was reluctant to share her private writing, which she felt was altogether more personally revealing than any performance she might give on the stage. School writing, in general, posed the opposite problem. Because it usually consisted (in her eyes, at least) of "writing summaries of other people's work," it failed to "stir up [her] imagination in any way." She indicated during our first interview that routine assignments which required no originality were the most exasperating for her: "I'm always thinking that I have to do more than what was assigned," she said, but teacher-imposed "boundaries" often prevented

her doing more. She felt that she achieved her best results when given a difficult but stimulating task: "I am usually satisfied with work that I was challenged by and interested in. I'm often disappointed in work I thought was easy or boring" (initial questionnaire). Unfortunately, in her experience the latter type of work had been the rule. Sarah would have agreed with Janet Emig that in general school writing "is a limited, and limiting, experience" (1971, p. 97).

Sarah was an excellent case-study subject. In addition to being candid about her attitudes toward writing, she was able, upon reflection, to articulate fully the considerations and procedures which characterized her composing process. Her responses to many of the items on both questionnaires ran into the margins, and her interviews were three of the most useful I conducted. She was obviously comfortable talking about her writing and seemed to enjoy the process of giving voice to previously tacit ideas and feelings. Documentary evidence from her writing protocols largely confirmed her self-reports. Though far more untidy and thus difficult to follow than either Don's or Melissa's rough work, Sarah's voluminous notes and drafts left an unmistakable, if tortuous, trail that indicated the course of her thinking process. Her oral-composing session was completely successful. And though she did a good deal of her writing at home, Sarah made frequent and voluble comments during class which further illuminated the direction of her work in progress.

Pre-instruction writing methods

Sarah had little trouble selecting a topic for the initial writing sample. Pleased to have the opportunity to write an informal paper, she decided to narrate some of the "adventures" of the previous weekend in the form of a letter to an unnamed friend. Once she had established the dimensions of the piece, she immediately began composing a rough draft. She worked very quickly, recording the events in the order she remembered them and occasionally stopping to change a few words or to insert some additional information. Sarah made several more changes and additions when preparing her second (and final) draft of the letter, but she preserved the original order and tone:

You'll never guess what happened on Friday. Actually its not that exiting. Johanna and I were coming home from the dance, my mom was driving, and these guys in a car started honking, waveing, tailgating and blowing kisses at us. It was pretty funny because my mom was getting worried. She kept saying "I bet they're drunk and they're going to crash into us." Actually they probaly were drunk, they looked like the only brains they had were in their pants. I must admit that I thought that they were babes! I mean its rare that you actually get checked out by anyone male and goodlooking. Anyway they were really checking out Johanna, who'd be intrested in me? When we got home I heard my mom telling my dad about it saying that we're going to have to be carefull when we go out now. That was about the only exiting thing that happened exept we gained about ten pounds. After we got home we ate popcorn, ice cream and apple crisp. That was after eating dinner at Taco Villa and dessert at Sweeties. We saw Mary and Connie at Taco Villa, they were waiting for Dana and Andy. It turned out that they were getting stoned in the bathroom, they just couldn't face Mary and Connie strait. It was the same case with Mary and Connie, they would only be so happy to see us if they were gone. We saw Dana and Andy later, without Mary and Connie. I wonder what happened, I guess it was a quick date, ya know?

The dance itself was as boring as usual. The D.J. guys were actually pretty fine but they must of been at least nineteen and they turned out to be pretty dull. It was pretty sad because there weren't even any eighth graders to dance with. It was the emptiest dance I've ever been to. Of course most of the ninth grade boys stood around with their hands in their pockets lost without anything to say. They really think they've got it all together. Too bad for them. they're going to be dissapointed in themselves.

We ended up leaving the dance (we were there for about one hour) and going uptown to backroom. It was fun because we were all, Johanna, Mesa, Kirsten and I, in really wacked out moods. Boredome does it everytime. We had a good time talking strangers and doing wierd things like staring in bars. At one of the bars there was a group of guys, all about thirty years old, who were all playing pool. We all looked in and one guy invited us in to play pool. Little did he know that we're six years underage. They looked like decent guys but you never know so we left quick to avoid them coming out to talk to us. We ended our friday night running around town singing and dancing, pretty strange huh?

When asked how she felt about they way the piece had turned out, Sarah replied "lucky"--because the letter had "just happened." She attributed this unwonted ease of composing to the informality of the assignment. If a paper is on "something personal," she added, "it's a lot easier to write."

Sarah indicated that she usually found writing more difficult, particularly when faced with an uninspiring topic and restrictions on the format and scope of the essay. She said, "Boundaries drive me crazy, I think." She reported that the process of starting an assigned paper was typically attended by considerable anxiety:

I look at the assignment over and over again, and if we read something in class and then I'm going to write about it, I read it again, and . . . I worry, I get nervous, I think I don't know anything about the topic. I really go through every bad thing you can imagine.

Eventually she would begin jotting down some ideas and then proceed to

writing out a rough draft as above. On occasion--particularly in the case of a research paper--she developed a formal topic outline before drafting. Revising for Sarah consisted primarily of "cutting out unnecessary things that people don't really care about" and adding things with an eye toward "making the writing flow." She said she was especially attentive to transitions, which had apparently been emphasized by a previous social studies teacher. She was much less concerned about "little things" like sentence structure and spelling but acknowledged that she ought to be checking them more.

Producing text was not the difficult part of the process. Sarah indicated that her progress from prewriting to writing to rewriting was generally smooth and continuous--once she had put pencil to paper ("When they start, they go"). Though she frequently made minor recursions during drafting to generate additional material or revise, she seemed to be able to "sustain the flow." Major reformulation of a piece already underway was rare. But she would often become blocked when producing ideas. Finding an approach to a tightly structured assignment was particularly troublesome: "Something like that'll take me hours to start, you know. . . . My problem is actually getting myself to do it, getting myself in the right kind of mood to do it, and . . . I haven't been able to do that lately." Getting stuck was little short of traumatic for Sarah:

I get completely upset and mad and angry and blame it on every possible other person who I can and every other reason and sit there and say to myself that I'm a really bad student because I can't do anything unless I like it and really give myself a hard time.

The fact that she was usually quite successful in the end seemed to offer little solace when she was in the throes of beginning.

Sarah possessed surprisingly few effective strategies for coming up with ideas and overcoming serious blocks. In general, her approach was to "hope for the best." She preferred simply waiting for the flash of inspiration which often occurred after a period of incubation: "If I can think about it, not even consciously--just having the assignment before writing it helps a lot in getting started," she noted on the initial questionnaire. If possible, she made use of whatever happened to be on her mind, as in the case of the initial writing sample. When these basic approaches were inappropriate or unsuccessful, she relied on a technique not unlike Elbow's freewriting which she termed "write it all and then cut out." She explained how she had recently used it to complete a book report on Jane Eyre:

I had wanted to get it done like in one day, and then I found that I just couldn't do that, that I was having trouble writing the summary of the story, even though I'd read the book and I really like the book. I was trying to write down the story, and I was like, "Oh, do I have to read the book again?" So what I did was--because [the teacher] said write one paragraph, try to get it into one paragraph, and I just go, "One paragraph, oh, no!"--so what I did instead of obediently limiting myself to one paragraph was write it as long as I need to. . . . The summary was like two pages to begin with, and I cut all that I could, and then I had to have my mom read it and say, "This is unnecessary, this is unnecessary," because I just couldn't be objective enough to cut it out, . . . then I had to go back and write it and make sure I got the ideas of what happened into the summary, the feelings of the story. Instead of just saying the story, I had to get the idea.

Sarah reported that she frequently called on other people--teachers,

parents, and peers--for help in deciding what to include in a paper. And, as noted above, she continually referred back to the assignment itself and any relevant source material. Another influence that she mentioned quite often was her wide reading background ("I love to read everything"). From books she had learned, among other things, "how people tell a story."

Literature was but one of a number of "instructors" which appeared to have had an impact on Sarah's composing methods. She claimed to have been heavily influenced by her teachers ("I believe everything they tell me"), nearly all of whom had stressed the basic elements of formal writing: "You have kind of, you know, your introduction, you have your main idea, you have your stuff in the middle, and you conclude. And that's what I was told, and that's what I started doing." Her only vivid writing memory from elementary school was a "research paper on the Eastern Indians" which she had been assigned in fourth grade, when, according to her initial questionnaire, she had also "learned how to write a sentence and a paragraph." She felt that her writing had "barely" changed since that year, though her junior high teachers (especially in social studies) had given considerable attention to essay form. The experience she seemed to have valued the most was "exploring different styles of writing" in seventh grade English, though she was uncertain how much this had affected her own written work.

Sarah's family had been another major influence on her composing process, or at least on her desire to be successful at writing. She

indicated that her mother and one of her older brothers were good writers, while her father and other brother were not. "I wanted to prove that I could do it," she said. She frequently turned to her mother for help, but it was her writer-brother (an English major in college) whom she admired most. He had taught her an important lesson about the power of writing: "He didn't do that well in [high] school, but he wrote a really good [college] entrance essay, and it was really interesting, and he got in!" She said that she especially enjoyed receiving letters from him, because he often had "a sense of humor in his writing."

Sarah could not remember ever having been taught (in school or at home) any strategies for producing ideas. She noted that some of her teachers' advice had been limited to "Write a good paper." She had been given "lots of practice" in writing topic sentences and thesis statements ("I get so sick of it"), and she had learned how to make outlines--but these had rarely proved helpful:

I've only found them really good if it's a research paper or a topic that I'm really interested in, that I have enough ideas and enough conclusions to write an outline. When you don't really know what you're going to say, you can't write an outline, so it looks kind of--like I've often had, "I. Introduction," and then nothing.

Ironically, the essay formats some teachers had presented as aids to getting started had been so tightly structured that they had often had the opposite effect: as shown above, they had sometimes resulted in serious initial writing blocks.

Applications of heuristic strategies

Sarah recognized the mental procedures involved in many of the eight heuristic methods introduced in class, but the concept of using a process of invention in writing was new to her. She achieved only mixed results on the initial practice exercises, though she followed the guidelines in the booklet very carefully. Her favorite technique was freewriting, a version of which she had used in the past. With it she produced several pages of fluid, expressive prose. Her comment in class: "A lot of my personal ideas came out." She was also quite pleased with the material she developed by defining and creating a dialectic. But with the other five strategies she had little success. One--"dramatizing" (based on Burke, 1969a)--was a total flop: "I really had a hard time, because I did spend time on it, and nothing really happened, and so I spent a lot of time for nothing." When pressed, she identified a number of possible applications for the strategies, but on the whole she was skeptical of their potential to help on actual writing assignments. Asked to speculate about how she might use them during the balance of the composition course, she said she was afraid she might "forget" they were available.

Sarah's comments proved prophetic only in part. She could hardly have forgotten about the eight invention strategies--the teacher gave the class repeated reminders to try them. In fact, she made use of nearly all of them (in modified form in some cases) in composing the remaining five papers, which followed the same sequence as in the standard-level class. But her results were far less than satisfactory

on the first, a definition essay. After a brief, abortive attempt to come up with a topic by freewriting and diagramming, she gave up on invention and decided just to write. She made three false starts (on three different topics) and finally produced a complete rough draft (on "noise"), which she later revised slightly before making a fair copy. Her work with the heuristics did not figure in the final product in any observable way.

In her preliminary work for the next piece--a classification essay entitled "Ways of Walking"--Sarah included no complete invention exercises at all, unless this facetious terminal comment can be counted:

ARGHHH!--An invention strategy for the release of pent up frustration. A great word (expression) originated by Charlie Brown.

(She later referred to another "ancient invention strategy": Roget's Thesaurus.) Instead she attempted to incorporate elements of several techniques into the process of composing a rough draft. At one point she broke off from her developing text to brainstorm a list of ideas. At another she used the analogy format from the booklet to compare and contrast two methods of walking. At still another she inserted a simple diagram. Near the end she wrote the following comment in the margin: "I've begun to use the invention strategies in my head, without recording them." Which strategy she was using at the time was not specified, but the essay's conclusion was cast in the form of a dialectic. Sarah's effort was admirable, but to utilize this many heuristics in producing a single short essay was clearly impractical.

To use them informally during the process of drafting was certainly a desirable goal, but a step she was not ready for at this early stage. By the time she had completed her rough draft, she seemed thoroughly confused. Nonetheless, she reworked her material quite extensively before preparing a final version. She made a variety of marginal additions and corrections and moved entire sections of the paper. She also penned in several comments and questions--on points that she imagined might be raised by a critical reader--to attend to when preparing the final text.

The next assignment, a comparison/contrast paper, was the occasion of Sarah's oral-composing exercise. As the session began, she was thumbing through the booklet, trying to decide on an invention strategy. She finally chose "changing perspectives" (the one based on the tagmemic heuristic), partly because it was virtually the only technique she had not yet tried and partly because she was attracted to the phrase "The Unit in Contrast" at the head of the first column (see Appendix A). She had already selected "flute and piano" as her topic but quickly abandoned it as not very interesting and decided to write about her brothers instead. Responding to the two questions in the first "cell" of the exercise, she listed several points under "David" (see Figure 6, p. 147). Moving on to the "process" questions in the same column, she added several more characteristics, then repeated the process for "Mark." But when she attempted to view her brothers as a "system," the process slowed down. After listing only three items (under "BROTHERS"), she began to have doubts about

COMPARISON AND CONTRAST
 Flute and Piano
 David and Mark--my brothers

Changing Perspectives

<u>David</u>	<u>Mark</u>
friendly	funny--sense of humor
generous	misteivous [mischievous]
hardworking	still school oriented
different from Mark	isn't as connected to
who is often unwilling	the family as David
to work--he does as	not a show-off like David
little as possible	likes children
Not school smart	
reading writing	
changing--learning to	--thinks it'll be easy
support himself--has his	
own job	
physically--Brown eyes	Blue eyes Br. curly hair
Brown hair 5'6" somewhat	short thin 5'3½"
chubby	thin
likes nice clothes/expensive things	conservative

BROTHERS--2 years apart
 competitive
 getting closer--used to be more competitive

Lord of the Flies
 William Golding

<u>Piggy</u>	<u>Ralph</u>
intellectual	physical

Figure 6. Sarah's initial planning sheets for the comparison/contrast essay.

completing the exercise:

I could only use "The Unit in Contrast," since that's what I'm doing. . . . The problem with me is I'm used to just writing. Writing what? This is harder in a way (10-second pause). Come on, come on (45-second pause as she skims the booklet). I don't know what to do. This is not too good. Well, not this. Arghhh! What other things could I do?

Sarah began considering other topics for the essay (e.g., "a good class vs. a bad class") and then became side-tracked by the books in the room. She thought that perhaps she could compare two she had read. When a copy of Lord of the Flies caught her eye, she hit upon the idea of contrasting two characters. She began listing the traits of Piggy and Ralph, but then worried that she would be unable to remember enough about them to write an accurate paper. She decided to look up the report on the novel she had written the previous year and ended the oral-composing session.

After a weekend's reflection, however, Sarah concluded that a paper on her brothers would be more interesting than one on Piggy and Ralph. She returned to the changing perspectives heuristic but this time listed several similarities. She tried to see her brothers "as part of a system" once again but had little success--until later. It was after she had written a partial rough draft of the paper that she added to her list an item which would eventually become an important segment of the essay: "Their morning routine--David cooks, Mark cleans." When she had incorporated the additional material, Sarah wrote out the following completed version:

It would be quite easy to assume that two brothers, who both have the same parents, the same home, and consequently

the same sister, would grow up to be quite similar. There are certainly similarities between Mark and David who are brothers with an age difference of only eighteen months, but the differences between them are also quite remarkable.

First let us look at the physical appearances of the two young men now nineteen and twenty-one. Mark, the eldest is quite slight, being not tall and rather slim, with blue eyes and brown curly hair. David is larger in both height and weight, he has brown eyes and brown curly hair. Their physical characteristics seem to coincide with their personalities.

David, the younger of them, has a very grandiose personality, he loves to eat and cook gourmet food, expensive clothes and luxurious places. Although Mark enjoys good food as well he is allergic to a lot of good things, thus dulling his enjoyment. Mark's personality is like that of a fox, he is sly. He has a great sense of humour, where David is sweet and charming Mark is mysterious and cunning. Together, as well as separately, they are two people who should not be excluded from any guest list for a party or other social event, their personalities are very complimentary.

When Mark and David were in high-school they had a daily routine that is a perfect example of how their personalities cooperate with one another. Every morning they would wake up at six o'clock in the morning, make sure neither of them had overslept, get ready and then head for the kitchen. They would turn on the radio, sometimes listening to Classical music and other times to Jazz or Rock, and start getting breakfast ready. Mark would set the table, David, the master chef, would whip up something tasty in no more than ten minutes. Then they would sit down to eat, when they had finished Mark would clear the dishes while David cleared the table and neatened up the kitchen. Every morning mom and dad and I could hear the faint sounds of clanking pots, music playing and two brothers letting each other calmly adjust to being awake.

While they are awake David's and Mark's outlooks on how to survive in modern America are quite different. David is very generous and money is a game of chance for him while Matt tends to side with security. David lives on the edge between luxury and financial collapse while Mark prefers to remain comfortable.

One reason for these differences is that David is already financially independent, he has a job as a professional dancer, and Mark is going to college, remaining fairly dependent on Mom and Dad. David is often frivolous with his own money but Mark is very conservative with money that isn't all his. It is yet to be seen what will happen when he becomes self

sufficient, perhaps he'll buy himself something for the first time in his life.

Academically Mark and David are complete opposites. David went to a performing arts school starting in eleventh grade and even before that he was engrossed in dancing. He had a very hard time learning how to read and write and even now his letters are hard to decipher. His natural charm helped him to spend a good deal of his time during Junior High and tenth grade dancing or in ceramics class.

Mark also spent alot of time in ceramics but he didn't have the same kind of problems that David had. He is now a senior at college and is planning to go to graduate school or as he says, "maybe."

Intellectually they are brought to the same level by both of their reading habits. They never stop reading, or hardly ever. Both of them have read an incredible range of literature. This is why when you talk with David you'd never know that he spent most of his time doing ceramics and dancing. It can be very annoying to little sisters who rarely sees her brothers and when she trys to talk to them they say "not right now, I'm reading." The only cure to this dilemma is to pick up the book that David or Matt has just put down and start reading, even if it's incomprehensible, in doing this they can't start talking to me because "I'm reading." This rarely happens though because if there's one thing they both have in common it's that they are both admired and truly appreciated by their little sister.

As usual, she made a number of editorial changes in the course of preparing the final draft.

The process by which Sarah developed her comparison/contrast essay prompts several observations about her use of heuristic strategies. She came very close to abandoning invention, as she had on the the definition essay. Accustomed to "just writing," she seemed to find systematic generation of ideas difficult and wondered if it was really necessary. In this case her persistence was rewarded, however. The heuristic produced a great variety of information, virtually all of which was eventually used in the essay. She

successfully returned to the invention strategy after drafting, an approach she had attempted and found confusing on the classification essay. Perhaps most important, she was able to capture a whole cluster of thoughts in a single brief note. Unlike Don and Melissa, who used the exercises to develop detail, Sarah recorded only basic ideas and expanded them later, as she wrote the rough draft. The entire contents and in some cases the very wording of their essays were drawn directly from the material they generated with invention strategies; but her paper was more than the sum of her notes, each of which seemed to serve as a mnemonic device which could reactivate the mental process which produced it. For example, a seven-word item on the brothers' morning routine (listed under the heading "AS PART OF A SYSTEM") resulted in the entire fourth paragraph. The main advantage, of course, to Sarah's shortcut procedure was a speedy transition to the process of drafting the text, which for her was less difficult than coming up with ideas.

Sarah's composing of the remaining two papers was consistent with her work on the comparison/contrast essay. In each case she relied on a single invention strategy to establish the approach and the overall dimensions of the piece but not to generate lists of specifics. She considered several topics for the cause-and-effect essay before choosing one suggested by her text: "failures of my life." Specifically, she decided to consider "the effect of a permissive or a strict classroom atmosphere on performance and achievement" (both types had apparently caused her to "fail"). Focusing first on the

latter situation, she created the following dialectic:

Thesis--Under a strict classroom atmosphere a lot is demanded of a student and therefore he/she is worked towards his/her potential.

Antithesis--If the situation is only constructed of atmosphere, it being strict and controlling, it may limit and/or inhibit a persons creative and logical potential.

Synthesis--If a classroom atmosphere is to be strict, in which there is little leniency, there must also be an attitude that allows for progression and not suppression.

She began a second dialectic on the permissive classroom but stopped midway through and wrote the following questions in the margin: "Do I choose one? How do I bring both together under cause and effect?" She elected to choose, and she developed her paper as a point-by-point comparison of the classroom atmospheres created by the detached, "ultra-strict" teacher and the supportive, "moderately strict" teacher. In other words, she contrasted the "thesis" and "synthesis" positions of her dialectic. The overall movement of the piece was from causes to effects, and its final shape was the result of considerable redrafting.

Sarah's final paper was by all accounts her greatest achievement of the term, though it began rather inauspiciously. She had a good deal of trouble coming up with a topic. After listing a number of uninspiring possibilities, she wrote (and pronounced) her favorite expletive, "ARGHHHH!" She tried making an "analogy" between her two favorite places but abandoned it after writing only three lines. Then, after another very brief false start, she began drafting a description of her first day at a summer camp for teenage actors. She composed directly from memory, without hesitation, and soon had

several paragraphs of material. In response to a query about how the work was progressing, she made this interesting comment: "It seems that whenever we do one of these informal assignments, I don't need the invention strategy. I just write." However, she apparently changed her mind later on, for she broke off her draft and completed an exercise in dramatizing--the technique she had found least successful at the start. At the end of the exercise she wrote an emphatic "Ah Hah!" and then proceeded to develop a formal outline for the piece. The end result was a narrative of nearly two thousand words, twice as long as her most extensive previous effort in the course. Unlike her desultory initial writing sample, this story was built on a clear sense of purpose and moved logically toward its conclusion. It also included some memorable portraits: the obnoxious, pseudo-sophisticated teenage "startlet," the affected director who called everyone "dear." Sarah was excited when she handed the paper in. She attributed its success to her use of the invention strategy, which she had used to "organize" and "expand" her ideas--but not to generate the details.

Effects of instruction in invention

Sarah was remarkably perceptive about the overall impact of instruction in invention on the character of her composing process. She recognized that her results with the strategies had improved during the course of the study and admitted that initially she had employed them more out of a sense of obligation than need. "There

were a few times when I had to stop writing so that I'd use the strategies," she commented on her final questionnaire, undoubtedly referring to her classification essay, the drafting of which she had interrupted several times to insert brief heuristic exercises. By the end of the term, she had learned how to make the techniques serve her own purposes, for which they "worked wonderfully."

Among the most important results of the instruction was its effect on her production of ideas. Despite a generally disappointing beginning, Sarah found that the strategies ultimately improved both her efficiency and her effectiveness. She was particularly grateful for the aid they provided in getting started:

There wasn't as much grief when I had to write a paper. First quarter [prior to the study] I'd let it go until the last minute and then say, "Oh no what am I going to do?" I've gotten quicker--with the invention strategies I don't waste as much time. (final questionnaire)

She also felt that the strategies enabled her to produce more, and more varied, material: "different ideas, like a different opinion of my own, perhaps, or another way of looking at it. And they helped me just develop my ideas, you know." These benefits were especially evident when she used strategies that had "questions and stuff":

Because when you answer questions, then usually something new turns up. . . . I think that helped a lot, to ask yourself questions, because lots of times you don't and you just keep writing; you're just repeating yourself, or nothing much comes in the end.

As indicated in the description of her papers above, Sarah occasionally came up with her own probing questions. She learned, in effect, how to be her own Muse. One of the key factors in her

eventual success was that she developed a systematic approach to selecting an invention strategy. Instead of choosing at random or merely picking whatever seemed familiar, she searched through the handbook for the most appropriate technique:

I'd be thinking, "Well, since this [paper] is comparing, I should find one that, you know, compares," or, "Since this is something that happened, I should do dramatization or find something that'll help me tell a story," and, "This is something that has two different sides, and I'll look for one that was like that."

Neither Don nor Melissa made such explicit connections. Unable, perhaps, to perceive as clearly as Sarah the mental process implicit in each of the strategies, they naturally gravitated toward those with which they felt most comfortable. Suitability for the task and topic was to them an important but only secondary consideration.

Sarah's work with invention strategies brought about several important changes in her overall pattern of composing. She rarely used the techniques to come up with a subject, but she did find them helpful in solving the next problem: "This is my topic, but what do I say?" They transformed the prewriting period of the process from an exercise in anxiety to one in deliberate planning. Sarah reported on the final questionnaire that heuristics even facilitated the preparation of formal outlines: "Often when you try to write an outline you get to the B and you have no more ideas--the strategies gave me full outlines at times." Indeed, she later concluded that one of the primary benefits of an invention procedure was that it aided in the organization and expansion of ideas:

It was mostly when I had a bunch of ideas and they didn't really go together that well, . . . like I'd have idea A, B, and C, and two of them would go together well, and I liked C but it really didn't go there, but I didn't have enough A and B to make a paper, so I'd use an invention strategy to see if I have enough of A and B to write a paper on it.

Sarah evidently had used this sort of selecting and generating process in planning and drafting her final two papers. In a related development, she came to view revising as more than just "improving the flow." By the end of the study, she saw that it also involved "making sure that, you know, [you] don't repeat yourself and checking that you develop your ideas well enough, that you don't mention something and then not do anything with it again." In other words, aspects of invention eventually came to play a significant part at every stage of Sarah's writing process.

Despite the initial disruption brought about by the integration of invention into the process, Sarah reported that the continuity of her composing was ultimately improved. Most important, the strategies helped her find ways to get past the debilitating blocks which had frequently left her stymied:

It's horrible when you go home and you can't do it. You're up till 12:30, and I don't think anybody in ninth grade or tenth grade or anything should be up till all hours of the night writing a paper that's two pages long. . . . It got ridiculous at the beginning of the year, just really bad.

What was "horrible" for Sarah about her previous situation was not so much that to write took a great deal of time but that so much of the time was spent unproductively--on groping for a viable approach.

Heuristics enabled her to identify alternative approaches and

occasionally presented her with the happy dilemma of having to choose among several she liked. In general, though, she continued to have little difficulty making the transition from producing ideas to producing text. In fact, because her overall plans were more clear, her forward movement seemed to be more deliberate. For the same reason, her frequent and generally productive recursive movements (to generate additional material or to edit) also became more purposeful. On the whole, she appeared better able to direct her own thinking and composing.

Sarah's increased control was connected, of course, to an increased awareness of the mental processes involved in writing. As indicated above, by the end of the study she was able to report accurately not only on her overt writing habits and procedures but also on the progression of her thoughts and writing plans. These developments were part of a fundamental change in her perception of the composing process. At the beginning of the investigation she had commented that becoming a good writer involved "having ideas that other people can understand and sympathize with" and "having the ability to transfer ideas to paper" (initial questionnaire; emphasis added). But at its conclusion she stressed the importance of organizing and expanding ideas, and she acknowledged that invention strategies often made significant contributions to the process of idea development. In addition, she noted, invention "makes writing easier, especially when you don't really like the assignment" (final questionnaire). She planned to continue to make use of the

heuristics, in social studies as well as in English.

Perhaps the most striking effects of the instruction in rhetorical invention were on Sarah's attitudes toward required school writing. She no longer felt trapped within the "boundaries" of an assignment:

Before it was like the assignment was hanging over you, and you went home and you banged your hand and your arm on the desk, and you'd kick the wall and knock over things, and . . . nothing happened. You're at bay of the assignment, and then you--I mean, now its more the other way around in that I can bend the assignment a little more, you know.

Possessed of this power to "bend the assignment," Sarah found it possible to "actually say something," and as a result she began to associate with school writing tasks some of the "creative feelings" she had always brought to her private, self-initiated work. She also became far less frustrated with the process. Instead of expending her attention and energy on beating the desk and the wall (and on other manifestations of anxiety), she was able to channel her creative abilities into more useful thought-producing activities. In other words, assigned writing became less of a threat and a chore and more of an interesting challenge.

In spite of her eventual success with invention strategies and the obvious approval of her teachers and peers, Sarah's feelings about herself as a writer remained mixed. She was generally confident of her writing ability, which she rated "very good" at the end of the investigation. She knew she was able to come up with ideas and to organize and develop them adequately in her papers. She no longer

felt that she had been merely "lucky" when an essay or other assignment turned out well. But she was far from complacent about the quality of her written work; she felt that she was capable of doing still better: "I think I have a lot of potential to be a very fine writer," she noted on the final questionnaire, "but I don't think I do my potential justice with actual work." Her main problem, she decided, was lack of consistency. She chided herself for occasionally saying, "Oh, this is good enough," and she criticized teachers because she felt that as a group they did not have consistently high standards. Sarah's comments reflected a desire to grow that had been obvious from the beginning of the study, when she had responded to the questionnaire item, "Are you a good writer?" by saying, "Not yet," and added, "If I'm a good writer now I have nothing to work for and that would not be good." Her willingness to work for continual self-improvement, made evident by her extensive experimentation with invention strategies, was strong evidence that she would, in fact, "do justice" to her potential and become "a very fine writer" indeed.

Not surprisingly, Sarah's final evaluation of the project was positive. Initially skeptical of the strategies' helpfulness, she had gradually been converted as she had realized the benefits of the instruction. And unlike Don and Melissa, who found only some of the various techniques effective, Sarah reported good results with all eight--though she seemed to prefer the more systematic approaches (those which had "questions and stuff"). She concluded that invention strategies ought to be taught in school writing programs. And yet she

was cautious in assessing their potential usefulness for other students. She predicted that I would find a considerable range of responses when I examined the results of the study: "My hypothesis is that what's effective in writing varies a lot from person to person and how they feel about it, too." The important but frequently ignored issues reflected in this statement (and in similar comments by Don and Melissa) are the focus of much of the following chapter.

C H A P T E R V
COMPARATIVE CASE STUDIES

The aim of this chapter is to provide a selective review of the results of the other seven case studies in the investigation and to compare them with the three discussed in detail above and with each other. This comparative review follows the mode of analysis developed at the beginning of Chapter IV (see pp. 75-85), but unlike the individual profiles its primary purpose is to examine the differences among the case-study participants and their uses of rhetorical invention strategies. The question of individual and situational differences underlies the profile of seven writers which follows and is directly addressed in the subsequent section, "Variations in the Use of Heuristics."

Seven Other Ninth-Grade Writers

Like Don, Melissa, and Sarah, the seven ninth-grade students introduced below made fascinating case-study subjects. All of them had interesting ideas about writing which they seemed very willing--even eager--to share. In general, the seven proved articulate and incisive in relating their own writing experiences and in reflecting upon the act of composing itself. They were also quite candid in expressing their attitudes toward writing and the writing instruction they had received in school.

Holly, Don's classmate in the basic-level group, maintained a much lower profile than he. As reserved as he was outgoing, she generally kept her own counsel during class discussions and writing sessions (although she was very open during our private interviews). Owing in part to her frequent absences from school, she seemed to be struggling to catch up most of the time. She acknowledged that one of her major shortcomings was a tendency to submit her work late. As a writer, Holly shared many of Don's characteristics. Her handwriting was equally cramped and irregular, and she also made numerous--though less serious--spelling errors. Getting started, she said, was her biggest writing problem. Like Sarah, she found the limits of school assignments frustrating, and yet she enjoyed writing stories on her own. She reported that she often collaborated with her best friend to compose heroic fantasies and tales of talking animals in the manners of Tolkien and C. S. Lewis. Holly missed a good deal of the beginning instruction in heuristics due to illness, and her initial reaction to the strategies was "neutral." By the end of the study her response was quite positive, even though her results with the techniques were mixed.

Eduardo, a member of the standard-level class, also wrote animal stories outside of school. Unlike Holly he always worked by himself; his self-initiated writing served a different purpose from hers. She wrote her stories to "become someone else" (i.e., someone greater, more important, more heroic); he, to represent and to purge his negative feelings--usually anger. He was not particularly interested

in polishing his tales. He indicated, in fact, that he hid them under his mattress to keep his mother from correcting his spelling. School writing was a strain and a bother for Eduardo. He seemed to have difficulty comprehending the abstractions inherent in formal assignments, and he disliked the judgments teachers made of his work. He said he enjoyed doing all the exercises with invention strategies, but he was apparently unclear about how to use the more complex ones to develop papers. The techniques which helped him the most were freewriting and diagramming--perhaps because they enabled him to record his ideas quickly, without regard for the mechanical problems which continually plagued him.

Ruth, another member of the standard-level class, was in many ways the opposite of her classmate Eduardo. His social interaction seemed generally to be limited to quiet conversation with one or two close friends, but she was obviously a key part of a much wider social circle. She spent a good deal of class time--as much as she could get away with--laughing and chatting with several other girls. Though hardly enthusiastic about completing her assignments, for the most part she worked hard enough to earn respectable grades, which to her were the only important measure of success. Imaginative and bright, Ruth apparently understood the purposes of all eight heuristic procedures, for she was successful in using them to develop material for her essays. Like Melissa, however, she preferred not to alter her approach to composing, and her overall reaction to the strategies was negative. The only technique she reported enjoying was freewriting,

because it seemed somewhat familiar to her.

Alex, the fourth case-study subject in the standard-level class, was a special case: a native of South America, he had been in the United States and attending an English-speaking school for less than three years. His command of the language was on the whole very good, but he was still having considerable difficulty with its surface features--phonetically in speech and mechanically in writing. Friendly but quiet, he was obviously serious about learning and especially about earning good grades in his courses. His initial response to invention strategies was mixed; he liked three or four of the heuristics very much but dismissed the others as too complicated. He claimed that his favorites worked better and better as he adapted them to suit his own style and needs. At the end of the study he strongly endorsed the concept of teaching rhetorical invention in school.

All of the remaining three case-study students were members of the advanced-level class. Like most of their classmates they were bright and alert and determined to succeed academically. All three had done well on school writing assignments, even though their approaches and attitudes were quite varied. They had clearly learned well what their teachers expected and knew how to meet each instructor's demands. On the surface, it seemed that these students had relatively little to gain from instruction in rhetorical invention, but all of them ultimately found the strategies very helpful.

Khalif's initial comments about writing were very negative. He insisted that he hated virtually all school assignments and reported that he never composed on his own. He did not usually seek advice from others on his papers; he claimed, in fact, that he rarely even reread his own work. Given these attitudes, it was hardly surprising that he was doubtful at first about the usefulness of invention strategies. But he tried the techniques (as required) and discovered that they made his composing procedures more effective. He developed an idiosyncratic approach to coming up with ideas and developing them in depth. Eventually he even acknowledged that writing could be an enjoyable and satisfying endeavor.

In many ways Fran made a similar study, though her methods and manner of writing were quite different from Khalif's. She also found composing an unpleasant activity, one that she associated primarily with grades. Expedience and a measure of cynicism characterized her approach to most writing assignments: she said that instead of her own experiences and beliefs, she included in her papers what she felt would "look good." Fran understood the eight heuristics well enough, but she wondered at first how they would help her to write. She may simply have thought them unnecessary, for her composing procedures already included a rudimentary process of invention. Nonetheless, she experimented with several of the strategies and concluded that they made her more efficient as a writer.

Jim was the student of every teacher's dreams. Intelligent, imaginative, industrious, and involved, he was eager for challenge and

confident of success. His interests and talents spanned a range of activities from contact sports such as ice hockey to role-playing games such as Dungeons and Dragons and even to unusual instruments like the bagpipes. He was equally skillful in programming computers and in composing well-ordered, mellifluous prose. He approached both endeavors as exercises in problem-solving. Like Fran he was using a simple process of invention before the instruction in this investigation began. But in contrast to her and some of the other case-study students, he was not at all reluctant to adopt and make use of the new strategies taught in class. He felt that they made the idea-making process both more organized and more flexible; he developed a practice of using several heuristics for each paper.

Two general observations can be made about the attitudes these students brought with them to this inquiry. One is that, despite their obvious differences in writing skills and previous performance, they were unanimous in their criticism of the school writing experience, which to them was on the whole too restrictive and formal and a source of debilitating pressure. Their comments seemed more than mere adolescent fault-finding; many had given the subject considerable thought on their own. The other key point is that most of the students reported enjoying and frequently engaging in various kinds of self-initiated writing activities--in spite of their feelings about writing in school. In these respects, at least, it appeared that very little had changed since Janet Emig completed her seminal study of the composing processes of twelfth graders (1971).

As indicated above, these seven students made valuable subjects not only because they were candid about their attitudes toward writing, but also because they were able to provide clear and generally accurate accounts of their respective composing processes. Though not, on the average, as articulate as their classmates Don, Melissa, and Sarah, they were certainly conscious of their own writing habits and procedures. Their questionnaire responses and comments in class included a variety of provocative statements that served as useful starting points for the three interviews, which allowed for illustration and exploration in depth. Participation in the study seemed gradually to increase the students' self-awareness. Working with and reflecting upon their own writing methods and the various invention strategies apparently improved their powers of introspection.

Documentary and empirical evidence from writing protocols and field observation served to confirm and to clarify the subjects' self-reports. The oral-composing sessions proved particularly valuable. My decision to leave the students alone as they wrote was a calculated risk (other investigators who have used this technique have remained in the room to prod their subjects if necessary), but six of the nine who attempted the procedure produced satisfactory--or better--results. With additional practice the others might have done so as well. (Transcripts of two of the sessions--Fran's and Jim's--are included in Appendix C as examples of different but equally successful approaches to the use of invention strategies.) Writing

folders, which contained complete protocols of the entire term's work, supplied valuable additional information about the developing role of invention in the students' composing processes. And not least important were my own observations of the study's classroom context. The background they provided was essential to the process of eliciting and interpreting the participants' self-reports. As expected, the various data sources proved complementary.

Pre-instruction writing methods

No single characterization could adequately establish the dimensions of all of these students' composing methods, as their approaches to the initial writing sample amply showed. Most of them seemed to be grateful for the chance to write an informal piece directed to an audience of their peers. Several of the students chose to address a specific person and cast their papers in the form of a letter to a friend. Others had a generalized reader in mind. Significantly, all of the advanced-level subjects (i.e., except Sarah) wrote conventional five-paragraph themes. They may have been reluctant to venture beyond this familiar format, which they knew they could execute well; or perhaps it never occurred to them that school writing could be of any other type. Topics for the papers ran the gamut of teenage interests: television, rock concerts, sports, and school life. Three of the seven--Holly, Alex, and Ruth--began drafting immediately, their prewriting activity apparently limited to thinking of a subject. Like Sarah and Don, they engaged in very

little overt planning at the start. Eduardo and Khalif each made limited plans, the former jotting down some ideas for the piece and the latter generating a list of adjectives to describe his subject. Only Fran and Jim developed their ideas extensively before drafting; she by examining various facets of her topic, and he by determining the parameters of his essay (subject, manner, audience, etc.). Both made brief outlines before composing their texts. Subsequent steps also varied considerably. Most students wrote a rough draft and a final, but the extent of revision ranged from very little to a fair amount. Alex completed four drafts of his paper, though none represented a major modification of the original version. Ruth used the trial-and-error approach: she wrote three different letters to the same close friend before deciding that her manner and matter were satisfactory. Holly misplaced the first draft of her piece, an informal movie review; her "final" was a much shorter summary of a television show. All of the students shared their papers-in-progress with classmates or other trusted readers at least once--but in many cases only for approval, not advice.

The subjects' initial writing-process self-reports revealed a number of important similarities in approach underlying their apparently very disparate practices. All of them maintained that they found getting started the most difficult aspect of composing, and several had devised certain rituals for beginning which postponed the inevitable confrontation with the blank page. One boy said he often took a nap before writing; one girl felt it best to do her other

homework first. Others said they liked to "get comfortable" by listening to the radio or watching television. A majority indicated that they did some sort of prefiguring on paper at least occasionally, though none prepared full, formal outlines unless required to do so. All reported that they normally made more than one draft of a piece; however, they seemed to be minimal revisers on the whole. They attended to mechanical errors and wording, but most said they rarely undertook major reformulations after beginning a rough draft. Fran spoke for most of the group when she said, "It takes a lot of work to change it around, [so] I'll just take an okay instead of a great."

The dominant view of the composing process among the students was that of a linear progression from thinking to writing, but in fact every one of them worked recursively to a degree. Even Jim, the most organized writer in the sample, moved ahead in his drafts by continually spiraling back to generate more material or revise. Ironically, Fran, the other extensive planner, was the least linear composer of all. She expected to make discoveries and changes as she wrote, and the gradual development of her ideas was evident in her numerous marginal notes and corrections. On the other hand, the weaker writers' recursions were often characterized by long, unproductive pauses that disrupted the continuity of composing. Several complained of being stymied by blocks, which in some cases lasted for hours. By their own accounts these students were especially vulnerable to blocks during the earliest stages of the process.

In general, the case-study students possessed very few effective strategies for developing ideas and overcoming blocks, though each of them knew at least one. All seven reported relying heavily on inspiration. "I just try and relax myself, and I wait for something to come," said Khalif. Ruth made a similar comment, but when asked whether this approach brought good results, she replied, "No, but I need the break anyway." Several maintained that they were sometimes assisted by a kind of advance serendipity; that is, they were occasionally assigned a writing task (the initial writing sample for this study, for instance) which just happened to be suited to a recent experience or thought. They admitted, however, that such happy coincidences rarely occurred in the case of formal writing assignments, which usually were essays or research reports with teacher-chosen topics and formats. For these tasks the students valued an extended period of incubation, but some were better able to use it productively than others. Jim spoke of "taking ideas and re-forming them, . . . in the hallways or in gym or anyplace," until he knew what he wanted to say. Fran proceeded by exploring her own feelings about a subject, examining the "good and bad things" about it dialectically. Others used the strategy of brainstorming lists of ideas to get started, and several employed approaches not unlike Elbow's freewriting to get unstuck. Holly and Eduardo, the least successful school writers in the group, apparently used no such helpful techniques for composing assigned papers; but each had developed an effective invention strategy for writing stories outside

of school. Hers involved visualizing herself in a dramatic situation and asking herself questions about the other characters and the plot. His was to find an objective correlative for the emotion he was experiencing when he sat down to write. He said he had written a series of pieces about a kangaroo to work out his feelings of anger:

See, when I get mad, I start writing down what happened, and then I write something else. I write, like, say, with the kangaroo, I write about him. In the first paragraph I tell who he is and what he looks like and that, and then I write, like, "It all started one day" or "Once upon a time," then I just write it, and then it all is like everything that happened to me is happening to the kangaroo, but I kind of put it in different things. Instead of, say I got in trouble from my mom, well, I put it he got in trouble by a-- none of his friends liked him and everything, and he decided to go on a journey and all that. So I just write that, and I keep going.

Unfortunately, Eduardo, like Holly, had been unable to apply his heuristic to school writing tasks.

The extent of the students' reliance on external sources of ideas varied widely--from individual to individual and from one writing task to another. Sometimes the substance and form of assigned papers were supplied by the teachers themselves. Citing an example, Ruth said, "That [paper] was pretty laid out for you, because you just have to write down what's in it [the assignment]." She felt such assignments were "pretty easy" to write, but others (like Sarah) found them much too restrictive. A majority of the group said they often approached parents or peers for suggestions about their writing. In most cases, though, the assistance they sought had to do with organizational points or mechanics. Significantly, Fran and Jim were

the ones who went to others for help in developing content--she to her mother (a lawyer) to debate issues, he to his classmates to brainstorm ideas. At the other extreme was Khalif, who said that he never consulted with anyone about papers-in-progress. He maintained that his friends were "not qualified" to help, that his teachers were too critical, and that his parents were just impossible. "I have to do it myself or I can't do it at all," he concluded. He acknowledged, however, that his ideas for writing often came from external sources such as television and films. Khalif was by no means alone in this debt. Many others relied on the popular media to supply them with subjects, viewpoints, and facts. Reading was another important influence on the students. Some borrowed their topics from magazine articles and books; and a few, such as Holly, consciously emulated the style and content of their favorite authors. On the whole, it appeared that a student's reliance on this or that source of ideas or information said less about his or her skill as a writer than about his or her personality and interests.

On the surface it seemed that the students had experienced many different kinds of writing instruction in school. Some, such as Jim, remembered with fondness teachers who had encouraged them to write imaginatively and often. Others, like Ruth, had been considerably less fortunate. Her formative "writing" experiences had consisted of plagiarizing reports in fifth grade:

I remember we always used to go down to the library and look at the encyclopedias for stuff to write, and we'd start

talking or I'd just find myself writing down exactly what was in the book.

Several members of the basic- and standard-level classes indicated that they had been exposed mainly to practice in particular skills: sentence structure, punctuation, capitalization, and spelling. All seven of the students reported, however, that their teachers had always stressed form--especially the conventional deductive arrangement of textbook paragraphs and themes. School instruction in how to get started had generally been limited to preparing thesis statements and outlines, methods which few of the students had found helpful. On the other hand, three people said that they had acquired useful techniques outside the classroom. Ruth and Alex both practiced simple versions of freewriting. She had learned the procedure from her mother, an English major; he had picked it up from a friend. Fran had used yoga exercises learned from her stepfather to get herself ready to write. Nearly all of the students in the sample had been influenced in some way by the writing habits of their parents or peers. Some students were the children of professors or graduate students; others had siblings in high school or college. Most of them had regular contact with someone for whom writing was an important and frequent activity. These "significant others" may not all have offered explicit recommendations or demonstrations of their composing methods; however, they undoubtedly provided a good deal of tacit instruction by example.

Applications of heuristic strategies

The concept of rhetorical invention was a new one for all seven participants. As indicated above, their responses to the initial classroom instruction in heuristics were varied and, in general, very difficult to categorize. The advanced-level students were more familiar than the others with the mental processes inherent in the strategies, but otherwise there were no clear distinctions among the classes. The top students did not, on the whole, prove more likely to understand the techniques and execute them successfully; nor was the material they produced in the practice exercises necessarily more interesting than that generated by the basic- and standard-level writers. Individuals' preferences for particular invention strategies did not follow any obvious pattern. Each student had a number of likes and dislikes, but no heuristic was favored (or rejected) by everyone. All of the case-study participants save one could identify possible uses for the strategies; however, they were far from consistent in predicting results. Some felt that heuristics would give them much more to say, while others saw them mainly as an aid to organization. A few simply doubted that they would help much at all. Only Eduardo seemed to have no idea of what might come of employing the techniques, but he was eager to try them nonetheless.

The students' attempts to make use of heuristics in producing their assigned compositions are summarized in Table 2 (see p. 176). Data pertaining to Don, Melissa, and Sarah are included for the sake of comparison with the others. As the table makes clear, invention

strategies played a part in the composing of virtually all of the papers. Half of the papers (23 of 46) were developed with the aid of two or more techniques apiece. The extent and the nature of the strategies' contributions varied widely from one composition to

Table 2

Invention Strategies Attempted by the Case-Study Students
on Five Composition Assignments

Student	(1) Definition Essay	(2) Classification Essay	(3) Comp./Cont. Essay	(4) Cause/Effect Essay	(5) Final Paper
Don*	DG	--	CD	FW	VS
Holly*	FW	--	DG	CD/DG	DG
Melissa	DF/FW	FW	CD/FW	VS	VS
Eduardo	DG	None	FW/CD/DG	DG/FW	FW/DG
Ruth	FW	xx	CD	xx	DR
Alex	FW	FW	VS/FW	DR	VS/FW
Sarah	DG/FW	FW/MA/DG/CD	CP	CD	DR
Khalif	FW/DG	FW/DG	FW/DG	FW/DG	FW/DG
Fran	DF/MA	DG/FW	FW/CP	DG	MA/CD
Jim	FW/MA/DF/CD	CP/MA	VS/DG/MA	DG/CP/MA	VS

Key: CD--Creating a dialectic DG--Diagramming MA--Making an Analogy
 CP--Changing perspectives DR--Dramatizing VS--Visualizing
 DF--Defining FW--Freewriting xx--Not submitted

*Students in the basic-level class completed four papers after instruction in invention, in the following sequence: cause-and-effect essay, definition essay, comparison/contrast essay, final paper.

another, of course. In some cases the role of invention was small and had little to do with the eventual product. In other instances heuristic procedures accounted for both the form and the content of the finished paper. Sometimes students used the techniques to get started--to find a subject or a suitable angle for a piece. Sometimes they used them to expand an idea--to explore and develop it in detail and depth. Then too, invention strategies sometimes aided organization by revealing key relationships within a body of material. They often served two of these functions simultaneously and occasionally all three and more.

A number of observations can be made about the students' selections of invention strategies. All participants in the three writing classes were encouraged to experiment with a variety of heuristic procedures, but each student made his or her own decisions. Only one of the case-study subjects (Khalif) chose to try fewer than three different methods, and some used as many as six or seven. Freewriting was the strategy selected most often. The simplest and least systematic of the eight, it played a role in the production of half the papers (23), usually in combination with another technique. Diagramming, a flexible visual approach, figured in the composing of almost as many (19). The more structured heuristics were picked much less often (fewer than ten times each), but even the most complex and difficult ones were attempted by at least three different people. It is interesting to note that the students did not always gravitate toward particular strategies for particular tasks. There were some

minor trends in their choices, of course. Defining and making an analogy, for example, were predictable selections for the definition essay. Visualizing and dramatizing, employed in the final composition more than elsewhere, were natural choices for those who elected to write narratives for that assignment. But in no case was there anything resembling a consensus. The case-study group as a whole used no fewer than five different strategies for each assignment.

The students showed diversity not only in their choices of invention strategies, but also in the extent to which they adapted and combined the heuristics to suit their own purposes and needs. Several felt it was best to use the handbook as a manual and complete each exercise more or less just as given. Others (including one or more members of each class) preferred to take only the general idea and come up with the specific procedures on their own. Most of the students attempted at least once to use two or more strategies in combination for a single paper. Some of them did so by completing a series of separate, essentially unrelated heuristic exercises. Others developed an integrated approach, using the material they obtained with one procedure as the basis for selecting and beginning the next. These methods seemed equally viable and appropriate, for each produced a number of successes and some failures. Each writer apparently adopted the one most consistent with his or her personal style.

The students' experiences with the techniques were varied. Holly, like Don, developed a pattern of using one invention strategy per paper. But she was much less systematic and thorough than he and

produced far less useful material. Like Melissa she was much more successful using two exercises, presumably because the second brought out aspects of the subject she had missed when completing the first. Ruth, on the other hand, found a single heuristic more than adequate to generate a wealth of ideas. Each of the three she attempted brought forth an abundance of details and feelings. Unfortunately, some of her most interesting thoughts never made their way into her finished compositions; she seemed to have trouble picking out her best material. Eduardo and Alex were both frustrated at first--the former apparently because he had no notion of how to turn an heuristic exercise into an essay, and the latter because he was displeased with his results. Each of them eventually settled into a pattern that generally involved using freewriting in tandem with another invention strategy. This arrangement seemed to satisfy the need each expressed for sustaining a "flow" of language while composing, and at the same time it enabled them to see their subjects as wholes.

The advanced-level students made an interesting study. As Table 2 shows, their approach from the outset was to use more than one invention strategy per assignment. Unlike classmate Sarah, who abandoned this method after two unsuccessful attempts, they practiced it virtually without exception throughout the term. Khalif was by far the most cautious member of the group. Having arrived at a simple but effective procedure (freewriting lists of ideas and then arranging and expanding them with various kinds of tables and graphs), he was not inclined to try any other techniques, though some of them obviously

influenced his thinking significantly. Fran and Jim were more adventurous; each tried a variety of combinations of heuristics. But they employed the invention strategies in quite distinct manners. She used the techniques in a tentative way, to explore and reflect upon her subject and approach, and discarded a good deal of her material when drafting. Jim, on the other hand, was very systematic. He used heuristics to develop specific content, and his process generated little waste. These different but equally effective writing methods are illustrated fully in Appendix C, which includes Jim's and Fran's oral-composing protocols.

Effects of instruction in invention

Given the diversity among these seven ninth-grade students in their approaches to and results with invention strategies, it is difficult to summarize the effects of their work with heuristics on their composing processes and their attitudes toward writing. Some writers' practices appeared to be altered substantially as a result of instruction in invention; other participants' seemed to be affected only slightly, if at all. The nature of the changes was also quite varied, for no two participants received the instruction or applied it in exactly the same way. These differences were reflected in the subjects' responses to the second questionnaire and in their comments during the final round of interviews. Still, there were several recurrent themes in these data, suggesting a number of important generalizations about the impact of instruction in rhetorical

invention on the students' composing methods and their perceptions of the writing process.

In the first place, the instruction seemed to bring about marked improvement in the students' capacity to generate ideas. All seven--even Ruth, who said she had no plans to use the heuristics after the study--reported that engaging in a process of invention made their thinking more efficient or more effective or both. For some the key benefit was ease of starting. Fran's comment:

I used to get like a block, like I really didn't want to do it, and now it's just gotten a lot easier to start, because I just write down my ideas the first thing, so I don't have to start right away into putting it into paragraphs and sentences, and so it's easier to do it that way.

Invention strategies helped her to think quickly, she added, and to put her emerging ideas down on paper in a useful way. Of course, she had used some heuristic techniques before the investigation began. The improvement in fluency was far more dramatic for weaker writers like Eduardo and Holly, who had previously experienced a great deal of difficulty in getting started on school assignments. Eduardo's favorite heuristics, freewriting and diagramming, allowed him to set aside, at least for a time, consideration of "the teacher's rules and all that" in order to concentrate on what he had to say. Holly felt that another advantage was being able to record her ideas rapidly, before they had a chance to get away. She and several other case-study participants indicated that they produced more ideas when they used invention strategies. As Khalif aptly noted, more can also mean better:

[Whenever you write], the ratio will be, maybe, for every one good idea, good aspect, you'll maybe get two, three, even four bad ones, . . . so if you just keep going [with the invention strategies], you'll get a lot of really dumb ideas, but you'll also get a lot of good ideas. I guess you could say you get more better ideas.

Abundance allowed him to be selective, he said, and made it unnecessary for him to stretch his compositions out with "fillers." For a number of students the salient factor was not the quantity of material produced but its depth. They felt that the primary uses of heuristics (especially the more systematic techniques) were to provide a wide range of perspectives on a subject and to aid in developing a topic in detail. Jim was particularly strong on this point. He said that he found invention strategies most helpful when he knew more or less what he wanted to say but not how he wanted to say it. His idea-producing needs were very different from, say, Eduardo's, but heuristics proved able to help them both--and all the others.

Another important effect of the experience of learning and using invention strategies was a change in the features of the students' composing methods. The most notable difference was an overall increase in productive prewriting and planning activity. Heuristics reduced the writers' need to delay starting in order to wait for a flash of inspiration from the Muse. Whether they chose a systematic approach or undertook a more casual search for ideas, they moved into drafting their papers equipped with a far better sense of direction than before. Moreover, all seven said the strategies helped them to organize and develop their material as they wrote. In some cases the

exercises served as blueprints or outlines; in others, as sources of enriching detail. Invention did not generally play a role in revising, except by obviating major adjustments to the text. By enabling the students to identify problems and solve them at the earliest stages of the process, heuristics made extensive reformulation unnecessary in most instances. They did the work, Holly said, of at least two rough drafts. Nevertheless, a few people did employ the techniques to bring order to drafts they had already completed. Ruth attempted to use dramatizing for this purpose on one occasion, and Alex sometimes used "focused freewriting" to revise. On the whole, it appeared that invention transformed the very nature of most students' composing processes. Khalif spoke for many in explaining this change:

With the invention strategies it's totally different. Instead of just starting to write, you start with the preliminary to get your ideas, then you branch out on the ideas, then you put them together in a rough draft, and then you do the final. The process changed a lot. It's a totally different process.

Of course, the process was not "totally different" for everyone; the extent to which the participants modified their writing habits during the study varied considerably, as noted above. The point here is that they became more deliberate and self-directed in their composing. Random discovery of ideas and language gave way to an integrated process of development as the students learned how to use heuristics.

Increased control of the writing process brought with it improved continuity of progression. Recursions, because they occurred within a

framework or plan, became much more productive, on the whole, and less likely to disrupt the forward movement of composing. Students who had reported being troubled by blocks--Holly and Ruth especially--found that heuristics could provide a way around them. Both girls said the strategies were most useful to them when they could think of nothing further to say. All of the subjects said they found the transition from producing ideas to producing text a smooth one, though Khalif pointed out that this depended on the success of the invention exercise. Holly captured the sentiments of most of the group with this analogy:

Once I have it down on paper, the essential structure of it, it's just like when you're baking a cake. Once you have the cake done, the icing's the easy part.

Spreading the icing is easiest and most satisfying, she might have added, when the cake comes out even and firm. So, too, with composing: drafting and polishing a paper is facilitated by a full, solid base of ideas.

Of course, even the finest ideas and the smoothest process cannot by themselves guarantee a superior product. Ruth, for example, produced excellent results with each of the invention strategies she attempted; but, as noted above, she did not always use what seemed to me her most compelling and provocative material. As a consequence of poor selection, she sometimes wrote less than what appeared to be the best possible paper. However, that she had choices to make was clear progress. Like most of the others she had experienced this luxury only rarely before her work with heuristics.

For these seven ninth graders, as for Don, Melissa, and Sarah, some of the most significant effects of instruction in invention were on their perceptions of writing and the writing process. That they had become more aware of their own thinking and composing was evident in their final self-reports, which were remarkably introspective (considering their age and inexperience) and apparently very accurate. Their accounts of their respective mental procedures for writing were detailed and generally consistent with the evidence in their oral-composing protocols and with my own observations of their work during class. Then too, some of their basic notions about writing had changed. In response to an item on the initial questionnaire about what it takes to become a successful writer, most had answered that the writer must possess imagination and, in Jim's words, "the ability to put ideas down on paper smoothly and easily, without losing any of the meaning." In other words, to write effectively was to have good ideas (how?) and to transcribe them fluently in written language--a two-step transaction not unlike that promulgated by Warriner's and the other conventional handbooks. At the end of the study, virtually all of the students took the opposite perspective. The focus of their remarks on the final questionnaire was not the recording but the making of meaning with written language. Their descriptions of the writing act were replete with such phrases as "putting thoughts together" and "forming the ideas." Clearly, they had come to recognize the value of a process of invention--a process, said Alex, which "lets you think more." Most of them indicated that they would

continue to use heuristics to generate, organize, and develop ideas for writing. Assignments from English and social studies classes seemed to be the most likely future applications, though Khalif wondered whether the techniques would help with research papers, that is, beyond the "preliminary stuff":

After that it's different, because it's pretty much note-taking instead of thinking, and it's pretty much getting information instead of coming up with new ideas.

He suspected that the assignments for the composition course had been designed expressly for the invention strategies (in fact, they had not), and he was eager to try them in the "real world." Ruth alone had no interest in using heuristics further. She acknowledged their aid in producing ideas, but she still felt it "easier to write from scratch." The problems she had experienced in selecting her best material may well have contributed to this conclusion.

While the subjects' perceptions of the composing process changed substantially as they worked with heuristics, the effects of the instruction on their attitudes toward writing were much less dramatic--though no less important. In general, the students did not significantly alter their opinions of the school writing experience. They continued to find a great deal to object to in the restrictions imposed by most school writing tasks and in the pressures associated with writing for grades. Though all of them appreciated the greater-than-usual freedom of choice provided by the composition course, most still preferred to work outside of school--in diaries and on stories and with other expressive genres. And yet several did say

that learning about invention had improved their whole outlook on required writing tasks. Even the most difficult and uninteresting assigned projects appeared far less formidable once they knew ways to attack them. Building and sustaining creative momentum was not the problem it had been at the beginning of the investigation, because the students no longer tried to compose merely by inspiration--or by sheer force of will. On the whole, the participants seemed to be much more willing to approach the act of writing as a multi-layered process once they understood its features and recognized that its progress was to a large extent within their control.

The students were nearly unanimous in applauding the concept of an art of invention in writing, even though it represented an entirely new approach. Upon reflection they felt that their instructors had given too little attention to the problem of getting started--and to all other aspects of the production of ideas. All seven advocated--many of the quite strongly--some teaching of heuristic procedures in school. Agreement was limited to general principles, however; evaluations of particular invention strategies were quite varied. Ruth, at one extreme, could endorse only freewriting, which was similar to a technique she had used in the past. Jim, at the other, recommended all eight, which he felt served a variety of distinct purposes. Most of the students had two or three favorites with which they had achieved good results during the term. Their preferences and the probable reasons therefor are explained in further detail in the next section of this chapter.

The case-study subjects' attitudes toward themselves as writers underwent a number of important changes in the course of the inquiry. Chief among these was a general improvement in self-confidence, particularly in regard to production of ideas. The weaker students worried less about having enough to say--a significant development, since meeting the length requirements of school writing tasks seemed to be one of their major concerns. For the more fluent writers, the principal change was an increase in range and flexibility. Jim explained:

Now when I look at a piece of writing and say, "Well, I wonder how he ever came up with that!"--now I can look at it and say, "Yeah, I could do something like that." . . . Almost any type of writing I could look at and say, "Well, this would be the best way to go about it."

All seven students felt better equipped to organize and develop their ideas, as noted above. Without exception, they attributed these positive developments to their work with rhetorical invention strategies.

Nonetheless, the students' overall assessments of their own writing did not change substantially from beginning to end. Most gave themselves ratings of "good" at both times. However, the basis of judgment was different in each case. When asked on the initial questionnaire how they knew whether or not they were good writers, six of the seven cited the comments of others or simply the grades they had received on their papers, but only one student responded in this fashion to a similar item on the final questionnaire. All the others explained their generally positive self-ratings by referring to

particular abilities they possessed. This shift in the participants' evaluation criteria is significant: it suggests that they experienced growth in independence and self-concept commensurate with their gains in writing skills.

Variations in the Use of Heuristics

The foregoing comparison of seven case studies and the three individual profiles which preceded it are replete with examples of the wide variation in the students' composing processes, their attitudes toward writing, and their responses to instruction in rhetorical invention. In many respects, the participants' diversity was more striking than their basic similarity as ninth grade writers. Their differences were nowhere more evident and material than in the uses they made of invention strategies: in the roles that heuristics played within their composing processes and in their individual preferences for particular techniques. This section represents an attempt to categorize and account for the most important of these differences. Two kinds of variation are examined below: differences among the individual students and differences among distinct writing situations.

Differences among students

As indicated above, the ten case-study students were individualistic in their uses of rhetorical invention strategies. The teacher encouraged them to adapt the techniques to suit their

respective purposes and needs, and by the end of the study each one had developed a reasonably consistent, highly personal approach. Even so, it is possible to distinguish several patterns in the manners in which they employed the heuristics and in their ultimate preferences for particular types.

To begin with, an interesting--though tentative--distinction may be made between the writers who used the strategies in an exploratory way, leaving the actual shaping of the text to the drafting stage, and those who used them explicitly to produce form and content--Fran's and Jim's systems, respectively (see Appendix C). Of course, no one used the same method all the time; but, based on the subjects' practices and their final self-reports, it appeared that, in general, the girls preferred the former, while the boys, on the whole, were inclined toward the latter approach. Given the small size of the case-study sample, it is impossible to say whether this pattern was a mere coincidence or the result of insidious cultural pressures which condition "intuitive" thinking in females and "logical," "organized" thinking in males. However, there was evidence to suggest that the paths students chose (or fell into involuntarily) were not necessarily the optimum ones. Melissa, Holly, and Ruth, "average" or "below-average" writers all three, produced their longest and most fully developed papers on the occasions that they took the "explicit" approach. On the other hand, Jim's strict adherence to this method may have accounted for the "stiffness" his teacher complained of in his otherwise masterfully written compositions.

Another key difference among the case-study subjects was in the extent to which they eventually adapted their composing methods to accommodate a process of invention. Some students made fundamental changes in the procedures by which they developed their their assigned papers; invention became the dominant force in their work. Others simply modified the procedures they had been using by inserting heuristic exercises before or between or in place of other steps. (These characterizations are by no means absolute, for in reality the students took a variety of approaches; but they do represent the two tendencies shown.) In the end, it was generally the advanced-level subjects who adjusted their methods of writing the most. Three of them--Sarah, Khalif, and Jim--clearly fit into the category of "fundamentally changed"; Fran, who continued to use her own invention strategies in addition to the procedures taught in class, did not--but she made significant adjustments to her composing process nonetheless. As a rule the less talented writers were more conservative: they attempted to make invention a part of the process they already knew. Two of them, Melissa and Ruth, failing to do so, rejected further use of heuristics for the time being. The reasons for these differences in response probably lay in the students' previous experiences with school writing. Those who had succeeded consistently in the past could afford the risks inherent in trying something totally new. Those who had merely gotten by, on the other hand, or who felt insecure about their writing abilities, were understandably less willing and less able to undertake major, potentially disorienting

change. Don was the obvious exception to this pattern. Though perhaps the weakest writer in the sample at the outset, he was among those who altered their practices most radically. That he did so was not really surprising, however. Optimistic by nature and surrounded by supportive adults, he undoubtedly felt that he had more to gain than to lose. This is not to say, of course, that those who changed most profited most. The subtlest adjustments are sometimes the most important. Besides, only those changes for which a student is truly ready are likely to have any permanent beneficial effect.

The writers' ultimate preferences for particular invention strategies were also related to their ability groupings, except in the case of the freewriting method, which was cited as a favorite by at least half of the subjects at each level. The other heuristics fell into two groups: those which were basically visual in nature and those which were dependent on verbal response. The first type, which included "visualizing" and the various forms of "diagramming" (some of which were adapted from other invention strategies), was the unmistakable choice of the students in the basic- and standard-level classes. Advanced-level students found these techniques useful, too, but they generally preferred those which belonged to the other group--especially "changing perspectives" and "making an analogy." A number of factors appeared responsible for these trends. Freewriting was popular simply because it was free of the restrictions imposed on most school writing tasks; even writers who did not find the strategy particularly useful said that freewriting was a pleasurable activity

in its own right. As to the reasons for the obvious divergence in the students' responses to the remaining heuristics, their degrees of complexity undoubtedly played a role. The verbal techniques were more abstract than the others, and they involved using patterns of thinking with which the advanced-level students seemed to be more conversant (owing in part to their accelerated development and in part to the structure and content of their courses). Familiarity with the mental operation inherent in a specific rhetorical invention procedure generally made its acceptance by a student more likely. But the most important factor was individual learning style. Don, who acknowledged being a visual learner, summed up the key differences among the subjects with this analogy:

There's not like one invention strategy . . . that'll work for everybody. If you're a very visual person, like I said before, you may use visualizing or diagramming; and if you're a little more concentrated on the paper, you may use different things. It's just the way you work most efficiently, like if you take an engine and, say it can run on solar power, gas, and then alcohol, let's say, and it runs most efficiently on solar, you're going to use solar, you know. It's just like that--you want to get your mind working the most efficiently towards the paper.

Don's finding the right "fuel" for his idea-producing "engine" was facilitated by his having several available to choose from and the opportunity to experiment with relatively little risk.

Differences among writing situations

Individual differences were clearly a prime factor in the case-study students' applications of heuristics. Differences among

distinct writing situations were another one, no less important. For though most students developed fairly consistent overall patterns in the roles they assigned to the rhetorical invention process and in their preferences for certain types of strategies, their specific procedures and choices often changed from one composition to the next. Some of these variations were apparently quite random, the products of mere whimsy or chance; but others were linked to the nature of the task and even to the writer's general attitude toward it, as the informal analysis which follows attempts to show.

Every writing task has a number of important dimensions which affect to varying degrees the writer's outlook and approach: audience, mode of discourse, subject, purpose, time constraints, and so forth. The data obtained from this inquiry are insufficient to determine the relative influence of each of these variables on the case-study students' uses of invention strategies. However, it is possible to contrast their responses to two distinct writing situations. One, the comparison/contrast essay, the last formal paper to be completed by all ten participants and the third after the initial instruction in invention, was written solely for the teacher. The students were free to choose their own subject matter, but they were obviously limited in their selection of a form. The other assignment, the very last of the term, was the opposite of the previous one in many key respects. The directions for the final writing sample were open-ended; they placed no restrictions on either subject or form. This paper had a different orientation as well: it was addressed to an audience of the writers'

peers. Without exception, the case-study students stated a preference for the second of these two opportunities for writing. Nonetheless, three of the subjects (Alex, Khalif, and Fran) elected to write formal essays for the last assignment, two of them in the comparison/contrast form. Naturally, their procedures for composing the piece did not differ substantially from those they had used in developing the earlier composition. Of greater interest here are the other seven participants, who chose for their final papers various informal modes (narratives, letters, and humorous nonfiction), thus creating an entirely different rhetorical situation from that established by the comparison/contrast assignment.

The dissimilarities in the dimensions of these two occasions for writing were reflected in the students' choices of invention strategies. Dialectics (with variations), tree diagrams, and tables were the principal selections for the comparative essays, while strategies more suited to developing stories--the visualizing and dramatizing techniques especially--were the ones generally used in preparing the final papers, all of which included narrative to some degree. Jim's choices epitomized the differences in approach. He produced the material for the essay assignment with his usual mix of heuristic exercises, in this case a brief "visualization for ideas" followed by two kinds of diagramming and two detailed analogies, all culminating in a formal topic outline. To generate the content for his final composition, "a typical Dungeons and Dragons adventure," he took the unprecedented step (for him) of selecting only one invention

strategy: visualizing. He clearly saw the need to adjust his composing methods to fit the dimensions of the task. But even the weaker writers made appropriate changes. Holly and Eduardo, who used the diagramming strategy for both these assignments, switched from classification exercises to flow charts (for the essay and the final paper, respectively). This pattern suggests that the students succeeded in connecting their topics to the underlying structures of the various invention strategies--even though many of the case-study students were less than systematic in making their selections.

The students' approaches to composing the two papers indicated another important relationship between the rhetorical situation and the uses of invention, though the data were far from conclusive on this point, which concerns the role played by heuristics in the process--the exploratory/explicit distinction made above. Though the manner in which the various strategies were employed was for the most part a function of individual style, the dimensions and the perceived difficulty of the task also seemed to be influential. In general, the students used invention less explicitly when writing their narratives and other informal pieces for the final assignment than they had when composing the comparison/contrast essay. (This observation is based on both protocol evidence and on comments the students made during class and the final interviews.) Once again, Jim's procedures offer a good illustration. The text of his essay was drawn almost entirely from the extensive prefiguring on his two planning sheets; but the text of his story, done a section at a time, was based only on images

he had created in his mind. It seems reasonable to infer that this change in approach was the result of the shift in both audience and form (the subject matter was essentially the same in both cases). To narrate a story for a group of one's friends did not present the same challenge as to produce a clear essay in a specified form for a teacher/evaluator. The latter was presumably the more difficult task, the one which required extensive point-by-point development. Hence the more visible, direct role for invention strategies. This point is connected to the comment made by several of the students in the final interview that heuristics would probably help them most with "reports," by which they referred to various "boring" assignments with difficult, teacher-selected topics and forms. The conclusion they seemed to have reached was as follows: the more problematic and unappealing the writing task, the greater the need for an explicit invention process.

Though the foregoing discussion is by no means an exhaustive analysis of the extensive variation in the subjects' uses of heuristics, this much is clear: that the roles students assigned to invention within the composing process and their preferences for particular strategies were linked not only to their individual styles and abilities, but also to the dimensions of each rhetorical situation. Heuristics evidently helped all ten participants to some extent, but different techniques served different students in different ways on different occasions for writing.

Summary of Case-Study Findings

Like each of the three individual profiles and the comparative analysis of the other seven ninth-grade writers, the summary of case-study findings which follows is presented in accordance with the mode of analysis set forth at the beginning of Chapter IV (see pp. 75-85). This summary of findings reflects an attempt to represent fairly the diversity within the sample and at the same time to make sense of the group as a whole. In essence, the entire set of conclusions given below is the result of a compromise between these two goals.

Though chosen by lot, the ten case-study students proved excellent research participants. They represented a variety of backgrounds and interests and exemplified a range of writing abilities and styles. Earnest and cooperative, they were able, upon reflection, to articulate their own writing habits and procedures, and they became increasingly aware of their respective thinking and composing processes as the investigation progressed. The overall accuracy of the students' self-reports was established by the evidence from the other data sources, including cumulative writing folders and my own classroom observations. Of particular interest were the protocols obtained from ten tape-recorded oral-composing sessions. Though a third of the students who participated in these sessions were unable to verbalize their thoughts as they wrote, those who were successful in performing the procedure provided insights into otherwise

inaccessible aspects of their respective composing processes.

The first of the four major research questions which guided this investigation concerns the role of invention in the students' composing processes before the instruction in heuristics. Of course, the participants' writing methods varied widely according to their abilities and personal styles. Still, there were certain fundamental similarities in the ways they approached and completed writing tasks. All ten found getting started the most difficult stage of the process. Their prewriting/planning activities were limited and generally quite unsystematic (Fran and Jim, both members of the advanced-level class, were significant exceptions in this regard). As a rule, they prepared second drafts of their texts, primarily to improve diction, appearance, and mechanics; major reformulation of structure or content was rare (and considered a waste of time). On the whole, the participants' view of the composing process could be characterized as "thinking of something and then writing it down." This is not to say, though, that their papers developed in a continuous, linear fashion. Recursion among the various features of the process was common--but frequently unproductive. For example, the premature correcting of minor mistakes often disrupted the flow of composing. Moreover, many of the students were troubled by blocks, particularly when they had to face the blank page. Even the most skillful and successful of these writers complained that they lacked full control of their writing.

Nowhere was this lack of control more apparent than in their production of ideas. Students at all skill levels reported relying

heavily on inspiration from a frequently uncooperative Muse. The usual result was a paucity of choices: when they ran short of time, they would "take whatever comes." Only two of the subjects (again, Fran and Jim) engaged in anything resembling a process of invention, though each of the remaining eight had employed on occasion at least one rudimentary invention strategy--in most cases a version of freewriting or visualizing. Some of these strategies were situation specific, applicable to only a small range of writing tasks. In general, the students did not regard their own heuristics as flexible procedures for producing ideas but rather as variants of their methods of producing text. Of course, much of the idea content of their writing came from external sources, particularly in school, where teachers often specified the topic and the format and even the approach to be used in a paper. Other sources of ideas--parents, peers, books, television--were influential to varying degrees for each student, but everyone relied on at least one from time to time. On the whole, the participants' idea-producing methods were characterized neither by deliberateness nor independence.

To determine precisely the impact of previous instruction in writing on the students' composing processes is impossible, of course, but this much can be inferred from their behaviors and self-reports: that their teachers had given primary attention to form, particularly the three-part deductive arrangement of conventional expository paragraphs and themes. Classroom instruction in planning techniques had essentially been limited to the formal topic outline, a device

students had generally found useful (if at all) only after they had developed ideas. But school teachers had not been their only instructors. Virtually all of the subjects had been influenced to some degree by a parent or sibling or friend who wrote often in a professional or academic capacity. These "significant others" had taught them (or modeled) a variety of useful "tricks of the trade"--including, in some cases, rudimentary rhetorical invention strategies.

The second of the study's four main research questions is concerned with the impact of instruction in heuristics on a number of aspects of the students' composing processes. Though the concept of rhetorical invention was a new one for all ten of the case-study subjects, they responded to the strategies taught in class in different ways. Some made connections between the techniques and procedures they had used in the past; some did not. Some understood each heuristic completely and recognized specific applications from the start. Others achieved only partial understanding and never saw any applications for certain strategies. The students' actual uses of heuristics were varied, too. They employed them both singly and in series or combination, as given in the handbook and in modified form. Freewriting and diagramming were selected most often, apparently because of their simplicity and flexibility; but most students tried several different techniques over the course of the investigation, and as a group they attempted no fewer than five for each assignment. Their results, like their approaches and choices, were mixed.

Despite this extensive variation in response, it is possible to make a number of key generalizations about the effects of heuristics on the students' composing processes.* The most dramatic developments by far were the positive changes in the efficiency and the effectiveness of the writers' production of ideas. They could generate more material more quickly with invention strategies; as a result, it became easier for them to begin writing tasks. Moreover, heuristics provided a range of perspectives on a particular subject and at the same time facilitated exploration in depth. Even the two students who ultimately rejected the use of invention strategies (Melissa and Ruth) acknowledged that the techniques had made them more fluent and thorough in producing ideas. These developments were part of an overall change in the texture of most of the students' composing methods. In general, the prewriting stage became more prominent and more likely to include deliberate searching and planning. Organization of ideas and text was improved; and though the role of revision was not significantly increased, substantive reformulation of material took place throughout the period preceding completion of the rough draft. Recursions became more productive, on the whole, because they occurred within the context of an overall plan. Then too, the participants found it easier than before to move from producing ideas

*Changes in the subjects' writing methods cannot be attributed entirely to instruction in invention, of course. Some growth undoubtedly would have occurred without introduction of discovery procedures into the composition course. In reference to the effects summarized in this section, however, the case-study data has demonstrated at least a substantial contributing role for heuristics.

to producing text. Interrupted less often and less seriously by blocks, they found the entire process more continuous and smooth. Indeed, writing became a "totally different process" for several, and a more systematic, less obscure one for all--even those who elected to return to their old methods. Of course, the ten participants did not automatically produce masterpieces because of heuristics. Unaccustomed to working from an abundance of ideas, they did not always choose their most interesting material. But that they were even able to choose was a sign of the progress they had made in taking control of the writing process.

Increased control was directly related to a basic change in the students' perceptions of writing. They became more introspective and, as a result, more aware of the mental procedures involved in thinking and composing. In essence, they learned that the two processes are connected: they came to see writing as a meaning-making process, not merely as a means of transcribing complete thoughts. Though they never lost faith in the power of inspiration, they recognized that invention gave them more flexibility. Most indicated that they would continue to make use of invention strategies to generate, organize, and develop ideas--especially for formal assigned writing tasks.

The impact of instruction in rhetorical invention on the case-study participants' perceptions of the composing process was among the most significant results of this inquiry. Less obvious but no less important were the effects of learning heuristics on their attitudes toward writing. These effects, the concern of the study's

third research question, included changes in the students' feelings about the act of composing and in their feelings about their own writing abilities and written products. Most of the ten students came into this study with two sets of attitudes about the activity of writing. On the one hand, they enjoyed being creative with language and valued writing as a powerful means of self-expression. On the other, they found writing tedious and unfulfilling and pronounced it a main cause of anxiety and irritability. The former set of feelings was associated chiefly with open-ended, informal, self-initiated writing endeavors; the latter with restrictive, highly structured, academic writing tasks. This negative view of the school writing experience, held by even the most successful student writers in the group, was not altered substantially at the conclusion of the investigation; but the participants were much less intimidated by assignments because they felt that heuristics put them more in control. They were also more willing to treat the act of writing as a multi-layered process with complex, recursive features. Most agreed that invention should play a role in this process, though their preferences for particular invention strategies were quite varied. In general, these students approached writing tasks with more confidence in their abilities than they had at the outset: they knew they could produce viable ideas in sufficient quantities, and they knew they could organize and develop them in their papers. Their respective assessments of their own written products did not change significantly from beginning to end, but the basis of judgment seem to shift from

the comments of others (especially teachers) to self-analysis. The students themselves attributed these improvements in attitude and self-concept to the work they had done with rhetorical invention strategies. Though two of the participants (Melissa and Ruth) concluded that heuristics were not helpful overall, it was not because they had realized no gains from the instruction. Rather, these students were ultimately unwilling to take risks with their more-or-less adequate (i.e., safe) composing methods. But even they seemed to have more positive attitudes as a result of having increased their understanding of the writing process.

The final research problem, explored most directly in the previous section, concerns the individual and situational differences in these ninth graders' uses of rhetorical invention strategies. The roles invention played within the students' composing processes and the types of heuristic procedures they preferred varied from one individual to the next, but there were a number of interesting patterns in these differences. The girls in the sample generally used the heuristics in a tentative, informal, exploratory fashion, while the boys seemed to use them explicitly to create text. The reason for this distinction was not entirely clear, but it may have been related to social conditioning that favors "intuition" in females and "logic" in males. Two other distinctions were apparently connected to the participants' ability levels. One involved the extent to which they adapted their composing methods to accommodate a process of invention. Those who had been most successful at school writing proved the most

likely to risk significant changes. The weaker writers generally attempted to add heuristic procedures to the processes they already knew. The other ability-related distinction was between students who favored the more visual heuristics (members of the basic- and standard-level classes) and those who preferred the more verbal techniques (three of the four participants from the advanced-level group). This pattern was linked to the relative complexity of the various invention strategies, but also to the differences in the students' learning styles. One strategy--freewriting--was a favorite at all levels. Variation in elements of the rhetorical situation (audience, mode of discourse, purpose, subject, etc.) also affected the students' uses of heuristics. A comparison of two distinct occasions for writing showed that the participants' selections of invention strategies and the manners in which they employed them within the process corresponded to the overall dimensions of the task. In general, the more complex and formal the situation, the more direct and explicit the role of heuristics.

C H A P T E R VI

GENERAL RESULTS

The purpose of this chapter is to extend the analysis of the study's four major research problems (see pp. 53-55) to the results obtained from all forty-six participants in the investigation. These general results possess neither the depth nor the richness of the more extensive case-study data, but they establish a broader perspective on the issues, thus providing a basis for assessing the applicability of the case-study findings to other ninth graders.

Like the case studies the general results are derived from three distinct sources of data. One source was my own observations, recorded daily, of the writers at work in their composition classes. These field notes were supplemented by the teacher's written comments on each student. Another source was the forty-six participants' self-reports: their responses to the initial and final questionnaires. The third was the students' collected notes, drafts, and papers, including their initial and final writing samples. Interpretation of the latter two sets of results required the use of several coding procedures, described in detail in the following section. Evaluation of the students' written products was carried out by three paid independent readers, all of whom were experienced teachers of writing. Once again, the various sources of data proved complementary. Like the three separate views customarily provided in blueprints, they supplied different kinds of information about the subjects and at the

same time served as checks on each other.

The presentation and discussion of the general results are organized around the four main research questions, which are treated in separate sections below. In each case, the relevant case-study findings serve as the starting point for the data analysis.

Coding Procedures

Because the initial and final questionnaires were exploratory and open-ended and not neatly precategorized, the results they obtained were complex and somewhat unwieldy. Some items elicited unanticipated responses; some brought forth different kinds of responses from different students. To make overall sense of the questionnaire data I developed the following simple procedure for coding the participants' answers to each question.

The coding procedure included several steps. The first was to transcribe the various responses to each item onto coding sheets--one for each class. I performed this task immediately after the administration of each questionnaire. Informal review of these preliminary results was invaluable in planning the interview schedules. Formal analysis of the questionnaire data took place after the conclusion of the investigation and involved the development of a coding system for each item. The process was guided in part by my classroom observations, which suggested possible groupings for each set of responses. In the end, though, the categories came from the

data themselves. Often I had to make several attempts to come up with a system that accounted for all answers. To insure a meaningful count of responses in each category, I limited the number of categories for each question to three. In the few instances where this restriction proved too narrow to accommodate the data, I examined the responses on an item-by-item basis to search for additional patterns and minor trends. Otherwise, I simply coded the students' responses by number, recorded the totals for each class, and computed percentages for the entire sample.

The questions did not all prove equally interesting, of course. Some seemed to strike familiar chords for the students or to isolate issues of importance to them; these items produced the most clear-cut, direct, and extensive responses--and therefore the most useful results. Others elicited only minimal answers or answers so varied or vague as to be of little value. The most important of the questionnaire data related to the four major research problems of this inquiry are reported in the appropriate sections of this chapter.

Coding of the students' written products was performed by three paid independent raters, whose qualifications as experts are summarized in Table 3 (see p. 210). All were experienced and highly respected teachers of writing, and all had been involved in the development of writing programs in their respective schools. They participated in three rating sessions for this study and completed three separate rating tasks, described below. All of their nearly fifteen hours' work was performed under my direct supervision. Each

task was preceded by a training session designed to clarify its purpose and to insure consistency of standards.

The first rating procedure was a blind holistic scoring of the participants' initial and final writing samples, both of which were informal compositions on any subject for an audience of the students' own age. Using a simple five-point scale (on which 1 designated "poor"; 2, "fair"; 3, "average"; 4, "good"; and 5, "excellent" for ninth-grade level), each reader evaluated the overall quality of all eighty-seven papers collected in the two samples (46 participants x 2, less 5 papers never submitted = 87). To eliminate the "halo" effects of neatness and legibility and to focus the readers' attention on the elements of composing most relevant to the study, the papers were typed with minor errors (i.e., mistakes in spelling and punctuation) corrected. Students' names and all temporal references were removed, and the raters were not told at this point that the papers had been written on two different occasions. Each of the readers received the

Table 3

Qualifications of the Three English Teachers Employed
to Evaluate the Participants' Written Products

Rater	Degree Status	Grades Taught	Years of Experience	Leadership Positions Held
1	M.A. + 30 hours	7-12	21	Department Chair, 7-12
2	M.A. + 30 hours	9-12	26	Department Chair, 9-12
3	B.A.	7-9	5	Dept. Coordinator, 7-9

compositions in a different random order, and they were not allowed to see each other's scores while the rating session was in progress. These precautions were taken to minimize the danger that bias would be introduced inadvertently into the scoring procedure.

All three teachers were familiar with the process of holistic scoring and thus needed no introduction to the procedure. The training for this task consisted of rating and discussing twenty sample papers (the case-study students' compositions): ten at the start and five after each of two breaks in the scoring. I stipulated at the outset that to be considered valid the three raters' scores for a particular composition could differ by no more than one point. Thus ratings of 2, 2, and 3 (for example) were deemed acceptable, while ratings of 2, 2, and 4 or 2, 3, and 4 were not. The goal of the training sessions--to "calibrate" the three readers--was achieved with little difficulty. Only two of the twenty sample papers received initial holistic scores more than one point apart, and none of the remaining sixty-seven sets of ratings failed to meet this established standard of agreement. The procedure was thus extremely successful overall. All three readers chose the same rating for a third of the papers (29 of 87), and they selected adjacent ratings for virtually all of the rest (56 of 58). The mode score determined the final rating for each paper, except for the two with invalid initial ratings: given a second reading, the three raters agreed on the median score in both of these cases.

The second rating procedure was much more complicated. Using the

students' notes and rough drafts and any other preliminary material as evidence, the readers performed an analytical rating of the degree to which a process of invention had contributed to the development of each of the initial and final writing samples. "Process of invention" was defined on the rating sheet as "a deliberate search for subject matter using one or more heuristic (discovery) procedures (including but not limited to the strategies in the booklet)." "Development" was defined broadly for this procedure, as follows: "identification of a main idea or purpose, selection of an approach, organization of materials, generation of details, etc." A five-point scale was employed to indicate the extent to which--in the reader's judgment--invention had played a role in the process of composing each paper (a score of 1 designated "to no extent"; 3, "to some extent"; and 5, "to a great extent"--scale points 2 and 4, which were not labeled, represented interpolated values). As before, the three readers received the compositions (and related materials) in different random orders, and they were not allowed to reveal their ratings to each other until the initial scoring was complete. In some cases they may have been able to determine whether a paper was written before or after the instruction in heuristics, but this awareness did not result in any discernable bias; they were instructed to look for evidence of a process of rhetorical invention, not for use of particular invention strategies. To alleviate any sense of obligation they might have felt to assign higher scores to the final than to the initial writing samples, I told them that I anticipated a wide range of scores on both

samples and that I was primarily interested in comparing the students with each other at both ends of the study. On the whole, I was satisfied that their decisions were probably not influenced significantly by any extraneous factors.

Preparation for the analytical rating procedure included an extensive training period. The readers were unfamiliar not only with the type of scoring required, but also with the concept of rhetorical invention. First they were asked to familiarize themselves with the invention strategies booklet which had been used in the study. After an informal discussion of invention theory, they proceeded to rate twenty sample papers (again, from the case-study group). At first they had difficulty making reliable ratings (i.e., within a single point of each other on any given paper), but by the end of the training session they had become quite consistent. They remained well "calibrated" for the rest of the procedure: of the sixty-seven papers rated after the training session, only six received scores more than one point apart. The readers were given a second look at these papers, and in each case the discrepancy was eliminated or reduced to the acceptable margin of error. The end result was that nearly half of the papers (43 of 87) received identical ratings from all three readers, while the remainder received adjacent scores. Once again, the mode score determined each composition's final rating.

The third rating task performed by the three independent teacher-evaluators was not a formal coding procedure but an informal review of the students' writing folders. Each reader examined

one-third of the thirty-three available cumulative files (the case-study students' folders were excluded from this procedure, as were three others which had been submitted virtually empty) to comment on each participant's experience in learning and applying rhetorical invention strategies. Using the evidence contained in the individual folders, the readers answered (in writing) the following questions about each student:

- (1) To what extent did the student understand the strategies he or she was taught?
- (2) To what extent did these strategies contribute to the development of the student's essays?
- (3) What patterns, if any, did the student follow in using the invention strategies? (For example: What strategies did he or she seem to prefer? Did he or she use them as given in the booklet or in modified form? Individually or in combination with other techniques? At what stage of the writing process? For what purposes?)
- (4) How successful, overall, was the student in using the strategies?

Since this final task required no numerical ranking, little additional reader training was needed. Explanation of the purpose of reviewing the folders and spot-checking of each reader's first few sheets of written comments sufficed to insure thorough and relevant remarks.

The Role of Invention in Ninth Graders' Composing Processes

The first major problem of this inquiry, once again, concerns the nature of ninth graders' composing procedures and specifically the

role of invention in their writing processes (i.e., before instruction in heuristics): Do ninth-grade students have invention strategies of their own, or do they depend on inspiration--and, when inspiration fails, on the suggestions of others--to generate ideas for writing?

The case-study findings suggest that, on the whole, the simple answer to the first part of this question is no--ninth graders do not usually engage in a process of rhetorical invention to develop ideas (though most seem to know at least one simple heuristic). Conversely, the answer to the latter part is yes--ninth-grade students do rely heavily on inspiration as well as on external resources for ideas. As a rule, they approach the entire act of composing much less as a process of making meaning with written language than as a process of giving form to complete thoughts. In the case studies, the major exceptions to these patterns were found in the methods of the most advanced writers.

Field observations

My field observations from the first week of the study--when the participants prepared the initial writing sample--were wholly consistent with the case-study findings. In general, the students' composing of this paper seemed to include very little prewriting activity. Some writers picked topics for the paper immediately, while others chose only after consulting with friends; but most, having done so, plunged directly into drafting--without any obvious planning of the piece or a deliberate search for ideas. Many ran out of material very quickly and became blocked (or decided to stop then and there).

Others, dissatisfied with what they had written, abandoned their rough drafts and started again. Few managed to sustain a smooth flow of ideas for much more than several minutes at a stretch. The students frequently turned to the teacher--and occasionally to each other--for help or approval. A majority made two complete drafts of their papers, but the second one seldom incorporated major revisions. In general, except for mechanical corrections and a few minor changes in wording or detail, what these writers began with was what they ended with. In short, their composing procedures were limited; they seemed to regard the act of writing as a simple, one-dimensional process.

The foregoing description is a composite, of course. In reality, the forty-six students' writing methods varied considerably from individual to individual. Some differences seemed to be linked to ability grouping--particularly the extent of prewriting activity. Though the use of heuristics was rare overall, there was a good deal more evidence of deliberate planning in the advanced-level group than in the other two classes. A majority of the top students prepared lists of potential topics before deciding on a subject, and some made brief outlines or lists of ideas before starting a rough draft. These writers appeared to have a better sense of direction, though they were by no means immune to serious blocks.

Independent evaluation

My informal analysis of the role of invention in the participants' composing processes at the start of the investigation

can be compared to the results of the independent evaluation described above. The holistic scores and analytical ratings which pertain to the initial writing sample are presented in Table 4. The holistic

Table 4
Distribution by Class of Holistic Quality Scores
and Analytical Invention Ratings
on Initial Writing Sample

Class	N	Holistic Score					Analytical Rating				
		1	2	3	4	5	1	2	3	4	5
Basic	8	2	5	1	--	--	7	1	--	--	--
Standard	13	--	6	6	1	--	10	3	--	--	--
Advanced	21	--	3	7	11	--	8	5	6	2	--
Totals	42*	2	14	14	12	--	25	9	6	2	--
Percentages		4.8	33.3	33.3	28.6	--	59.5	21.4	14.3	4.8	--
							80.9		19.1		

Analysis of Variance

Effect	Group Means		Differ- ence	F-statistic (df=1;40)
	Basic/Standard (n=21)	Advanced (n=21)		
Quality (Holistic score)	2.33	3.38	1.05	21.33**
Invention (Analytical rating)	1.19	2.10	.91	13.63**

*Only those students who submitted both an initial and a final writing sample are included in this and all subsequent comparisons. Of the remaining four participants, three submitted only one writing sample and one submitted neither.

**Significant at the .001 level.

scores represent the three readers' assessments of the overall quality of the compositions (3 = average for ninth grade); the analytical ratings represent their best estimates of the extent to which a process of rhetorical invention contributed to the papers' development (1 = to no extent; 3 = to some extent; 5 = to a great extent).

Of particular interest is the negatively skewed distribution of analytical rankings. The high percentage of low ratings supports my observation that most of the students did not engage in a deliberate search for ideas. Invention contributed little or nothing to the development of over four-fifths of the writing samples (the 80.9 percent which received ratings of 1 or 2). On the other hand, less than one-fifth of the papers (19.1 percent) were developed with invention playing a moderate or more extensive role (indicated by an analytical ranking of 3 or 4). In no case did a process of rhetorical invention contribute "to a great extent" (analytical score 5). Clearly, the students relied on other means than heuristics to generate material for their compositions.

The distribution of analytical ratings by class, like my own observations of the participants at work, suggests that an important distinction may be drawn between the writing procedures of the advanced-level students and the methods employed by the members of the basic- and standard-level classes. First, it is necessary to establish that these two groups (the basic/standard, on the one hand, and the advanced, on the other) differed significantly from each other in writing ability--to establish, in other words, that the

advanced-level students were, in fact, "advanced" writers. The holistic quality scores on the sample provide a useful basis for comparison. The mean score for the basic/standard group was 2.33 (slightly below grade level); for the advanced group, it was 3.38 (slightly above). That the difference represents a greater variance between the groups than within them is demonstrated by an analysis of variance, which yields an F-statistic of 21.33, significant at the .001 level of confidence ($df=1;40$). This result indicates that the groups' analytical rankings can be meaningfully compared in terms of writing ability.

One obvious difference between the two groups was in the range of invention scores each received. While the basic- and standard-level students' invention rankings all clustered at the two lowest points on the scale, the advanced-level students' were more evenly distributed. The mean scores were significantly different as well. The basic/standard-group mean on the analytical rating was 1.19; the advanced, 2.10. In this case, the analysis of variance calculation yields an F-statistic of 13.63, which is also significant at the .001 level of confidence ($df=1;40$). It is reasonable to conclude, then, that in this sample ninth graders of higher-than-average writing ability were more likely to use a process of invention in composing than ninth graders who possessed lower-than-average writing skills. The apparent connection between writing ability and the use of heuristics is explored further in the next major section of this chapter.

Questionnaire responses

An additional perspective on the first research problem is provided by the participants' responses to several items on Part I of the first questionnaire (see Appendix B). Taken together, these informal writing self-reports illuminate not only the students' composing habits, but also their basic notions about writing. The data which follow were assembled according to the coding procedures described above (pp. 208-209). Since the original questions were exploratory and open-ended and the answers quite varied, results in the form of percentages must be regarded as approximations.

One question (I,2) asked students to identify the aspects of writing they generally found the most difficult. Among the case-study subjects the overwhelming response was "getting started"--coming up with ideas. Similar results were obtained from the entire sample (n=46). A substantial majority (63.0 percent) indicated that the toughest composing problem they faced was beginning a writing task: trying to decide what to write about, trying to think of what to say. "Coming up with an idea when you can't even begin to think of one" and "starting something like the first sentence or two" were typical of the responses from all three classes. By contrast, much-worried-over stylistic concerns such as format, sentence structure, punctuation, and spelling were cited as the most difficult aspects of writing by fewer than half as many students (28.3 percent). Miscellaneous responses accounted for the remainder (8.7 percent). Given the results of the analytical rating (reported above), which showed that

the students engaged in very little systematic planning or idea development, the fact that they found getting started the most frustrating part of the composing process is not surprising.

Two other questions sought to determine what invention strategies (if any) the participants used to generate material for their compositions. One item (I,3) asked how they usually started on a piece of writing; the other (I,4), what they did if they became stuck or ran out of ideas. As expected, the responses to both were extremely varied, and many of them were difficult to classify; however, it is possible to distinguish between those that implied even a minimal role for invention and those that indicated no deliberate search whatsoever. Over half of the answers to the first of the two questions (54.3 percent) fell into the latter category; many of these responses described the first stages of writing strictly in terms of passive behaviors. For example: "[I] get an idea then jot the words down as they come to my head"; "I sit there for a while"; "[I begin by] doodling, listening to music, thinking." On the other hand, a substantial minority of the students (39.1 percent) made reference to some sort of heuristic procedure. In the basic- and standard-level groups, this was typically some means of adapting life experiences for stories. In the advanced-level group, the technique mentioned most often was making informal lists of ideas. The remaining three students (6.5 percent) said that their methods of getting started were different for each paper. A similar pattern of responses was elicited by the question on strategies for becoming unstuck. A majority of the

participants' answers (60.9 percent) suggested that they waited for inspiration when blocked: "I space out for a minute and think"; "I begin to daydream or find something else to do"; "I draw or doodle." By contrast, approximately one-fourth of the students (23.9 percent) identified specific techniques that they used for restarting the flow of ideas. In many cases the strategies were variations on brainstorming. The rest of the group (15.2 percent) indicated that they turned to their parents or peers when they ran into a roadblock or out of material. These results, though by no means conclusive in themselves, lend support to the case-study finding that, in general, ninth graders lack reliable idea-producing strategies and as a consequence depend heavily on inspiration. On the other hand, the responses to these questions confirm that many students know at least one rudimentary heuristic.

One other item on the first questionnaire (I,5) was concerned with the dimensions of the participants' composing methods. It asked the students whether they normally prepared more than one draft of a composition and, if so, what kinds of changes they made. Once again, the responses were consistent with my own observations of the group and with the case-study findings. Although nearly all of the students in the three classes reported making two or more drafts of most papers, only a small portion (15.2 percent) said they made substantive revisions. The vast majority (73.9 percent) indicated that they concentrated mainly on improving mechanics and diction--and appearance. A few (10.9 percent, most of them at the advanced level)

reported that they normally submitted the first draft. Clearly, for most of the students in this sample rewriting was not a meaning-making process.

Another portion of the questionnaire (Part II) asked the students to identify a good writer and to speculate about his or her composing procedures in answering a series of questions quite similar to those they had answered about their own writing methods. Some students seemed to have very little idea of how a successful writer proceeds, but among those who did the overall pattern of responses was not unlike that reported above. In other words, the students' notions of an effective composing process--if they had any--were consistent, by and large, with their own practices. They apparently felt that the act of writing was inherently limited to a narrow range of features. A systematic process of rhetorical invention was not among them, nor was extensive revision--nor any other deliberate meaning-making procedures, for that matter. That the students held such a view is not surprising, of course; the traditional paradigm of writing instruction is based on a very similar creed. An unfortunate consequence of this narrow understanding of writing is the feeling apparently shared by many students that success is dependent to a very large extent on factors beyond their control ("creativity," "imagination," and "talent," for example). One student in this study spoke for many when she answered a question on what it takes to become a good writer with this response: "I guess you just are one or aren't one."

The Effects of Instruction in Rhetorical Invention
on Ninth Graders' Composing Processes

Closely related to the foregoing discussion of the role of invention in ninth graders' composing processes is the second main question of this exploratory investigation and the central concern of the research: Does instruction in rhetorical invention affect the ways ninth-grade students compose? The answer provided by the case-study findings is a clear and unequivocal yes. Despite major differences in the subjects' responses to and uses of rhetorical invention strategies, a number of general effects were apparent. In the first place, the students became more efficient and more effective in their production of ideas. Most became more deliberate and systematic in their approaches to generating and organizing material, and as a result they were less troubled by blocks. These changes in the texture of the participants' methods of composing were accompanied by a shift in their perceptions of the process from a view emphasizing transcription of fully formed thoughts into words to one stressing the interaction of thought and language. Writing became a "totally different process" for some and a more self-directed one for all of these students. The general data pertaining to this problem--my own daily field observations, formal holistic and analytical ratings by the three independent readers, and selected results from the second questionnaire--suggest that these case-study findings extend in large part to the remaining participants in the study.

Field observations

Most of the classroom time given over to this inquiry was devoted to the learning and use of invention strategies. In my role as participant observer in the three classes I had ample opportunity to record in daily field notes the students' responses to the instruction in heuristics and to examine the results of their experiments with the strategies. Frequent informal consultations with the teacher provided me with a means of testing out my perceptions, and the independent readers' written remarks about the folders served as an additional check on my conclusions, the most important of which are summarized below. These comments reflect only the major trends, of course. In fact, no two participants among the forty-six were exactly alike in their responses to or results with invention strategies.

That the students in all three of the classes became more deliberate in their discovery and development of ideas for writing was evident both in their classroom activities and in the contents of their cumulative writing folders. Instead of merely waiting for a "flash of inspiration" or plunging directly into drafting without planning, most of them eventually engaged to some degree in a self-directed process of rhetorical invention. They appeared to become more efficient and systematic in their approaches to starting and sustaining the flow of ideas. The overall result was an increase in the quantity, variety, and depth of material they produced for each writing assignment. However, although these effects were observed at all three ability levels represented, some useful distinctions may be

drawn among the groups in the character and scope of their work with invention strategies.

The students in the basic-level class seemed to experience the most difficulty comprehending the purposes and uses of the strategies, particularly the more complicated ones. The teacher explained the heuristic procedures much more methodically to this class than to the others. Even so, the initial invention exercises revealed inconsistent compliance with instructions and in some cases only partial success. For example, though most of the students could create dialectics outlining opposing points of view, some failed to develop a synthesis or reach a conclusion at the end. None of the students did well on all eight of the strategies initially, but no one did poorly on all of them, either.

Despite the unevenness of the basic-level students' performance on the practice exercises, the invention strategies produced an immediate and dramatic effect on their methods of composing "real" papers. They seemed to have an easier time getting started, and most developed much more material than before. Indeed, the early results in this class were so encouraging that the teacher predicted the investigation would show that instruction in invention was most beneficial for basic writers. As a group these participants showed a marked preference for the freewriting and diagramming strategies, consistently choosing these straightforward techniques roughly four times as often as all the others combined. The students used the strategies to varying degrees and in quite different ways, but in

general they seemed to become more disposed to discovery and revision in their composing procedures. Most needed considerable guidance from the teacher in applying the heuristics to specific writing problems, but many repeatedly expressed satisfaction with the quality of the work they had produced with the strategies.

Students in the standard-level section completed the simpler initial invention exercises with relative ease, but they too experienced difficulty in comprehending the uses of some of the more complicated strategies. As a result, most selected freewriting and diagramming to develop ideas for the first two assignments, and these techniques remained favorites throughout the study. But unlike their counterparts in the basic-level class, many of these participants eventually employed several other heuristic devices from the booklet, particularly visualizing and creating a dialectic. The nature and extent of students' use of the strategies varied widely, though most settled into a pattern consisting of three overlapping stages: one or more invention strategies, a rough draft or two, and a polished final copy. As a rule they required less help from the teacher than the basic-level students, and many adapted and combined the heuristics according to their individual needs.

The advanced-level students' initial response to instruction in rhetorical invention was mixed. Though in general they seemed more conversant than the others with the various modes of thinking involved in the strategies, they were not necessarily more successful in employing them, especially in the practice exercises. As the work on

the essay assignments began, a few of the students protested the teacher's requirement that they incorporate some use of the strategies; confident in their own methods of writing, they maintained that they did not need to learn new procedures for producing and developing ideas. Nonetheless, the advanced-level class as a whole ultimately employed more of the heuristics more extensively than either of the other groups (though some individuals limited their choices to just two or three). Among the techniques these top writers selected regularly were sophisticated strategies such as changing perspectives and making an analogy, as well as the four mentioned above. The purposes for which students made use of heuristics ran the gamut from casting about for a topic to generating specific material for the text, and, as in the standard-level class, modification and integration of the strategies was common.

One final observation: though the evidence was ample in all three of the groups that the students became both efficient and effective in producing raw material with the aid of invention strategies, their success in selecting and arranging their ideas was less certain. The teacher and I noted during the course of the study, and all three independent readers later commented, that some writers occasionally failed to include what appeared to be their most promising insights, examples, or details in their essays. This phenomenon, noted in the case-study chapters, was especially evident in the two lower groups, whose members were obviously unaccustomed to working on papers from an abundance of ideas. This finding suggests that the impact of

instruction in invention on the texture of students' composing methods may not become immediately apparent in their finished products.

Independent evaluation

The holistic and analytical ratings performed by the three independent readers (see above, pp. 209-213) were designed in part to reveal the effects of heuristics instruction on both the composing process and composed product. Though based on a limited sample of the students' work, these ratings provide some indication of the changes in the ninth-grade participants' writing methods brought about during the course of the study. They also suggest that a connection exists between the overall quality of a written composition and the degree to which a process of invention was involved in its genesis and development.

Table 5 (see p. 230) compares by class the analytical invention ratings assigned by the readers to the initial and final writing samples. Once again, these ratings represent the three readers' collective estimates of the extent to which a process of invention contributed to the papers' development (1 = to no extent; 3 = to some extent; 5 = to a great extent). The assignment was the same for both samples: to write a composition on any subject in any form for an audience of one's peers. The final writing sample was taken at the end of several weeks' experimentation with heuristics, but the students were not specifically instructed to use invention strategies from the booklet in writing this paper. Many did, but some did not.

It is evident from the figures presented in the table that invention played a much greater part overall in the composing of the final writing sample than of the initial. While fewer than one-fifth of the earlier compositions (19.1 percent) received analytical ratings

Table 5

Distribution by Class of Analytical Invention Ratings
on Initial and Final Writing Samples

Class	N	Initial Sample					Final Sample				
		1	2	3	4	5	1	2	3	4	5
Basic	8	7	1	--	--	--	3	3	1	1	--
Standard	13	10	3	--	--	--	1	6	5	1	--
Advanced	21	8	5	6	2	--	3	7	4	4	3
Totals	42	25	9	6	2	--	7	16	10	6	3
Percentages		59.5	21.4	14.3	4.8	--	16.7	38.1	23.8	14.3	7.1
		80.9		19.1			54.8		45.2		

Analysis of Variance

Group	Group Means		Difference	df	F-statistic
	Initial	Final			
All Classes (n=42)	1.64	2.57	.93	1;82	16.93*
Basic/Standard (n=21)	1.19	2.29	1.10	1;40	25.69*
Advanced (n=21)	2.10	2.86	.76	1;40	4.33**

*Significant at the .001 level.

**Significant at the .05 level.

of 3 or above (indicating a moderate or greater role for invention), nearly half of the second set of papers (45.2 percent) were given the three highest rankings. Conversely, whereas almost three-fifths of the students (59.5 percent) made no apparent use of a process of invention (analytical score 1) on the initial writing sample, fewer than one-third as many (16.7 percent) were assigned to this category on the final composition. The mean analytical rating for the first group of papers was only 1.64; for the second it was 2.57. An analysis of variance calculation yields an F-statistic of 16.93, indicating that the difference between the two samples is significant at the .001 level of confidence ($df=1;82$). This result is not surprising, of course, since the students had studied and practiced the art of invention extensively just prior to the final writing sample. Still, it lends credence to my field observation that the participants became more deliberate in searching for ideas during the course of the investigation.

Of equal interest is the distribution of scores by class on the initial and final writing samples. Though the students at all three ability levels received a greater variety of invention ratings the second time, the change was especially evident in the basic- and standard-level groups, where the range of scores doubled (from two to four). The mean analytical rating for these two classes combined ($n=21$) changed from 1.19 on the earlier sample to 2.29 on the later, a difference significant at the .001 level of confidence ($df=1;40$, $F=25.69$). The advanced-level class's mean score also increased, but

not as dramatically--from 2.10 to 2.86. This change is significant at the .05 level ($df=1;40$, $F=4.33$). Taken together, these figures suggest that the instruction in rhetorical invention had a greater effect on the composing procedures of the weaker writers than on those of the more skilled participants. This finding supports a hypothesis offered by the teacher while the study was in progress.

Though the primary purpose of this inquiry is to examine the effects of heuristics instruction on ninth graders' composing processes, its impact on the effectiveness of their written products is an important related concern. To determine whether there existed in this study a relationship between the students' use of invention strategies and the overall quality of their writing, I divided the participants into two distinct groups: those who received low invention ratings on the final writing sample (analytical scores 1 and 2) and those who received moderate to high invention rankings (analytical scores 3, 4, and 5). A comparison of these groups is presented in Table 6 (see p. 233).

First, it is clear that these two groups of students were roughly equivalent at the start of the investigation. Their mean analytical invention ratings on the initial writing sample were virtually identical (1.61 and 1.68); both, on the average, used heuristics only minimally in composing the first paper. Their initial mean holistic quality scores were not quite as close (2.74 and 3.05), but an analysis of variance reveals that the difference was not significant ($df=1;40$, $F=1.29$). Both groups included students from all three

ability levels, and both, of course, were ultimately exposed to the same introduction to heuristics. "Controlled," in effect, for all other key variables, these groups may be meaningfully contrasted on the basis of their performance on the final writing sample.

As Table 6 indicates, the high invention-rating group (mean analytical score, 3.63) produced, on the average, substantially better final papers than the low invention-rating group (mean analytical score, 1.70). The two groups' mean holistic quality scores (3.58 and 2.78, respectively) differed by four-fifths of a point on a five-point

Table 6

Comparison of Mean Analytical and Holistic Scores of
Students Receiving Low (1, 2) vs. High (3, 4, 5)
Invention Ratings on the Final Writing Sample

Score Category	Group Means		Differ- ence	F-statistic (df=1;40)
	Low Invention Rating Group (n=23)	High Invention Rating Group (n=19)		
<u>Initial Sample</u>				
Analytical (Invention)	1.61	1.68	.07	.06(NS)
Holistic (Quality)	2.74	3.05	.31	1.29(NS)
<u>Final Sample</u>				
Analytical (Invention)	1.70	3.63	1.93	102.63*
Holistic (Quality)	2.78	3.58	.80	6.53**

*Significant at the .001 level.

**Significant at the .05 level.

scale. An analysis of variance shows that this difference is significant at the .05 level of confidence ($df=1;40$, $F=6.53$). This result, which is consistent with both the case-study findings and my own analysis of the participants' compositions, suggests that there was, in fact, a relationship between the students' use of heuristic procedures and the ultimate effectiveness of their writing. Those who engaged to at least some extent in a process of deliberate idea development composed final pieces of significantly higher overall quality than those who did not.

Thus a key finding of the independent evaluation is that instruction and practice in rhetorical invention is likely not only to effect important change in students' methods of writing, but also to bring about measurable improvement in the quality of their written products. The latter conclusion is similar to those reached by most previous investigations of instruction in heuristics--virtually all of which have been experimental in design (see Chapter II, pp. 39-45). This finding takes on even greater significance when viewed in the light of the evaluators' comments that some students failed to include the best material they had produced with invention strategies in their drafts. All three independent readers remarked that in several instances the initial heuristic exercise was more interesting than the eventual finished composition. These observations suggest a potential for improvements in the participants' written products beyond those reflected in the holistic quality scores reported above. However, such gains might reveal themselves slowly and intermittently, and

perhaps only after additional instruction on how to select and arrange raw ideas. Unfortunately, this investigation had neither the means nor the necessary length to explore these hypotheses adequately. An in-depth longitudinal study is needed to determine systematically the long-term effects of instruction in rhetorical invention.

Questionnaire responses

The ninth-grade participants' views of how learning heuristics affected their composing procedures were included in their responses to a number of items on the second open-ended questionnaire. Although these questions were not designed to be matched precisely with particular items on the first questionnaire, as a whole they do provide a useful basis for comparing students' ideas about the composing process before (see above, pp. 220-223) and after instruction in rhetorical invention.

Part I of the second questionnaire included two items on the nature of the writing process. The first of these questions (I,2) asked students what the process involved besides putting words on paper. Most of those responding (88.4 percent, n=43) mentioned "thinking" or "thought," and among these a majority (46.5 percent of the total) referred to a particular process of developing ideas. Some cited methods of generating material or entertaining alternative points of view; others stressed organizing or "putting it all together" in a form that readers could comprehend. Of the handful of students whose answers included no reference to thinking (11.6

percent), most said that writing involved "expressing feelings." A related item (I,3) asked the participants to list the main steps in their own writing processes. Only two (4.3 percent, n=46) failed to mention specific procedures or stages. Significantly, fully half of the rest (47.8 percent of the total) indicated that the use of invention strategies had become an important step--in some cases more than one step--in their respective composing methods. These results are not especially surprising, of course, given the students' extensive work with heuristics, but they do contrast sharply with those obtained on the first questionnaire. Clearly the prevalent view of the writing act had changed from one emphasizing reliance on inspiration to one stressing active meaning-making.

Parts II and III of the second questionnaire were devoted to various aspects of the participants' experiences in learning and applying invention strategies. Some items asked how the students had used heuristics--whether, for example, they had referred to the instructions in the booklet each time they had selected a strategy (III,1). Half indicated that they had used the handbook consistently, but the other half said they had not found it necessary to consult the instructions every time. Worthy of note is the fact that the first group had a majority of basic- and standard-level students, while the second was dominated by members of the advanced-level class. A similar pattern was evident in the responses to the question, "Did you attempt to use all of the strategies?" (III,2). Overall, two in five (41.3 percent) said they had tried all eight; the remainder (58.7

percent) acknowledged that they had attempted only some. Participants from the two lower-ability groups were split evenly, but only a third of the advanced-level students responded affirmatively to this question (although as a group they had, in fact, employed more of the techniques more often than the other classes). Even more skewed was the distribution of responses to an item inquiring if the students had ever changed or combined any of the strategies (III,3). Nearly half of the sample (47.8 percent) indicated that they had done one or the other, but this group was comprised mainly of advanced-level writers. Over three-fourths of the members of the top group cited examples of adjustments they had made to the heuristics, but fewer than one-fourth of other students did so. (In reality, the basic- and standard-level groups had done a good deal more modification than they reported. Their responses to this item undoubtedly reflect the extent of conscious tinkering with the strategies.) Taken together, these three items point to a basic distinction in the participants' uses of invention strategies. In general, the basic- and standard-level students seemed to be more reliant on the procedures and materials presented in class than the advanced-level students, who apparently felt much more confident of their abilities and could therefore afford to be more independent.

Another set of questions asked the participants to comment on their success in incorporating the use of invention strategies into their own composing processes. On these items the three classes did not disagree: a substantial majority of the students at each level

indicated that they had been at least partially successful. To the question, "How well were you able to produce and develop ideas with the aid of invention strategies?" (II,3) more than four-fifths (82.6 percent, n=46) made positive responses, many of them citing specific effects: "I was able to come up with more and better ideas," "my ideas flowed more," "[the strategies] got my mind working," and so forth. Some students noted that heuristics had helped them to produce or develop ideas--not both--but only a few of them (17.4 percent) claimed no success. The next item (II,4) asked, "How well were you able to select from these ideas and organize them into complete papers?" Two-thirds of those responding (66.7 percent, n=45) reported good results. Several noted that the invention strategies "really organized everything." However, the remaining one-third of the students gave mixed (20.0 percent) or wholly negative (13.3 percent) responses to this question, indicating that they had experienced difficulty converting raw ideas into finished products. As one student said, "It was hard to distinguish between the junk and the jewels." These results and this comment almost certainly account for my own and the independent readers' observations that some students failed to make use of their most promising material. Unaccustomed to choice and lacking effective criteria, they sometimes chose poorly.

The most interesting set of comments on the entire questionnaire was elicited by the item (II,5) which asked the participants when and for what purposes they had found using invention strategies most and least helpful. As diverse as the students themselves, the responses

to this item proved impossible to classify meaningfully. Noteworthy, though, was the degree to which students, even within the same class, contradicted each other. One person's best application for heuristics was likely to be someone else's worst use. As I have indicated throughout this report, the participants were individualistic in their approaches to learning and applying invention strategies. Nonetheless, there was widespread agreement among the students that heuristics had had an impact on their writing. When asked, "How has the use of invention strategies affected the way you write?" (II,6), more than three-fourths said that their work had improved. Most of these students (63.0 percent of the total, n=46) cited gains in specific areas such as clarity, organization, or depth; others (13.0 percent) noted overall improvement. The remaining participants in the sample (23.9 percent) could see no significant changes in their writing attributable to their work with invention strategies. Even so, very few of them ruled out the use of heuristics in the future (on item III,5). Only three of the forty-six students in the study (6.5 percent) said that they did not intend to make any further application of the discovery techniques they had learned. Four others (8.7 percent) were uncertain. However, a substantial majority of these ninth-grade writers (84.8 percent) indicated that they would continue to employ rhetorical invention strategies, for reasons ranging from ease of starting to the hope of receiving good grades. They apparently recognized what the independent evaluation of their writing samples (discussed above) later showed: that a writing process

which includes a significant role for invention is generally more effective than one that does not.

The Effects of Instruction in Rhetorical Invention
on Ninth Graders' Attitudes Toward Writing

The third major issue addressed by this inquiry is less tangible than the first two but by no means less important: Do ninth-grade students' attitudes toward writing change as they learn new heuristic strategies? The case studies provided a mixed response. The ten subjects' feelings about the act of composing did not change substantially during the course of the study: in general, they continued to place a high value on the creative and expressive potential of writing but to dislike the pressure and restrictiveness of school assignments. On the other hand, most of these students reported that engaging in a process of rhetorical invention gave them a feeling of increased control. They became more confident of their abilities to produce and develop ideas. And though they did not, on the whole, express more satisfaction with their written products at the end of the study, the basis on which they made judgments about their own work had changed from external feedback (chiefly grades) to self-analysis. A similar pattern of changes in attitudes is evident in the general results. The initial and final questionnaires each included several items pertaining to students' feelings about writing and about their respective abilities as writers. Supplemented by

relevant field observations, the participants' responses to these two sets of questions are summarized and briefly compared below.

Initial questionnaire responses

The first questionnaire was administered immediately following the completion of the initial writing sample, an assignment which had allowed the students a free choice of subject and form. Their comments about the assignment in class had made clear that such freedom was an unwonted pleasure; these reactions may well have been reflected in their responses to the first question, "Do you enjoy writing?" (I,1). More than a third of the participants in each class (43.5 percent overall, n=46) said they did like to write, generally for reasons resembling this basic-level student's: "I get to put my thoughts and feelings down on paper. I get a feeling of accomplishment." The remainder of the sample was evenly divided between those who said "sometimes" and those who said "no" (28.3 percent each). Explanations provided by members of the former group stressed the nature of the assigned writing task. For example: "I like to write about things I'm interested in but when it comes to other things I hate it." Students who said they did not enjoy writing gave a variety of reasons: "It's too time consuming," "[I have too many] mechanical problems," "I can't express all of my feelings in writing." Taken together, the participants' responses to this item reveal the same pattern of mixed feelings about writing as was evident in the case-study students' self-reports.

At the opposite end of the initial questionnaire was an item (II,7) which asked the participants to evaluate their own writing abilities. This query ("Are you a good writer?") was the last of a series inquiring about good writers' methods and skills. The students' responses were mixed, but on the whole more were positive than negative. Two-fifths of the sample (41.3 percent) replied "yes" or "I think so," while only one-fifth (19.6 percent) replied "no." The remainder (39.1 percent) gave equivocal answers such as "so-so" or "all right" or even "I'm not sure." Contrary to expectations, there was no correlation between students' views of themselves as writers and their respective ability groupings. Similar proportions of positive and negative responses were recorded in all three of the classes. Interesting also were the brief explanations included with most students' answers to this question. Though some mentioned particular skills or deficiencies and a few simply cited "gut" feelings about their work, a substantial majority (72.1 percent, n=43) based their self-assessments entirely on the judgments of others, especially teachers. This result, too, is consistent with the case-study data from the initial phase of the investigation.

One other item on the first questionnaire (I,6) was concerned with the participants' attitudes about writing. It asked the students if they were generally satisfied with their own written products. Most of the students in each class (67.4 percent overall, n=46) gave affirmative responses, and many explained that their feelings were based on the effort they put into their work. Among the remaining

participants approximately half (15.2 percent of the total) indicated some satisfaction with their writing, while the rest (17.4 percent) acknowledged little or none. However, on the whole it seems safe to conclude of the students in this study that, despite their mixed feelings about the act of composing and any doubts they may have had about their own writing abilities, like poet Marianne Moore they enjoyed having written.

Final questionnaire responses

Administered at the conclusion of the inquiry, just after completion of the final writing sample, the second questionnaire served in part as a follow-up survey of students' views about writing and in part as a vehicle for reflection and comment on the use of rhetorical invention strategies.

In general, the students' responses to the follow-up questions revealed no dramatic developments in their attitudes toward writing, though there were some important shifts in their views of themselves as writers. The first question (I,1) asked them to identify the feelings they associated with the act of composing. Like the first item on the initial questionnaire, this one elicited a mixed response. As before, wholly positive answers outnumbered wholly negative ones by a margin of more than three to two (37.8 percent and 22.2 percent, respectively; n=45), but--owing, perhaps, to the wording of this item on the second questionnaire--the greatest percentage of students (40.0 percent) indicated that writing activity gave rise to both positive

and negative emotions. Some students said that their feelings depended on the nature of the task, but others reported experiencing highs and lows in the course of nearly every writing project. Another key follow-up question (I,4) asked the students to evaluate their own writing abilities. As before, two in five (41.3 percent, n=46) assigned themselves ratings of "good" (or the like). On the other hand, just over one in ten (10.9 percent) rated their writing skills as unsatisfactory. The remainder, nearly half of the sample (47.8 percent), gave middling answers such as "average" or "fair." The ratio of positive to negative responses to this question was nearly double that recorded on a similar item on the initial questionnaire. Even more significant, though, was the change in the basis on which students judged their abilities as writers. Although a substantial majority of the group (72.1 percent) had previously reported relying entirely on the reactions of others, very few (10.9 percent) even mentioned such feedback in explaining their final self-evaluations. On the contrary, most of them cited particular strengths and/or weaknesses in their products or processes. This finding supports the observation made numerous times in the case-study chapters that the participants became more aware of their methods of composing and more independent in making self-judgments during the course of the investigation. To what extent this effect is directly attributable to their work with invention strategies is, of course, impossible to say.

Responses to two other self-judgment questions which appeared on the final questionnaire suggest that the students became more

confident of their abilities to produce and develop ideas for writing as a consequence of their participation in the study. When asked, "Are you usually able to come up with good ideas?" (I,5), more than five in six (84.8 percent) said "yes"; the remainder were divided between "sometimes" and "no" (8.7 percent and 6.5 percent, respectively). This result becomes meaningful when considered in light of the fact that a substantial majority of the group had indicated at the beginning of the inquiry that coming up with ideas had been the aspect of writing that they had found the most difficult (see p. 220). The other item, "Do you think that your writing improved last quarter [i.e., during the study]?" (I,6), also elicited an overwhelmingly affirmative response from the students (82.6 percent "yes"). Significantly, most of them (65.2 percent of the total) referred to the use of invention strategies and/or to gains in related skills when asked to identify the ways in which they felt that their writing had improved. For example: "Now it is much easier for me to find things to write about"; "I [am] able to get my ideas down in order and not jumbled"; "I think about things more before I write them and I'm learning to develop my ideas." These data are wholly consistent with the results of the case-study portion of the inquiry; thus it seems safe to conclude that the instruction in invention had a positive impact on the students' opinions of their own writing skills.

Perhaps the most important responses of all were those elicited by two items asking the participants to comment directly on their work with the various invention strategies. One question (II,1) asked

simply if they had enjoyed the experience; more than half (54.3 percent), including a majority of each of the three classes, said that they had, listing reasons such as those given above. A third of the group (30.4 percent) gave the strategies mixed reviews, most of them noting that some of the techniques were difficult and/or time consuming. Only a handful (15.2 percent) said flatly that they had not enjoyed using invention strategies, generally because they had not found them useful. The same small percentage of students responded negatively to an item concerning their results with heuristics (II,2), and a somewhat larger group of participants (21.7 percent) reported having had moderate success. But nearly two-thirds of the sample (63.0 percent) rated their overall results "good" or "very good." Apparently there were some students in the group who, although they had not enjoyed working with the strategies, had nonetheless recognized the techniques' utility.

The final item on the second questionnaire invited additional comment on the students' experiences of using rhetorical invention strategies. The response was overwhelmingly supportive (positive comments, 75.0 percent; negative comments, 7.1 percent; other comments, 17.9 percent; n=28). Indeed, the participants' parting reactions to writing with heuristics were summarized best by the advanced-level student who wrote these remarks: "I'm glad we did [invention strategies] because sometimes they really helped make writing easier and less complicated [and] helped me prepare better to write the final copy."

Variation Patterns in Ninth Graders' Uses
of Rhetorical Invention Strategies

The problem of differences is the focus of the fourth major question of this inquiry: Do ninth-grade students' uses of heuristics vary from individual to individual and from one writing situation to another? In one sense the answer to this question is obvious--in this investigation the use of rhetorical invention strategies varied considerably from student to student as well as from one writing assignment to the next. However, the water is murky beneath the surface. What factors determined these numerous differences in approach is by no means obvious; undoubtedly a myriad of influences were at work in each individual on every occasion for writing. Still, it is possible to distinguish the broad trends and to identify some probable causal relationships. Several such patterns of variation are suggested in the case-study findings presented in Chapter V (see especially pp. 189-197); others are alluded to above in previous sections of this chapter. The purpose of the discussion which follows is to draw these observations about the issue of differences together with additional evidence from the general results. The data presented below are limited in depth and generally informal in nature, but they proceed from a variety of sources: my own daily field notes, the final questionnaire, the oral remarks of the classroom teacher, and the written evaluations of the participants' folders prepared by the independent readers.

Differences among students

My analysis of the case-study subjects' employment of heuristics identified two types of differences among students: in the roles they assigned to invention strategies within their individual composing processes and in the types of invention strategies they preferred. One key distinction was that made between the participants who used heuristics in an exploratory fashion and those who employed them explicitly to create text; this difference was tentatively associated with gender. Two others were evidently linked to ability. The advanced-level writers proved more likely on the whole to restructure their composing procedures significantly to accommodate a process of rhetorical invention than the members of the lower-ability sections, who tended instead to make small modifications and additions to their accustomed writing methods. Then too, the advanced-level subjects as a group seemed to favor the verbally oriented strategies, while the other students clearly preferred those with a visual emphasis (though participants at all levels approved the freewriting technique). These case-study findings are generally supported by the data obtained from all forty-six students, but some aspects of the general results are inconclusive. The problem of differences among student writers is one which unquestionably needs further study.

The independent readers' informal analysis of selected participants' cumulative writing folders confirmed my identification of two basic tendencies in the use of heuristics: the exploratory, tentative, sometimes random approach and the explicit, systematic

generation of text. All three readers noted that some students used invention strategies primarily to experiment with ideas. These writers often tried a variety of approaches and abandoned a good deal of the material they produced. They frequently drew main ideas and some examples from partially completed discovery exercises but actually worked out the content and form of their papers as they wrote their rough drafts. Others relied on heuristic techniques to provide both a method of organization and all necessary details. These students typically sharpened and developed their ideas with the aid of invention strategies, then used the completed exercises as checklists from which they composed substantially complete working drafts.

Among the case-study participants girls made more use of the former (exploratory) approach, while boys seemed to lean toward the latter (explicit) method. These trends were only partially confirmed by the general results. The case-study finding received the most support in the advanced-level class, which included almost equal numbers of boys and girls: over three-fourths of the participants in this group appeared to fall into the gender-based pattern described above. Unfortunately, the standard- and basic-level classes were far too unbalanced in numbers of each sex to allow for any clear determination of trends (both groups included many more boys than girls). However, all three outside readers did note that the students in the lower-ability classes were generally more successful when they used invention strategies systematically than when they used them in a random or merely exploratory fashion. Ultimately, knowing which

writers are more likely to employ a particular method of working with heuristics may be less important than simply knowing that different (and equally bonafide) methods exist. Thus a student who finds one approach unproductive may still achieve positive results with another.

The extent to which students revised their composing processes as a result of instruction in rhetorical invention was linked to ability level in the case studies. Advanced-level writers undertook more significant changes in procedure than most of the subjects from the two lower groups, who typically added heuristics to their accustomed writing methods. On the surface the general results suggest the opposite conclusion--that the basic- and standard-level students experienced greater change. As noted in a previous section of this chapter (see pp. 225-228), the classroom teacher observed (and I agreed) that the most dramatic effects of instruction in heuristics occurred among lower-ability students, many of whom made immediate gains in efficiency and effectiveness from the use of invention strategies. On the other hand, some of the top-level writers resisted employing the techniques at first and were slow to adjust their composing methods to them. Then too, the analytical rating results (see Table 5, p. 230) indicate that the advanced-level class as a whole did not increase its planning and discovery activity over the course of the investigation as much as the basic- and standard-level group did. However, a closer examination of the manners in which the participants altered their respective composing procedures reveals that the data pertaining to all subjects is consistent with the

case-study findings. It is true that the use of invention strategies constituted a major shift in approach for the students at the lower ability levels, but these participants were generally quite conservative in incorporating this change into their established writing methods. Heuristics became the preliminary step in an otherwise relatively unchanged process. As explained above, the majority of these students settled quickly into a three-stage pattern for writing--invention exercises, rough draft, and final copy--and stayed with it throughout the investigation. Too, they relied primarily on the procedures and materials presented in class when employing heuristics (see pp. 236-237). The advanced-level students, though cautious at first, eventually engaged in a good deal of experimentation with the strategies, using more of them in more different ways than the other groups. For these, the more accomplished--and therefore more confident--writers in the sample, the heuristics presented in this study provided alternatives to methods with which they had already been successful--and to which they could always return. For the average and below-average writers, however, invention strategies appeared to fulfill a basic need, to supply a key element previously missing from the students' conceptions of the composing process. Both kinds of change seem indicative of growth.

The participants differed from each other most sharply in their preferences for particular invention strategies. The technique most favored by one set of students was apt to be found completely unsuitable by another. Though determined in large part by individual

taste, such differences were also associated with ability level in the case-study analysis. Basic- and standard-level writers generally preferred the visual strategies to the more complex verbal heuristics favored by many advanced-level students. The technique with the widest appeal was the freewriting method, which seemed to work well for participants of all abilities. These findings are partially sustained by the data obtained from all forty-six students in the sample. What proved to be the best indicator of their ultimate preferences was a group of items on the final questionnaire (III,2) which asked the participants to describe their results with each of the eight invention strategies in the booklet. Their responses were sorted into three categories: positive comments, negative comments, and others (mixed results or no opinion). Selected results from these items are reported by ability level in Table 7 (see p. 253).

Freewriting received an overwhelmingly positive response from the students in both ability groupings (basic/standard and advanced). This outcome, which was expected, confirms the case-study trend referred to above. The other results are less conclusive, but they also point in the direction of the case-study findings. For example, the visually oriented strategies (visualizing and diagramming) were endorsed by the lower-ability students by margins of better than two to one. Advanced-level writers like diagramming, too, but their responses to visualizing were almost evenly divided. The latter heuristic was clearly much less of a favorite within the top group than in the other two classes. Virtually opposite trends are evident

in the case of the verbally based strategies. Table 7 summarizes students' responses to the two which elicited the most clear-cut reactions: the changing perspectives and dramatizing techniques. (Since more than a third of the responses to each of the remaining three strategies were coded "other," I considered these items less useful for comparison.) As expected, a majority of the basic- and standard-level students who expressed an opinion about the verbal heuristics reported that their results had been negative overall. Advanced-level students' reactions were mixed. Participants stating a view of the comparatively complex changing perspectives strategy approved it by a five-to-two margin. On the other hand, contrary to

Table 7

Distribution by Ability Level of Students' Responses
to Selected Invention Strategies
(in Percentages)

Invention Strategy	Basic/Standard Group* (n=25)			Advanced Group (n=21)		
	Positive	Negative	Other	Positive	Negative	Other
Freewriting	72.0	28.0	--	81.0	19.0	--
Visualizing	60.0	28.0	12.0	42.9	38.1	19.0
Diagramming	64.0	28.0	8.0	76.2	--	23.8
Changing Perspectives	32.0	44.0	24.0	47.6	19.0	33.3
Dramatizing	28.0	44.0	28.0	28.6	38.1	33.3

*Results from the basic- and standard-level classes were combined to establish groups of comparable size.

expectations, the top writers did not on the whole react favorably to the dramatizing procedure (the only heuristic among the eight which received more negative than positive responses from students in all three classes). Taken together, the questionnaire data presented in Table 7 confirm the conclusions of the case-study analysis regarding students' preferences for particular types of invention strategies, at least insofar as the basic- and standard-level participants are concerned. (That these students were more comfortable working with visual heuristics is significant when considered in light of the fact that current/traditional writing instruction relies almost exclusively on verbal approaches.) Advanced-level writers proved less predictable, but where their opinions were different from the others' they leaned in a direction consistent with the case-study findings. Even so, it must be stressed that the trends discussed above are not rules. For every majority that reacted in a particular way to a certain invention strategy, there was a significant minority of students that responded in some other manner. The participants in this study were above all else individuals.

Differences among writing situations

While differences among individual students accounted for much of the variation in the ninth graders' uses of invention strategies, differences among distinct writing situations also played an important role. My analysis of the case-study data revealed that such factors as audience and mode of discourse influenced not only students'

choices of strategies, but also the manners in which they employed the techniques. Formal, academic essay assignments generally prompted more systematic uses of heuristics than loosely structured personal writing tasks. Results obtained from the entire sample, though limited to informal observations, strengthen and even extend these findings, as suggested in the brief presentation which follows.

Like most of their classmates who were case-study subjects, a majority of the participants in the general study seemed aware of the fundamental patterns of thinking underlying the strategies they selected for use. In many instances this awareness was reflected in their choices of heuristics. Some of the students apparently searched for techniques which seemed tailored to their assigned writing tasks. These writers might make use of tables, for example, when planning a classification essay, but they would turn to defining or making an analogy when developing ideas for a definition paper. In other cases the students' awareness of underlying thought structures was revealed in the ways they adapted the invention strategies. As the independent readers pointed out in their comments, some writers used certain techniques (or combinations) repeatedly but changed them to suit each assignment. Thus a tree diagram which was used as a cause-and-effect flow chart on one occasion might serve as the basis for a pro-and-con essay on another. However, there were some participants in the study whose selections of strategies could not be accounted for by either of the above methods. A few students seem to make choices at random, oblivious to the systems of thought the procedures implied. These

writers, according to my own observations and those of the teacher and the three outside readers, were generally unsuccessful in employing heuristics and could obviously have benefitted from additional guidance in matching assignments and techniques appropriately.

Examination of the general participants' writing folders supports yet another case-study conclusion: that factors within each rhetorical situation affected the manners in which students used invention strategies as well as their choices of heuristics. Once again, it is useful to contrast the structured essay assignments with the open-ended final writing sample. In general, the ninth-graders who took part in this study seemed to make more extensive application of discovery procedures when composing academic papers than when working on informal topics of their own choosing. They completed more heuristic exercises per piece when developing essays, and on the whole they produced far less "waste" on these occasions, perhaps because the boundaries of the task were predetermined. On the other hand, they employed fewer techniques, and in a much more exploratory fashion, on the last composition. That the students required less explicit assistance in producing ideas for the final paper is not surprising, of course; this assignment provided the opportunity for unfettered self-expression that many of these writers had said they craved.

The teacher of the three writing classes identified one other key influence on the ninth graders' uses of heuristics: time constraints. He noted that students who found themselves pressed were inclined to abbreviate their work with invention strategies (or to eliminate

planning activity altogether). A few took the opposite tack: they avoided writing a rough draft by proceeding directly from heuristic exercise to "finished" product. Neither of these shortcuts was particularly successful in the teacher's opinion. His observation underscores an important point. This study has shown that invention strategies can improve the efficiency and effectiveness of students' composing processes. It has shown that discovery techniques can be selected and adapted to suit individual needs and tastes and the dimensions of different rhetorical situations. However, heuristics are not magic charms that remove all the struggle from the act of composing. The student writer--encouraged and supported by teachers (and others)--must still devote adequate effort and time to all aspects of the process.

C H A P T E R VII

CONCLUSIONS

As indicated in the first chapter of this report, the present investigation grew out of two related developments in the literature concerning the teaching of written composition: (1) the gradual emergence over the past two decades of a process-based model of writing instruction to challenge the traditional product-centered paradigm and (2) the recent revival of interest in teaching invention, the rhetorical art of discovering what one has to say (cf. Young, 1978). Using a multifaceted research design and a trilevel system of data analysis, this study examined the effects of instruction in rhetorical invention on the composing processes of forty-six ninth graders. The inquiry was guided by four research questions: (1) Do ninth-grade students have invention strategies of their own, or do they depend on inspiration--and, when inspiration fails, on the suggestions of others--to generate ideas for writing (i.e., before instruction in heuristics)? (2) Does instruction in rhetorical invention affect the ways ninth-grade students compose? (3) Do ninth-grade students' attitudes toward writing change as they learn new heuristic strategies? (4) Do ninth-grade students' uses of heuristics vary from individual to individual and from one writing situation to another? A summary of the project's major findings and a discussion of their implications for further research and for teaching are presented below.

Findings

One of the principal aims of this study was to characterize the composing procedures of ninth graders, particularly in regard to their use of discovery techniques. Analysis of case-study data and general results revealed that the students in this inquiry did not, as a rule, make significant use of invention strategies or otherwise engage in deliberate searches for insights, approaches, or information prior to instruction in heuristics (though many of them knew at least one rudimentary heuristic device). Instead they depended on inspiration and suggestions from others as sources of ideas. In general, they found getting started the most difficult aspect of the writing act, especially in the case of school writing assignments, which were often attended by serious blocks. Their composing practices, which consisted chiefly of drafting and copying over in ink, reflected a tacit conception of writing as a one-dimensional process of transcribing fully formed thoughts onto paper. In short, the participants' composing procedures were limited; so, too, was their sense of control over their own writing.

This characterization of ninth-grade composing--a composite, of course--was assembled from data pertaining to students at all three ability levels represented in the study. But the inquiry also identified significant differences prior to training between average and below-average writers, on the one hand, and those with above-average skills, on the other. As a group the advanced-level

students in this study exhibited more exploring and planning behavior at the outset than members of the lower-ability classes. This finding complements the conclusions of previous researchers (Stallard, 1974; Pianko, 1979; Flower and Hayes, 1980, 1981) who found (respectively) that superior writers were more likely than others to engage in conceptualizing the subject, to reflect on emerging ideas and text, and to develop and continually revise a broad network of goals.

The primary goal of this inquiry was to describe the effects of instruction in invention on the composing of ninth graders. Unlike most previous investigators of classroom instruction in heuristics, who have focused on the (generally positive) impact of teaching invention on students' written products (see Chapter II, pp. 40-46), I have concerned myself primarily with changes in their writing processes. The case-study data and the general results showed clearly that many such changes took place among the forty-six ninth-grade participants in this research. Individuals' responses to heuristics were varied--no two employed the techniques in exactly the same way--but a number of general effects on the students' composing were apparent in their papers, behaviors, and self-reports. In the first place, they became more efficient and more effective in producing ideas. Many of them realized substantial improvements in fluency and thus found it easier to begin writing tasks. Most of them developed a greater capacity to examine a subject in depth and from different perspectives. These changes, which occurred among students of all abilities, were part of an overall broadening of the writing process

to include more deliberate searching and planning as well as more substantive reformulation. Composing became in both perception and practice a more self-conscious, self-directed meaning-making activity as a result of instruction in rhetorical invention strategies.

Though the central purpose of this investigation was to document change in the composing process, I also considered the effects of heuristics instruction on the ultimate product. Like several of the earlier studies referred to above, this inquiry demonstrated by means of a formal, independent evaluation that engaging in a process of invention produces better writing. On the other hand, informal sources of data brought forth a variety of evidence indicating that some students occasionally failed to make optimum use of the material they developed with heuristics. Unaccustomed to working from an abundance of ideas, these writers (most of whom were basic- and standard-level students) sometimes selected and organized poorly. This finding suggests that instruction in invention may create a potential for writing improvement beyond that immediately reflected in students' finished products.

Another important objective of this project was to examine the impact of teaching heuristics on ninth graders' attitudes toward writing. As a group the participants entered the study with mixed feelings about the act of composing. Students at all three ability levels said they valued the creative and expressive possibilities of language, but they complained that most school writing tasks were too limiting. These views were not modified by the instruction in

heuristics, though complicated formal academic assignments seemed to become less intimidating for many of the students. Somewhat more apparent were the effects of the work with discovery techniques on the participants' feelings about themselves as writers. Though their overall assessments of their own writing capabilities did not change significantly during the course of the investigation (which lasted, after all, only ten weeks), the basis on which they evaluated themselves changed entirely--from others' (especially teachers') opinions to analysis of their own strengths and weaknesses. Moreover, they seemed to become much more confident of their ability to produce and develop ideas. In general, the students attributed these gains in independence and skill to their learning and use of invention strategies, an experience most found enjoyable and worthwhile.

Finally, this study examined the problem of variation in ninth graders' uses of heuristics. My analysis focused on two basic types of variation: that which related to differences among students and that which related to differences among writing situations. In the former category one key distinction I found was between students who used invention strategies primarily in an exploratory manner and those who employed them explicitly to create text. This difference appeared to be associated with gender, but the connection could not be confirmed. Two other sets of differences among students were linked to ability level. One had to do with the extent to which writers modified their composing methods to accommodate a process of invention. For most of the basic- and standard-level students

heuristics supplied an important missing element and became the first step in an otherwise relatively unchanged procedure. Advanced-level students, more confident by virtue of their academic status (and thus more inclined to take reasonable risks), proved more willing, on the whole, to undertake radical process modifications, despite some initial resistance to the invention techniques. For these writers the strategies provided alternatives to methods with which they had already been successful. The other ability-related distinction concerned students' preferences for particular strategies. The basic- and standard-level groups clearly favored procedures with a visual emphasis. Advanced-level students were less predictable but seemed more likely overall to prefer techniques with a verbal orientation. Students at all levels approved of the freewriting method.

Differences among distinct writing situations also played a role in the participants' uses of heuristics--in their choices of strategies and in the ways they employed them. For the most part, the students appeared to select (or adapt) the strategies according to the thought-process requirements of the task. Then too, mode of discourse and audience affected the manners in which writers used the techniques. Formal, teacher-directed essay assignments generally prompted more extensive and more explicit use of heuristics than informal, personal, peer-centered tasks. Another key factor was time constraints. On the whole, the participants' work with the strategies seemed to be much more thorough and productive when they were not pressed for time.

In short, the present investigation has shown that instruction in rhetorical invention which provides alternatives, allows for differences, and encourages practical application can be of substantial benefit to ninth-grade writers.

Implications for Research

Like most other aspects of the teaching of writing, the teaching of rhetorical invention is far from becoming a closed subject. The present study, one of the few which have examined the effects of instruction in heuristics, is unusual in that its focus is on the composing process rather than on the composed product. Other inquiries of similar purpose are needed both to test its conclusions and to overcome its limitations, particularly those related to its setting and selection of participants. Practical considerations dictated that this project be restricted to a single grade in a single school during a single term. Much could be gained by extending it in any of three directions. First of all, expanding the research to include other grades, especially at the elementary level, where the use of invention strategies has not been investigated, might reveal distinct stages or patterns of development in students' abilities to create written texts. Such insights would help teachers and curriculum planners to decide when and how and for what purposes heuristic procedures should be introduced. Secondly, broadening the research to include other schools--in different parts of the country

and the world; in a variety of urban, suburban, and rural areas--would add an important cross-cultural perspective. It would be useful to know, for example, if the leading theories of invention are compatible with the distinctive rhetorical patterns of Black English (see Linn, 1975; Smitherman, 1977). Finally, lengthening the period of investigation to include several years' examination of a specific group of students might yield invaluable developmental data. Longitudinal case studies, in particular, would provide worthwhile opportunities to monitor the progress of individual writers and to assess the long-term effects of instruction in invention.

The results of the present investigation indicate a number of specific areas which might be explored in more depth in future studies. For instance, we need to find out even more about young writers' tacit heuristic strategies (cf. Stratman, 1980). Most of the ninth-grade participants in this inquiry could describe at least one personal discovery device, even though they depended primarily on inspiration. A more comprehensive examination of students' independent composing procedures--particularly those associated with nonacademic writing--might turn up other latent, inchoate strategies. If it did, would these techniques resemble those presented by the leading invention theorists? Would bringing them out in and of itself improve students' production of ideas? Would their composing procedures become more efficient? More effective? More flexible?

Another potentially interesting problem would be to develop and evaluate alternate methods of teaching invention. In this study

students were shown eight heuristics at once and then asked to apply them (with help) to a series of conventional essay assignments as part of a required semester of composition. What would happen if the same invention strategies (or others) were presented, say, two at a time or in a different sort of course (one which provided unlimited choices of audience, purpose, and mode, for example)? Along with heuristics for revising and polishing? With more or less structure provided by the teacher? With the addition of organized peer-group response? Which approaches would be most effective? For whom?

The question of individual differences needs a great deal more study. Variations in students' responses to heuristics were noted and tentatively classified in this inquiry, primarily on the basis of instructional grouping. An analysis based on more sophisticated psychological categories would be useful. For example, could students' approaches to invention or their preferences for particular invention strategies be related to quantitative measures of intelligence or creativity? To qualitative indicators of mental development or cognitive style? Similarly, the connections between students' methods and the specific dimensions of writing situations need much closer scrutiny. Which of the myriad elements of a rhetorical problem is most influential? Audience? Purpose? Mode of discourse? Or is it the writer's attitude toward the task? Are heuristics more helpful in some situations than in others? Which ones? Why? All of these questions have important implications for the teaching of writing in general and invention in particular. A

great deal of work still remains to be done.

Among the most important contributions of this study is its multifaceted research design. Its results showed that data-collection techniques drawn from ethnographic research, traditional classroom investigations, and recent writing-process studies could be integrated to provide an in-depth examination of students composing in an actual classroom context. Involving the cooperating teacher as a research-team member proved valuable in implementing the project design; he offered not only broad teaching experience and specific knowledge of the students involved in the study, but also innumerable practical suggestions. Future investigations of writing instruction might build on the model employed in this inquiry, refining its procedures and instruments and incorporating a more extensive examination of the wider context of students' composing--the home, the community, the circle of friends. Another key feature of the present study was its "pyramid" system of data analysis, which included detailed individual profiles, comparative case studies, and general results. This plan provided both depth and breadth and allowed for the complementary use of informal and more systematic techniques of data classification. Again, the particular methods used here--the mode of analysis derived for the case studies and the coding procedures developed for the general results--undoubtedly need a good deal of fine-tuning, but the overall approach to data evaluation employed in the present investigation may serve as a useful point of reference for the designers of future research projects.

Implications for Teaching

In a recent report on the status of writing and writing instruction in the American high school, Arthur N. Applebee (1981) paints a gloomy picture. He shows that, despite the enormous amount of attention which the teaching of composition has received in the professional literature over the past two decades, a narrow and limiting product-based paradigm remains the norm in most secondary classrooms across the curriculum. He found in his study that the typical assigned writing task was a mechanical "fill-in-the-blank" or "short answer" activity, and "even in those contexts where students were being asked to write at some length, the writing was often used merely as a vehicle to test knowledge of specific content, with the teacher functioning primarily in the role of examiner" (p. 101). In addition, he learned that instructional practices generally made no provision for a process of writing. Prewriting time averaged only three minutes and rarely included class discussion or the gathering and sorting of ideas. Writing time, too, was severely constrained, and students were normally asked to write only one draft. Major revision of content was unusual, priority being given instead to mechanical accuracy, neatness, and organization. However, though the editing stage was stressed most, it did not ordinarily serve its natural purpose of polishing work to be shared with others.

Applebee offers three recommendations for improving the present state of secondary school writing instruction: (1) to incorporate into

the various content areas (including English) "more situations in which writing can serve as a tool for learning rather than as a means to display acquired knowledge" (p. 101); (2) "to bring recent work on the nature of the composing process to the attention of a broader spectrum of teachers to provide them with a framework for analyzing the contexts within which they ask their students to write" and, at the same time, "to test hypotheses about the ways specific instructional techniques will interact with the various stages of the writing process" (p. 103); and (3) to create "contexts in which writing serves . . . natural purposes," especially the need to derive and articulate personal solutions to genuine problems (p. 105). These suggestions coincide with the views and conclusions of numerous composing-process researchers and theorists, and they would undoubtedly be supported by the forty-six participants in this study as well.

The results of the present investigation suggest that the teaching of rhetorical invention strategies might be an important, if partial, solution to the problems inherent in current writing practices in all curricular areas. Heuristics instruction responds in some measure to each of the needs identified by Applebee. Discovery procedures involve by design the employment of writing "as a tool for learning." Too, they facilitate problem solving by illuminating the various aspects of a question and by providing a basis for evaluating alternative answers. Above all, the use of invention strategies promotes the development of the composing-process features most

frequently neglected by traditional school instruction: generation and reformulation of ideas. A great many teachers of writing (most of them at the college level) have already recognized the potential benefits of heuristics, as the recent spate of conference papers and journal articles on approaches to teaching invention will attest. Indeed, there have even been serious efforts to program computers to prompt students' use of discovery techniques (see Burns, 1979, 1980; Wresch, 1982; Rodrigues and Rodrigues, 1984). The growth of interest in rhetorical invention is certainly an encouraging educational development, but will it be more than a passing fad? What steps can be taken to insure that the most promising work on heuristics will have a lasting, positive impact on secondary writing instruction?

In the first place, the use of invention strategies must be considered by teachers and students--and must be in fact--an integral part of the composing process, not an end in itself. Heuristic procedures which are treated primarily as classroom exercises may seem to work well for students for a time, but in the end they will be regarded as useless gimmicks and will go the way of some of the misapplications of Frank O'Hare's promising research on sentence combining (1973). Heuristics instruction should focus on students' applying simple invention strategies to actual writing problems, including at least some of their own devising. The present investigation has shown that such use of heuristic techniques can increase students' awareness of their own composing procedures and bring about major improvements in their production of ideas. At the

same time, this study has shown that young writers who are unaccustomed to working from an abundance of ideas may require the teacher's--or peers'--assistance in selecting and arranging material produced with heuristics. Given such guidance and continual practice, students who learn how to use invention strategies should experience an overall strengthening of their composing processes and ultimately realize significant gains in independence and confidence as well.

The other important consideration in the teaching of invention must be to provide flexibility. Instruction which limits student writers to a single heuristic approach (or even to one at a time) may seem more efficient from the standpoint of classroom presentation, but it is unlikely to be as effective in the long run as teaching which allows for alternative approaches. Indeed, the teacher's most important role may be to encourage experimentation with alternative methods of employing invention strategies. As the results of the present investigation have shown, heuristic techniques may be used successfully in an exploratory or an explicit manner, individually or in sequence or combination, and at various stages of the idea-development process. Furthermore, different approaches and strategies may work better on different occasions for writing. Thus teachers of writing need not and ultimately cannot select the "best" methods for their students. On the contrary, a basic goal of heuristics instruction should be to enable student writers to make appropriate choices for themselves and eventually to develop their own invention strategies.

One final note: in an essay entitled "Development in Writing," Carl Bereiter (1980) postulates five distinct (but not necessarily sequential) stages of writing development. The first is the process-oriented "associative" stage, at which ideas are recorded in order of occurrence and the writing is unadapted for readers. At the second, or "performative," level the focus is the product and the main concern rules; most schooling, Bereiter argues, is concentrated here. The third is the reader-centered "communicative" stage, while the fourth, the "unified," focuses again on the product with the self as reader. The last, like the first, is concerned with process, but writing is not random production of ideas at the fifth, or "epistemic," stage; at this level the process is a search for knowledge. Bereiter's theory offers a good illustration of the value of teaching rhetorical invention. As we have seen in this investigation, instruction in heuristics which "prod the Muse" has the potential of facilitating students' development toward epistemic, and not merely performative, uses of writing. This reason alone is sufficient to justify a prominent place for invention strategies in both composition and content-area courses.

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A P P E N D I X E S

APPENDIX A

INVENTION STRATEGIES BOOKLET

The twenty-page booklet reprinted below was the primary vehicle for teaching invention strategies to the three ninth-grade classes which participated in the study. During the initial phase of instruction, the booklet was used as the students' text. The teacher spent approximately two class periods introducing each of the strategies--explaining its purpose, demonstrating its use, and providing an opportunity for students to practice it. During the second phase of instruction, the booklet became an "heuristics handbook." Students were urged to refer to it whenever they needed a strategy for getting started (or getting restarted) on a writing task. They were also encouraged to keep track of their use of the various invention strategies on the chart on the booklet's last page (p. 302).

Chief among my goals in preparing the booklet were brevity and simplicity. To facilitate learning and later reference, I limited explanations of the eight invention strategies to two pages each--to a brief overview of the concept involved and a simple description of the heuristic procedure. Another of my aims was to provide maximum flexibility to both teacher and students. Because the heuristics were presented briefly, the teacher could develop his own introductions and illustrations. And because the strategies were presented simply, the students were free to adapt and combine them to suit their own interests and needs.

GETTING STARTED:
A HANDBOOK OF INVENTION STRATEGIES FOR STUDENT WRITERS

by

Bruce M. Penniman

1982

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Introduction

Many students say that their biggest problem in writing is getting started. Confronting the blank page is their greatest challenge, being unable to fill it their greatest fear. Students aren't the only ones who find it difficult to come up with ideas for writing. All writers--even professionals--sometimes have trouble thinking of what to say. The difference between a beginning writer and one who is more experienced is in how each handles the problem. A novice may simply give up in frustration or sit around waiting for a flash of inspiration (which may never come). A pro, on the other hand, will develop ideas with the help of invention strategies.

Invention strategies are procedures writers use to find out what they have to say on a subject. A common example is the set of "Wh" questions (Who? What? Where? When? Why?) a reporter uses to discover the important facts about a news event. Some methods are formal and systematic; others are informal and open-ended. All offer useful ways to get started on a piece of writing. They can also be helpful later on in the process--when ideas are needed for getting restarted.

The eight simple strategies included in this booklet represent a wide range of invention techniques. Try them all--see which ones work best for you. You may prefer a different method for each new writing task. You may find that sometimes you need more than one. You may decide to alter the strategies or even devise your own. What matters is that you'll be learning new ways to develop your own ideas.

1. "How Do I Know What I Think Until I See What I Say?"

This may seem like a strange question, but when E. M. Forster, a twentieth-century novelist, posed it, he was expressing an idea common among professional writers--that they often sit down to write not knowing what they mean to say. They discover new points of view, new ideas, and even new subjects as they write.

If this doesn't happen to you, it may be because you won't let it happen. You're probably so quick to criticize everything you produce on paper that your mind never gets moving. You may even censor your ideas before you get them on paper. You edit your writing too soon.

Freewriting is an exercise designed to loosen up your writing process. When you write freely, you banish the editor who sits in your head and just write--whatever comes to mind, without concern for whether it's good or bad, or even if it means anything. Freewriting is brainstorming on paper. The whole idea is to write without judging or censoring anything that appears. These are the rules:

- (1) Start writing and keep writing--for at least ten minutes, longer if possible.
- (2) Write anything that comes to mind--don't worry if it makes sense. Hold nothing back.
- (3) If you run out of things to say, don't stop! Repeat the last word or write nonsense--just keep going until the flow starts again.
- (4) Don't worry about spelling or punctuation or even complete sentences. Keep moving.
- (5) Above all, let yourself go. Don't be afraid of losing control. No one is going to evaluate this writing.

But, you say, doesn't freewriting produce a lot of garbage? Yes, it does. Most of what you write during a freewriting exercise will probably end up in the wastebasket. But mixed in with the junk will be some real treasure--ideas, insights, and expressions you didn't know you were capable of. You can keep these discoveries to develop into polished pieces of writing. Freewriting doesn't do away with planning and editing--it just postpones them until you have something to work with.

Freewriting serves many purposes. When you have no idea what to write about, you can use freewriting to come up with a topic. When you have a topic but don't know where to begin, you can use it to discover what you have to say. And when you get stuck in the middle of writing something, freewriting can get your ideas flowing again. You need not sit helplessly staring at your paper.

Try this simple freewriting sequence:

- (1) Do a ten-minute freewriting exercise. If you have an idea to start with, use it. If not, start anywhere.
- (2) Take a short break. Get up and stretch. Shake the stiffness out of your arm.
- (3) Now look over what you have written. When you find a good line or a striking insight, underline it.
- (4) Try to sum up in one sentence the idea that is emerging from your writing. This need not be what you have written the most about. It will probably be quite different from the topic you started with. Write down this key idea at the top of a clean sheet of paper.
- (5) Starting with this idea as a focus, repeat the process: freewrite, review, sum up. The more you do this, the clearer your subject will become. But remember--in order for freewriting to work, you have to believe!

2. "Just Thinking"

You've probably heard or been part of an exchange like this:

A: (to B, who is staring into space) Hello?
Are you there? What on earth are you doing?

B: (coming out of it) Huh? Who, me? Oh,
nothing. I was just thinking. . . .

"Just thinking"--what a strange expression! "Just" implies that thinking is an unimportant pastime, merely another way of wasting valuable time. Nothing could be further from the truth, of course. Thinking is the most important activity we human beings engage in. It's what makes us human, after all. Most of us could stand to spend a good deal more time thinking.

Sometimes "just thinking" is the best way to develop your ideas for writing. Your mind may be such a jumble of facts and feelings and partial insights that you simply can't write. When this happens you may need to stop trying to compose words on paper and compose yourself instead (note that "compose" means both "to create" and "to calm"). But you have to do more than stare at the paper or off into space. To make any progress you must concentrate.

Visualizing your subject is one way of thinking productively. Sometimes you can see things more clearly in your mind's eye than you can in the outside world. You can also change things around at will. You've probably used this method to prepare for an important conversation or to rearrange one that you wish had gone better. You can use the same technique to prepare or rearrange ideas for writing.

There is no best approach for contemplating a subject--whatever method suits you is best. The procedures given below are a process you can start with--a roadmap to get you from chaos to order, or from confusion to resolve. They are similar to some of those followed by people who practice meditation. Here are the five basic steps:

- (1) Solitude and Silence. Get rid of all distractions. Find a place you can be by yourself--in your room, in the back yard, in the woods--any quiet place where you can be comfortable.
- (2) Relaxation. Shake all the tension out of your body. Let your arms and legs go limp. Close your eyes. Breathe slowly and deeply. But don't fall asleep!
- (3) Visualization. Begin contemplation of your subject by evoking an image of it in your mind. Create a complete dramatic situation with characters, setting, and plot. Then watch the mental movie that develops. Pay close attention to the details.
- (4) Formulation of Questions and Possible Answers. To get at the significance of the scene you have visualized, ask yourself questions about what it means--especially as it relates to you personally. Develop as many answers as you can, and see how well they fit in with the "facts" you have imagined.
- (5) Resolution. The final step is to make a decision: an interpretation of the situation you have been contemplating, a conclusion about its significance or meaning. Don't end your "meditation" until you have taken this important step.

When you have finished, you should be ready to write. Don't put it off. Describe everything you've seen and felt and resolved immediately--before you lose it. Try to capture in words the scene you've visualized. Write down the questions you've asked and the answers you've come up with. Don't fuss about mechanics (there'll be time for that later); just record in detail the important ideas.

3. "All the World's a Stage"

So begins a famous speech from Shakespeare's As You Like It. The thought it expresses is a familiar one: that each of us is an actor with a role (or several roles) to play in the drama of life. This idea suggests an approach to writing. To create an effective play, a dramatist has to consider a number of essential factors: action, agent, scene, means, attitude, and motive (see chart at right). A play lacking any of these elements would be incomplete. Shouldn't writing about the "human drama" include them all as well? In fact, news reporters do use these items to "dramatize" their stories.

Dramatizing is a method you can use to make a subject vivid, first to yourself and then to your reader. It's a simple but reliable procedure for producing an abundance of important information. It's a good way to get started on a writing assignment about a literary work or an historical event or a lab experiment or just about anything else. The technique is also a useful way to come up with new ideas if you get stuck in the middle of a draft or to check for completeness a draft you've already written.

The first step is to think of your subject as an event. Write it down in one simple sentence at the top of a blank piece of paper. For example: "President Lincoln was assassinated by John Wilkes Booth." Then ask yourself all of the questions in the chart on the next page and write down the answers--first in the form of notes, then, if possible, in complete sentences and paragraphs.

ACTION: <u>What</u> was done?	MEANS: <u>How</u> was it done? (physically)
AGENT: <u>Who</u> did it?	ATTITUDE: <u>How</u> was it done? (emotionally)
SCENE: <u>When</u> & <u>where</u> was it done?	MOTIVE: <u>Why</u> was it done?

The questions in the left-hand column can be answered by direct (or mental) observation; the ones on the right require interpretation. Each of the six will bring an immediate response (or send you looking for information you don't have). But don't be satisfied with a simple answer--keep pushing each question until you determine the full significance of that element of the story. Also make note of how the various elements are related to each other. For instance, the scene of Lincoln's assassination--Ford's Theater, 1865--may seem unimportant until you consider that Washington was then in the middle of slave territory and that the nation's bitter Civil War was just coming to a close. These facts do more than add details. They also provide important clues about Booth's means, attitude, and motive.

Use this device to "dramatize" the events you write about--you'll be surprised how much you have to say about them.

4. "To Look at It Another Way"

When the Apollo astronauts first landed on the moon, they sent back television pictures of the earth, which looked like a tiny blue egg from there. Some people say that the movement to "save the earth" began with those pictures, because for the first time we were able to look at it another way--from the point of view of outer space--and see how small and fragile it really is.

A good way to learn about any subject is to look at it another way--and another and another and another. The solution to a difficult problem may become easy when you see it from a different point of view. Conversely, a new point of view may show that a problem is more complex than you thought.

The process of switching from one point of view to another is called changing perspectives, and it can be a powerful method of producing ideas for writing. The chart on the next page offers an approach. Its columns represent three contexts in which you can see a subject: (1) by itself, in contrast to similar things, (2) as a system made up of many parts, and (3) as a part of a larger system. Its rows represent two time perspectives. From the "static" point of view you see the subject at a fixed point in time. From the "process" point of view you see how it changes. The chart provides six perspectives in total, and a number of sample probing questions is listed under each one. Running a subject through all six blocks will generate a good deal of information; it will also reveal to you what you don't know.

	The Unit in Contrast	The Unit as a System	The Unit in a System
S T	View the unit as a unit separate from other things. -----	View the unit as a system made up of component parts. -----	View the unit as a component part of a larger system. -----
A T	What are the unit's characteristics?	What are the unit's principal parts?	What are the other parts in the system?
I C	How does the unit differ from similar separate things?	How are the parts arranged in relation to each other?	How does the unit function in relation to the other parts?
P R	View the unit as a changing process, object, or event. -----	View the unit as a system of changing component parts. -----	View the unit as a changing part of a changing system. -----
O C	How was the unit as a whole created?	How were the parts of the unit formed?	How was the larger system created?
E S	How is it changing at the present time?	How is each one of them changing now?	How is the system currently changing?
S S	What will happen to it in the future?	What will happen to each in the future?	What will happen to it in the future?
	What are the main features of the changing unit?	What does a change in a single part do to the entire unit?	What does a change in the unit do to the larger system?
	How does its method of change differ from similar units'?	How does a change in the entire unit affect each part?	How does a change in the larger system affect the unit?

This chart may seem hopelessly complex at first. But keep in mind that you need not answer all of the sample questions. Changing perspectives is what's important--it's a sure way to create new ideas.

5. "What's in a Name?"

The answer to this question, which Juliet asks in her famous balcony scene, seems simple enough: nothing. As Juliet goes on to say, ". . . a rose by any other name would smell as sweet." She's right, of course--the relationship between a word and its meaning is essentially arbitrary. On the other hand, we attach a great deal of significance to names. The fact that Romeo happens to be a Montague (and therefore Juliet's "enemy") makes all the difference in Romeo and Juliet. Shakespeare's tragedy contains an important truth: our attitudes about people, events, and ideas are determined largely by what they are called. We react to the label, not the thing itself.

What's in a name, then? Plenty. If you dig deeply enough, you'll find that most complex problems have at bottom fundamental disagreements about words--sometimes common ones we use all the time. Consider a few examples. What's the difference between a "patriot" and a "terrorist"? What does it mean to be "mature" or "beautiful" or "smart"? What makes a book or a movie "obscene"? There are probably as many answers to these questions as there are people.

One of the best ways of exploring issues in writing is by defining their key terms. Definition is often the key that unlocks a perplexing problem. "But what about the dictionary?" you may ask. "Doesn't it have definitions for every word in the language already?" Yes and no. The dictionary gives a generally accepted meaning but not the specific sense of a word that an individual has.

To get the full sense of a term, you have to explore it in depth. Besides giving the basic dictionary meaning, you need to explain the feelings you associate with the word and to list appropriate examples. In other words, you have to write an extended definition.

Extended definitions follow many different patterns. Three of the most common are given below. There's no way of knowing ahead of time which one will yield the most useful insights, so it's a good idea to try all three when you're working on a word. Use this order:

- (1) Classification. To classify something is to put it into a category. For example: "Measles is a disease." Not all words have such obvious categories, but you can usually find suitable ones if you try. Classification also involves giving details which show how the term you're defining differs from others in the category. In the case of measles, you would explain its symptoms, its effects, its prevention and cure, and so on.
- (2) Measurement. When a general term needs a precise meaning, a process of measurement may serve as a definition. For instance, economists say that we are in a recession "when the leading economic indicators decline for two or more consecutive quarters." Doctors define death as "absence of brain activity." Statements beginning "Happiness is . . ." are also examples of this kind of definition because they "measure" happiness.
- (3) Comparison. Sometimes the best way to grasp a new concept is to compare it with something more familiar: "A euphonium is similar to a tuba but has a higher range and mellow tone." Another example: "A shelty is a small sheepdog that looks like a collie." The main advantage to this kind of definition is that it enables you to draw on ideas and knowledge you already have.

Careful defining will always produce a number of useful ideas. Sometimes an extended definition can be the basis of a whole essay. So when you face a difficult writing problem, look for key words that need to be defined. Solutions often lie in exploring these terms.

6. "Beyond Compare"

One of the most interesting aspects of human language is that we often express ourselves metaphorically; that is, we speak of one thing in terms of another. You probably think of metaphors as elaborate literary comparisons like the ones in the famous passage which begins Alfred Noyes' poem "The Highwayman":

The wind was a torrent of darkness among the gusty trees,
The moon was a ghostly galleon tossed upon cloudy seas,
The road was a ribbon of moonlight over the purple moor,
And the highwayman came riding--
Riding--riding--
The highwayman came riding, up to the old inn-door.*

But metaphors can be very simple--our everyday speech is loaded with them. For instance: "I was completely mixed up by that problem. My answer was only a shot in the dark." We realize, of course, that the speaker in this example didn't really become scrambled by the problem or attempt to solve it with a gun. We understand that in this context "mixed up" means "confused" and "a shot in the dark" means "a guess."

Some metaphors have been used so much that they no longer have any meaning--they're "dead as a doornail." Sportscasters are notorious for using these tired expressions, which are called cliches. These metaphors don't work well because they have long since ceased to be striking. Fresh, original metaphors, on the other hand, have an impact on us. Not only do they spice up the language, they also create images which help us to see the subject in a different way.

*In Max T. Hohn, ed., Stories in Verse (New York: Odyssey, 1961).

The ability to think metaphorically seems to be natural in human beings. You can capitalize on this gift to develop ideas for writing. A good way to understand or explain a difficult subject is to compare it to something quite different with which it has a few points in common. To be effective, though, a metaphor must go beyond simply comparing--it must highlight the subject's essential features.

The process of creating this kind of vivid metaphor is called making an analogy. Successful analogies don't just happen--they have to be carefully developed. Here's an easy but effective method:

- (1) First, simply record your "gut reaction" to the subject. For "studying" you might say, "Studying is boring."
- (2) Next, think of other things (the more concrete the better) that give you the same feeling. For "boring" you might come up with "taking care of your kid sister" or, as one student suggested, "watching golf on TV."
- (3) Finally, choose the example from step 2 which best fits your subject and set up a chart comparing the two. Try to make several specific connections. For instance:

<u>Watching Golf on TV</u>	<u>Studying</u>
(a) not much action	(a) hours of sitting
(b) camera shots of air	(b) mind going blank
(c) quiet spectators	(c) can't have distractions
(d) tense atmosphere	(d) worrying about tests

Having developed your analogy in this way, you can then use it to develop your paper. Sometimes an analogy will serve as a good starting point; often it can be the basis of an entire essay. Try making up some analogies of your own. Don't be afraid to use your imagination--the wildest metaphors are frequently the best!

7. "On the Other Hand"

Tevye, the colorful, opinionated father in the Broadway musical Fiddler on the Roof, has five daughters, three of whom marry during the course of the play. In each case he is faced with a tough decision--to accept a son-in-law he doesn't approve of or to break his daughter's heart. He weighs the issues in monologues like this:

He's beginning to talk like a man. On the other hand, what kind of match would that be, with a poor tailor? On the other hand, he's an honest, hard worker. On the other hand, he has absolutely nothing. On the other hand, things could never get worse for him, they could only get better.*

Eventually Tevye makes up his mind.

Tevye's back-and-forth decision-making strategy is similar to a well-established method of testing ideas called creating a dialectic. In a dialectic the opposing sides of an issue are explored fully in order to develop a better understanding of the problem and, if possible, to reach a resolution. The process begins with the statement of a thesis--an opinion, belief, or value that can be defended with arguments. After these arguments are given, the antithesis, the opposite point of view, is stated and defended. The final step is synthesis, the formulation of a new position which draws on the strongest points of the thesis and antithesis. You can use the dialectical method to generate new ideas for writing. It's a good way to test your personal views and to develop solutions to problems.

*(New York: Pocket Books, 1966), p. 73. Copyright (c) 1964 by Joseph Stein. Used by permission only--All rights reserved.

There are lots of ways to create a dialectic. Any one of the following three should provide a good start in exploring a question:

- (1) Write out a case for one side of the issue. Muster all the support you can find. Then try taking the opposite view. Finally try to find a middle ground between them.
- (2) Develop a dialogue between two people who disagree with each other. They might have a friendly discussion of their differences, or they might get into an argument.
- (3) Set up a dialectic diagram like the one below:

THESIS:	ANTITHESIS:
Supporting arguments: 1. 2. 3.	Supporting arguments: 1. 2. 3.
SYNTHESIS:	

Whatever technique you use to create a dialectic, you should make an effort to examine the assumptions (that is, the unstated beliefs) behind both sides of the issue (try this with Tevye's speech). Using the dialectical method will not always result in a synthesis of ideas, but it should, at least, force you to examine why you hold certain beliefs. It will also enable you to consider alternative positions. It will certainly give you more to say about your personal views.

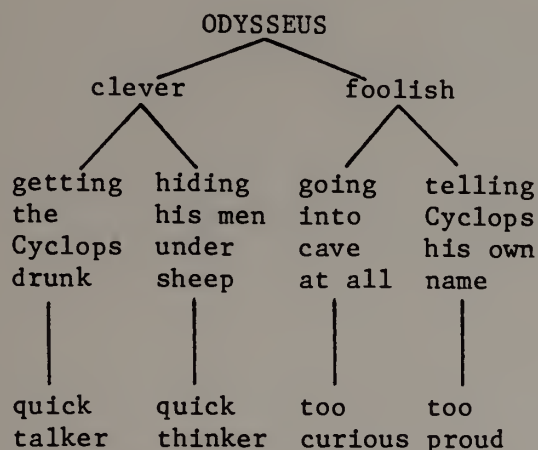
8. "Do You Get the Picture?"

The real meaning of this familiar question is, of course, "Do you understand?" Like many other common phrases in the language, it makes a connection between thinking and seeing (for example, "taking a point of view," "shedding light on a subject," and even "seeing" itself, as in "Oh, I see!"). These expressions highlight an important truth about the human mind--that much of our thinking is done visually. If you look back through the invention strategies in this booklet, you'll find that most of them are really ways of "looking" at a subject.

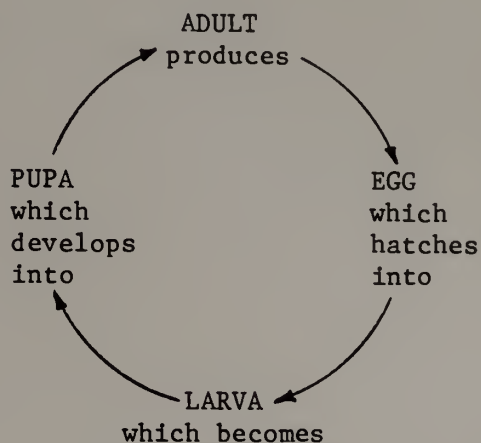
One advantage of thinking in pictures (as opposed to thinking in words) is that you can envision a whole idea at once. Words have to follow one after the other, but all elements of a picture are present at the same time. That's why we say that "one picture's worth a thousand words." Another advantage is being able to see relationships among the various parts. Similarities and differences and other kinds of connections are much more apparent in pictures than in words. Consequently, thinking in pictures is a good way of getting started on a piece of writing--or getting restarted when you are stuck.

You can make use of your natural capacity for visual thinking by diagramming your subject--especially when you have a lot of ideas or information you don't know what to do with. Seeing your material in graphic form may help you to make sense of it. On the next page are four simple diagramming strategies you can try. Each has a different basic purpose, but all are good ways of "getting the picture."

(1) Tree diagrams can help you to see the connections among various pieces of information. This one analyzes Odysseus's behavior in his famous meeting with the Cyclops Polyphemus:



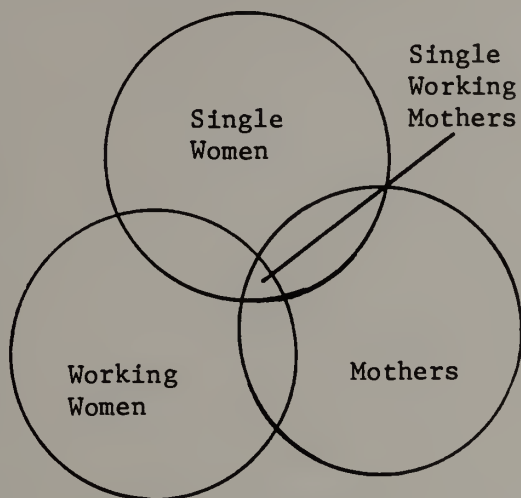
(2) Flow charts are useful in understanding and planning complex processes or procedures (such as computer programs). Here's a fairly simple one that shows the life cycle of a moth:



(3) Graphs and tables can be used to compare statistics and other kinds of data. Here's one which could be used to compare the nuclear arsenals of the United States and the Soviet Union:

Weapon	U.S.A.	U.S.S.R.
ICBMs		
Strategic Bombers		
Atomic Submarines		

(4) Venn diagrams are helpful for seeing how various sets of people or things relate to each other. The one below is a simple example that shows the overlap among three categories of women:



Checklist of Invention Strategies Used

The chart below provides a place to keep track of your use of the invention strategies and to comment briefly on the results you achieve with them. You can also make note of any other strategies you devise.

Strategy Used	Date	Results	Strategy Used	Date	Results
1. freewriting (pp. 2-3)			5. defining (pp. 10-11)		
2. visualizing (pp. 4-5)			6. making an analogy (pp. 12-13)		
3. dramatizing (pp. 6-7)			7. creating a dialectic (pp. 14-15)		
4. changing perspectives (pp. 8-9)			8. diagramming (pp. 16-17)		

Other strategies: _____

APPENDIX B

QUESTIONNAIRES AND INTERVIEW SCHEDULES

As indicated in Chapter III, questionnaires were administered at both ends of the study to all participants in order to determine their attitudes toward writing and themselves as writers and to learn about their composing processes--before and after instruction in rhetorical invention. Questions of these types were included in Part I of each form. The initial questionnaire (Form A) also included a number of items designed to elicit the students' notions of what a "good writer" does. The final questionnaire (Form B) asked for an extensive evaluation of the invention strategies. Names were requested on both of the forms so that individuals' initial and final responses could be compared.

Each of the three short interview schedules which were used to prepare the case studies served two distinct but related functions: (1) to follow up in depth on the classroom aspects of the research project and (2) to elicit background information about the students' experiences with writing and writing instruction. The first schedule was designed not only to explore in detail issues raised by each student's initial paper and questionnaire, but also to develop a brief writing history. The other two schedules were similarly balanced. In addition to calling for the students' reactions to their work with invention strategies, these guides provided for further probing of the subjects' composing processes and attitudes toward writing.

Ninth Grade Writing Questionnaire (Form A)

Part I. The questions in this section are about your writing habits and attitudes. Please respond honestly--there are no "right" answers.

1. Do you enjoy writing? _____

Why or why not? _____

2. What do you find most difficult about writing? _____

3. How do you usually get started on a piece of writing? _____

4. What do you do if you get stuck or run out of ideas? _____

5. Do you normally make more than one draft of a paper? _____

If you do, what kinds of changes do you make? _____

6. Are you generally satisfied with what you write? _____

Why or why not? _____

7. How did you learn your present method of writing? _____

Part II. The questions in this section ask for your views about good writers and how they write. Feel free to make an "educated guess" if you are unsure of any answer.

1. Name someone you know who is a good writer: _____

What sorts of writing does he or she do? _____

2. What makes this person a good writer? _____

3. How do you think he or she comes up with ideas? _____

4. Does he or she ever have trouble thinking of what to write? _____

If so, how does he or she overcome this problem? _____

5. Does he or she ever have to rewrite a paper? _____

What kinds of changes, if any, does he or she make? _____

6. What does it take to become a good writer? _____

7. Are you a good writer? _____

How do you know? _____

Ninth Grade Writing Questionnaire (Form B)

Part I. The following questions ask for your views about writing and yourself as a writer. Please answer honestly and thoughtfully.

1. What feelings do you associate with the act of writing? _____

2. What does the process of writing include besides putting words on paper? _____

3. What are the main steps in your own writing process? _____

4. How would you rate your own writing ability? _____

Explain your answer: _____

5. Are you usually able to come up with good ideas? _____

Why or why not? _____

6. Do you think that your writing improved last quarter? _____

If so, in what ways? _____

Part II. The questions in this section apply to your experience of learning and applying invention strategies in general.

1. Did you enjoy working with invention strategies? _____

Why or why not? _____

2. How would you rate your results with them overall? _____

Describe one particular success or failure: _____

3. How well were you able to produce and develop ideas with the aid of invention strategies? _____

4. How well were you able to select from these ideas and organize them into complete papers? _____

5. When and for what purposes did you find using invention strategies most helpful? _____

Least helpful? _____

6. How has the use of invention strategies affected the way you write? _____

Part III. This section is concerned with your use of individual invention strategies. You may wish to refer to the handbook when answering these questions.

1. Did you refer to the handbook instructions each time you used an invention strategy? _____

Why or why not? _____

2. Did you attempt to use all eight of the strategies? _____

Briefly describe the results you achieved with each of them below:

Freewriting _____

Visualizing _____

Dramatizing _____

Changing perspectives _____

Defining _____

Making an analogy _____

Creating a dialectic _____

Diagramming _____

3. Did you ever change or combine any of the strategies? _____

If you did, tell how and why: _____

4. Have you learned or made up any other invention strategies? _____

If so, what are they? _____

5. Do you plan to use any invention strategies in the future? _____

Why or why not? _____

6. Are there any other comments you wish to make about your recent
experience with invention strategies? _____

THANK YOU FOR YOUR PARTICIPATION IN THE STUDY!

Schedule for First Interview With Case-Study Students

1. Follow-up questions on initial writing sample:
 - a. How did you feel about the way it turned out?
 - b. Where did you get the ideas for this piece?
 - c. Did you have any trouble thinking of what to write?
2. Follow-up questions on initial questionnaire:
 - a. How did you feel about answering these questions?
 - b. What did you mean by your answer to question X?
 - c. Could you say a little more about your answer to question Y?
3. Background questions about use of invention strategies:
 - a. What do you do to get yourself started on a piece of writing?
 - b. Does your method vary for different kinds of writing?
 - c. What do you do when you get stuck or run out of ideas?
4. Background questions about other aspects of the writing process:
 - a. Do other people ever help you with your writing? Who? In what ways?
 - b. What do you feel is the purpose of rewriting?
 - c. Do you ever make major changes once you have begun writing?
5. Background questions about writing history:
 - a. Can you describe your early experiences with writing?
 - b. How has your writing changed since then? Your attitudes about writing? Your method of writing?
 - c. Who or what has been the greatest influence on the way you write?

Schedule for Second Interview With Case-Study Students

1. Follow-up questions on initial reaction to using invention strategies:
 - a. Can you describe your feelings about the eight invention strategies at this point?
 - b. What was it like to use them? Difficult? Easy? Enjoyable? Boring?
 - c. Which were your most and least favorite to use?
2. Follow-up questions on initial success in using invention strategies:
 - a. How successful were you in using these exercises for the first time?
 - b. Did some techniques prove more useful than others? Which ones? Why?
 - c. How closely did you follow the instructions in the booklet?
3. Background questions on past use of invention/planning strategies:
 - a. Were any of the strategies familiar to you in any way?
 - b. Have you used any of them or any like them as aids to writing in the past?
 - c. What other invention/planning strategies have you used?
4. Background questions on past instruction in invention/planning:
 - a. How have you been taught in school to develop ideas for writing?
 - b. How effective have you found these methods?
 - c. Have you learned any other methods anywhere else?

5. Speculative questions about future application of invention strategies:
- a. How do you imagine that you'll use invention strategies in the preparation of actual writing assignments?
 - b. Which of them are you most likely to use? Why?
 - c. What do you think will happen as a result of using them in writing papers?

Schedule for Third Interview With Case-Study Students

1. Follow-up questions on final questionnaire:
 - a. What did you mean by your answer to question X?
 - b. Could you say a little more about your answer to question Y?
 - c. Is there anything the questionnaire should have asked you but didn't? Is there anything you want to add?
2. Follow-up questions on use of invention strategies:
 - a. Can you talk about how you used invention strategies in writing your essays last quarter?
 - b. Did they help you to come up with more ideas? How?
 - c. Do you think you came up with better ideas? Why?
3. General questions about invention strategies in the context of the entire writing process:
 - a. Has using invention strategies changed your view of the writing process? In what way?
 - b. How do you get from the invention strategy to the complete paper? Did you have any problems with this?
 - c. Do you still feel that the main purpose of rewriting is Z?
(responses on first questionnaire and in first interview)
4. Background questions about other current influences on writing:
 - a. What sorts of writing have you been doing in other courses this year?
 - b. Have your family, your friends, your reading, or your activities had any recent effects on your writing that you know of?

- c. How do these experiences fit in with what you've learned about invention?
5. General questions about teaching and learning the writing process:
- a. If you were teaching a composition course, would you include invention strategies in it? Why?
 - b. What else would you change about the way writing is taught and assigned in school?
 - c. What should I be looking for when I examine the results of this study? Can you suggest any conclusions?

APPENDIX C
SAMPLE PROTOCOLS

As indicated in Chapters IV and V, the protocols resulting from the case-study subjects' oral-composing sessions were among the most important data produced by this investigation. Six of the nine students who participated in these sessions were successful in verbalizing their thoughts as they wrote. Fran and Jim performed this unfamiliar task particularly well. Their lucid and detailed accounts of their own composing provided key insights into the process in general and into the roles played by heuristic techniques in particular. Their oral-composing protocols are presented below.

Fran and Jim had a good deal in common as writers: both were members of the advanced-level class, excellent students, and successful writers. Both had devised simple heuristics of their own before being introduced to invention in this study, and both used the strategies they were taught quite productively. However, their approaches to invention were very different. Fran generally employed heuristics in an exploratory way. That is, she selected her strategies tentatively and sometimes abandoned them before completing their procedures. Her primary aim was to consider alternatives; she left the actual shaping of the text to the drafting stage and discarded a good deal of the material she produced. On the other hand, Jim used heuristics explicitly to develop the specific content and even the overall form of his papers. He chose his techniques

systematically at the start and only rarely left an exercise unfinished. Very little of the material he produced was thrown away. Invention strategies became a means of composing for Jim, but for Fran they served more as an aid to composing. These writers' discovery methods illustrate two distinct tendencies in the use of heuristics.

Jim's Cause-and-Effect Essay

The following transcript is the record of Jim's initial work on the cause-and-effect essay. The twenty-minute oral-composing session which this protocol represents was conducted just after he received the assignment in class. Jim's notes from the session are presented in Figure 7 (see p. 317) and Figure 8 (see p. 319). He began:

Today's topic is a cause-and-effect essay. Right now, I'm trying to figure out what I'm going to do a cause-and-effect essay on. Probably on something I'm interested in, being hockey or bagpiping, maybe computers or D & D [Dungeons and Dragons]. I have no--I haven't the slightest idea what I'm going to do it on. I could always--I'd like to try something dissimilar from what I've already done. I've already done numerous essays on computers, D & D--one on hockey, so that could be a possibility. I want to do something, though, that I could do a good essay on. Let's see, it's a cause-and-effect essay, which would be a--it would have to be a--something happens, I could tell why it happens; so what could I do? Let's see. Oh, who knows? Wait till something comes. Okay. Let's see, what could I do it on? Something--something that's interesting to more than just me. D & D is not really, because--well, there's no clear-cut reasons for that. And what else? Hockey--Stan has already done why our hockey team is winning, so, let's see. How about computers, then? Yeah. How about why people--or why society's moving toward using computers, like why computers are becoming more popular. Yeah, that would be a good one--write that down [writes]. Why are they becoming more popular? Freewriting, I guess, isn't

appropriate for this. It would probably--it's more of a--
 what I feel. Visualizing--that's possible. Hold on.
 Dramatizing--I doubt that--oh, that's a possibility. I can
 remember that. Changing perspectives--yes, I will use--I'll
 use changing perspectives as a means of getting more
 information on this thing, using the computer as part of
 society and as a unit on its own. Uh-huh. Okay. Maybe I
 could define the computer. Well, at the beginning. So
 that'll--at least that--making--hold it, I've used an
 analogy every time--analogy. Yeah, I like--I'll try to use
 an analogy in there. Create a dialectic? Well, let's take
 a look at that. Yeah, okay, pages fourteen and fifteen.
 Okay. Well, it's not two opposing viewpoints, really. Some
 people don't like computers, but--no, that wouldn't be so
 good. Diagramming? Let's take a look at--I could use
 diagramming for evidence, to support that computers are

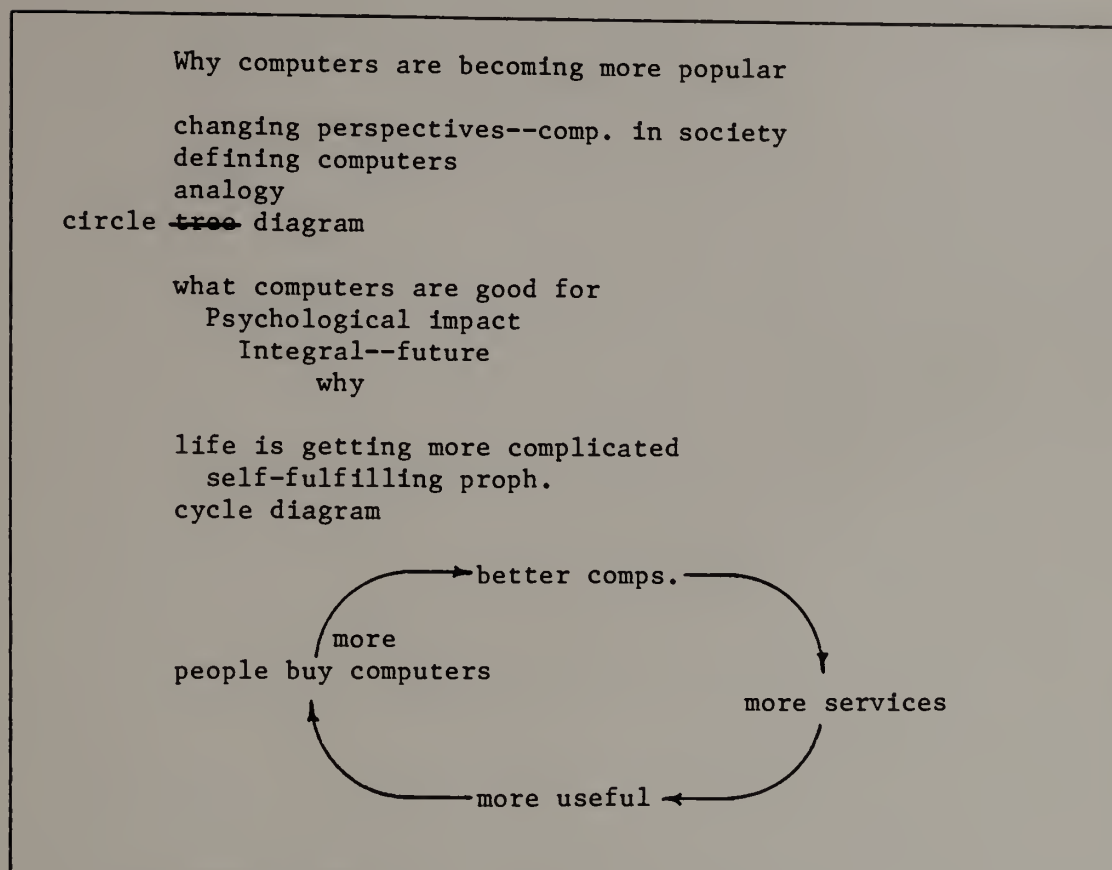


Figure 7. Jim's first planning sheet for the cause-and-effect essay.

already becoming more popular. Or what else could I use? Venn diagram, the families that have computers? No. Maybe a tree diagram, showing the different uses of a computer. Yeah, I'll use that. Those--yeah, that's fine. I'll use those invention strategies to get started. Okay, now, let's see. Exactly what do I want to say here? Okay, I'll start out telling what computers are good for, and then [writes] --and then I'll probably--yeah, I'll talk about the psychological impact of computers [writes]. Things--why, you know, why they scare some people, why people don't like them, like my dad, etc. Then I'll look at the future, how it's going to become an integral part--integral--integral part of society [writes]. That's good. Is that all I want to say? Is that cause and effect? No, I have to say why it's going to take over--why computers are getting more and more popular. Okay. Why are they getting more and more popular? I have to know that. Okay. Okay. Life is getting more complicated. Let's start with that [10-second pause]. What else? Let's see [8-second pause]. Okay. It's getting more complicated--self--it's a self-fulfilling prophecy, that is--that is, as more and more people get computers, it makes--more services will open up based on computers, and that way more and more people want to get them. Yeah, the more people get them, the more useful they become, so the more people get them, so the more useful they become, so the more people get them. Yeah, okay, I like that. Well, that--hey, that's a circular diagram, circle diagram, whatever that is. Let's draw that out. Okay. A two-stage cycle diagram. Let's figure out what--okay, let's start with--okay, let's start with people get some--people want computers. Okay. Okay, what happens when people buy computers? I guess they--well, okay, where there's more of a demand, okay, better computers come out--more computers--better computers come out. Now what happens when better computers come out? They have more capabilities, which means that the next step is, they become more useful. No, no, the next step is, more services are available, more functions. And the more services become available, they become more useful. Okay, and when they become more useful, it goes right back to people buy more. Okay. I've got that down. Is that the only reason they're becoming more popular? Back to life is getting more complicated. How would that affect computers, though? Let's see. I know, okay, I'll do a thingamajig on changing perspectives, see what that brings to light. That's page eight. Okay. The unit in contrast, as a system, and in a system. That's as a static; and then as a process we've got changing self, changing parts--parts, and changing system. The unit--unit itself as a unit separate from other things. The unit as a

unit separate from other things. What are its main characteristics? Okay. Flexibility and--other characteristics. Okay. Data handling--it's powerful at that. What else? Extremely efficient. Yeah, okay. How would it differ from similar separate things, like--I guess

	Contrast	as System	in System
S	flexibility	mathematics	people
T	data handling	data manipulation	data/facts/info
A	efficient	memory	-----
T	-----	entertainment device	-----
I	flexibility	-----	<u>function in/R: Aids</u>
C	do anything	able to interact	others to work
	programmable	complimentary	more efficiently
	<u>changing self</u>	<u>changing parts</u>	<u>changing system</u>
P	<u>created: in relation</u>	<u>formed: to enable</u>	<u>created: as regards</u>
R	<u>to needs of users</u>	<u>mach. to serve needs</u>	<u>needs of soc.</u>
O	<u>changing: keeping</u>	<u>changing: regards</u>	<u>changing: updating</u>
C	<u>up w/ demands</u>	<u>new demands</u>	<u>future: rely more</u>
E	<u>future: more + more</u>	<u>future: same</u>	<u>unit→sys: changes</u>
S	<u>pop.</u>	<u>part→unit: changes</u>	<u>demand on unit</u>
S	<u>features: program-</u>	<u>capab.</u>	<u>sys→unit: alters</u>
	<u>mability</u>	<u>unit→part: changes</u>	<u>needs so alters</u>
	<u>differ: unit more</u>	<u>responsibilities</u>	<u>unit</u>
	<u>flex.</u>		
		<u>Analogy:</u>	
		<u>Comp. in Soc.</u>	<u>[Digital Watches]</u>
		1. more exact--wise	1. exact time
		2. rely on data	2. forget day/date
		3. use for anything	3. always use
		4. new + exciting	4. new + neat
	<u>OUTLINE:</u>		
	I. Outline		
	A. Society more + more reliant on comps.		
	B. Self-fulfilling Prophecy		
	C. Psychological Impact		<u>data increase</u>

Figure 8. Jim's second planning sheet for the cause-and-effect essay.

like calculators and typewriters and stuff like that. Well, flexibility again. It can be programmed to do almost any task, I guess, so--do anything. Other differences. I guess--one of the things is, it's interactive, I guess. Someone--people have to program it for it to do something, as opposed to a calculator. That's one of the reasons it's flexible, I guess--programmable. Okay. The unit as a system made up of component parts. Principal parts--do I want to get technical, or do I want to stay somewhat abstract? I could talk about the memory, CPU, all sorts of stuff; but that's not what I'm looking for. Component parts. Okay, its component parts. I guess, yeah, component parts would be like mathematics, since it's good at mathematics and stuff; and, oh, heck, text-manipulation, data-manipulation, and--what other principal parts are--it can also be used as a memory device, a storage device for text. Oh, of course, and the ever-present entertainment device. Okay. How are the parts arranged in relation to each other? They are linked, I guess, so that they can be controlled and used interactively, controlled by a program, I guess, so--able to interact. They're complementary. Unit in a system, unit as a component part of a larger system--society? Okay. Other parts of the system. Ugh, that's going to be great to list them all. People. Other parts of the system. I don't just mean office machines. Come on. There are all sorts of things. Data. Society has a lot of data and facts. Other parts. I guess I would--information would also be under that. What are some of the other parts of society? Sure, okay, I'll--the bell's just about to ring . . . [end of tape].

When the class period ended, Jim had virtually completed the three "static" cells of the changing perspectives heuristic. He went on to fill in the three "process" sections and to develop an analogy between computers and digital watches (see Figure 8, p. 319). Then, after preparing a brief topic outline, he wrote a rough draft based directly on the invention exercises. The second and final draft of the paper, which follows, included a number of minor revisions in wording and mechanics but essentially the same content and form as the original version:

Computers in Society

-or-

Is That Thing Grinning at Me?

Computers are becoming more and more popular and important in modern society. This is due not only to our varying needs but also to our changing perspective regarding computers.

A vicious circle is helping to promote the widespread use of computers. As their capabilities increase and the demand on them continues to soar, more and more people buy computers. This is a self-fulfilling prophecy: when people buy computers, the manufacturers of these computers reads this act as evidence of an expanding market, and therefore develop and produce better computers that provide more services. Because of these new services, computers become more and more useful; more people then buy computers, which causes manufacturers to produce improved ones, and the cycle continues to spiral upwards.

There are other reasons as well, some of which explain why people begin to use computers in the first place. For one thing, modern society is becoming more and more complex. There is more data to handle, as everything can be and is represented by a number. People must be able to handle these large amounts of information, and since computers present an excellent method of managing raw data, people logically use computers to meet the required tasks. The gyrating system of increasing demand mentioned above is thus entered, and additional complexity only further inflates the system. In this manner, people create their dependance on computers themselves.

Similarly, computers infiltrate their way into every level of society. When an area becomes complex enough to warrant their use, they are employed, and shortly become necessary. People then organize their methods of data handling around these computers, and come to depend heavily on them. Thus, computers become not merely aids but necessities.

This happening is not unlike the digital watch outbreak. At first, digital watches were regarded as trivial, unnecessary oddities without practical application. However, they became invaluable to those that owned them: every time the time or date was needed, the wearer automatically looked to his watch. If the wearer found himself suddenly without one, he would find it difficult indeed to keep track of the time and date. The same occurrence is happening as regards computers.

The spread of computers began slowly, just as did digital watches, because many people feel uncomfortable using them. This mainly because they are strange, and can appear

unnervingly sentient to those unacquainted with the basis upon which they operate. However, as the use of computers becomes more widespread, this suspicion will evaporate, and nearly everyone will utilize them in various tasks. This will be the kickoff to a computer revolution in modern society.

So, as a combined result of all the aforementioned reasons, computers will continue to increase in popularity and importance until most of the data-handling in the U.S. is controlled by computers. Until then, keep your mind open, and your fingers loose. Good luck . . .

Fran's Final Paper

The occasion for Fran's oral-composing procedure was the final composition of the term: a paper on any subject in virtually any form for an audience of peers. Her session, like Jim's, was conducted immediately following the teacher's giving the assignment in class; it lasted approximately twenty-five minutes. The following protocol and accompanying planning sheets (see Figure 9, p. 324, and Figure 10, p. 326) were the result:

Now, what am I going to write about? I want to write about something which is going to interest people of my own age. I already did gossip, so I have to think of something else which everybody knows about or thinks about or has problems with. I already wrote one about drugs and alcohol. Maybe I could do something about pastimes or what people do with their spare time. Pastimes. All right. Maybe sports, but I don't really know that much about all the different sports. Let's see, what else are people interested in? Maybe something about education, like planning for college and stuff, but actually that's sort of isolated--well, not really isolated, but it depends on where you go to school, because a lot of people don't always plan on going to college. How about dealing with teachers [writes]. Dealing with teachers. What else does everybody have to deal with when they're a teen? With their parents--dealing with their parents [writes]. That might be a good one. You could do

that about fighting and how communication is important [writes]. And I could do it about divorces. That's a little depressing, though. That's good. I'm going to do it about kids and their parents. I have to make it interesting to people my own age. I can try and make it sort of funny. Hmm. I could do one on peer pressure, but my alcohol paper already had a little of that in it. That's okay, I'm sure Mr. K doesn't mind. Okay, that's enough. I'll find something in here to do it on. I think I'll do it on either dealing with your parents or peer pressure--or maybe divorce. I don't know. How about--if I were to do it about dealing with your parents, I'd do it--I'll have to think of a way to do it, different categories to do it in [8-second pause]. I could do--start with why it's so difficult to deal with your parents at this age. Something about the in-between stage, and you're not really sure whether or not--well, you're fighting for your responsibility as an adult, but your parents still often treat you as children. Okay, and, let's see, why is it so difficult and then, what else? You aren't taking their standards as much for granted as you did from before, or you're--well, you have to take into account the standards of your peers. I could combine this sort of with peer pressure. Let's see, then--why is that really important, to have a good relationship with your parents? Things like--I don't know--because they'll--I mean, you can--they'll always be there. You have to take them for granted. Well, I don't know. That's not true often. Because they'll always accept you; I mean, your family is the ones--your family in most cases is the only thing you can take--you can assume will accept you. You can take that for granted. Okay. Let's see. I'm not sure. If I were to do it on peer pressure--no, I don't want to do it on that. That's too boring. Let me get back to this. In-between stage, your standards. Think of more reasons why it's important to have a good relationship with your parents [10-second pause]. They can advise you. They can advise you, because they, after all, they've gone through what you've gone through. You should try talking to them, because you may find out that they really are easier to talk to than you thought before. Part of this is--well, the standards that change, that's really just you growing up and getting your own identity. So you have to be able to talk to your parents and argue with them about things, so--I don't know, so if you argue with them, then you'll be able to formulate your own opinions and stand up for your own ideas. Okay. Let's see [8-second pause]. It's actually, maybe--do it on school work, that's not--well, because I just don't know if I can make an entire essay out of this. I should be able to if I separate it into the category of

why it's so difficult and why it's so important. It's not going to be a very long essay. That's okay. All right. Now, I think I'm going to use an invention strategy to just try and add some more details in here. Maybe I could use an analog. That works well sometimes. Let's see, where is it in the book? Also, changing perspectives, that's sometimes good, but that's kind of hard. Here's analog. It's

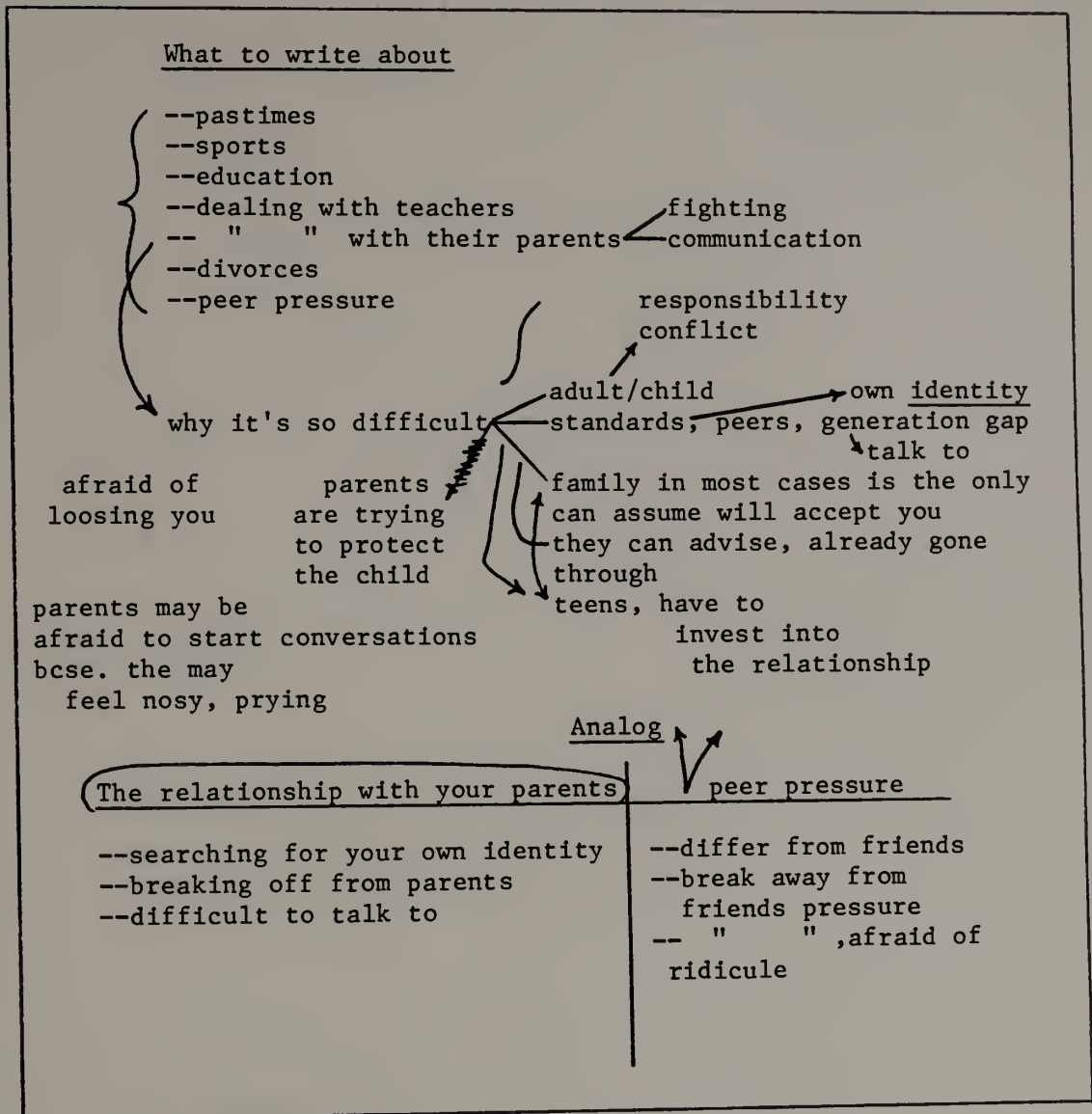


Figure 9. Fran's first planning sheet for the final paper.

difficult, that's what I'll say. Okay, what can I compare--what else is difficult like dealing with your parents at this stage? Studying. Swimming is difficult. Competitive swimming is difficult. What else is difficult? Doing your school work. That's sort of a different kind of difficult, though. I want something that's different that I don't really often see somewhere, because then I don't really make that much of a comparison. Let's see. What's hard? [8-second pause]. I don't really want something physical. I want something else--another situation which is really hard. Maybe peer pressure would be okay. It's a little similar but not exactly. I could try it. All right. The relationship with your parents is one--these things are so similar, so your peer pressure is another--your difficult things to deal with. Both of these, you're searching for your own identity. It's the same with peer pressure, because you're trying to be original and different from your friends--friends. Let's see. Often times . . . [writes]. Now, I'm trying to work on this analog comparing the relationship with your parents to peer pressure, and I've got all these differences, but what else is similar about it? Let's see. You really should--you have to put time into both of these relationships. Well [5-second pause]. All right, what else is difficult about the relationship with your parents? Sometimes it's hard to talk to them, and that might be true in--with peer pressure situations, because you'd be afraid of what your peers would think of you. Okay [writes]. Difficult to talk to--same over here. You're afraid of ridicule. Let's see. I don't really know if this is enough for an essay! Yeah, it should be [8-second pause]. This doesn't really go with peer pressure, but still--I won't put it under the analog, but--you want to be taken--well, it's part of the adult/child thing. You want to start taking responsibility, like take the car out and stuff, but your parents are still--still trying to protect you, and they don't want you to be grown up yet. Okay, responsibility--all right [5-second pause]. Let's see [5-second pause]. Now, what else is hard? What do I have problems with with my parents? Well--well, you have to invest time in a relationship. I mean, you--my mom--I know she gets mad because I never seem to have time when I should--you have to spend--have to invest in the good relationship [8-second pause]. You should make your family a priority--they'll always be there for you. Yeah, you could take them for granted. I already said that, so--just add--these two go together. I'll draw an arrow to put them together. There. What's another invention strategy I could use to form ideas for the picture? [8-second pause]. Freewriting's good, but I've already done that. What about

"Just Thinking"--visualizing? I think I'll do a dialect. Let's see [12-second pause]. Well, I just mean there's a generation gap here because there's different--well, this also ties in with standards, but it--there's different clothes and things like that. But I find I can talk to her, that I'm able to talk until you find out that they also had the same problems, and they also had them when they were kids. All right, I'll do a dialect. Let's see. Dialect. Try and think of a typical situation where there's conflict between teenager and parent, and then I'll--maybe I can use that to start off the essay with, like an example from real life, because that kind of makes it more interesting. Teenager, mother. Okay. Let's see. Teenager--I'll just use a T for that--"But, Mom, what's wrong with this miniskirt? [writes] Everyone wears them these days"

Dialectic

teenager/mother generation gap/mother, previous problems

T--But, mom what's wrong with this minny skirt, everyone wears them these days.

M--I think their disgusting ~~They~~ They're too inmodest.

T--What are you talking about, It's as far down as my knees.

M--I don't care. Go take it off right now

T--Why, you used to wear even shorter ones when you were in high school

M--Well it

parents
protect
~~~~~

#### Basic outline

Introduction

- ↳ why it's so important
- ↳ why it's so difficult

conclusion    how to have a good relationship

Figure 10. Fran's second planning sheet for the final paper.

[writes]. Mother. Okay. "I think they're disgusting. [writes] They're too immodest" [writes]. Okay. Teenager: "What are you talking about? [writes] It's as long as--it's as far down as my knee" [writes]. "I don't care. Go take it off right now" [writes]. "Why? You used to wear even shorter ones when you were in high school" [writes]. Let's see [10-second pause]. "Well, it wasn't--" No, this isn't going to work. Well, you get the general idea of the generation gap in there. I don't really have to write that out. Oh, well. Generation gap. And also, it's like you find out the mother probably also had these problems with her mother [writes]. These problems. Okay. Let's see. I could make a diagram [8-second pause]. Well, a lot of it is just how it's the parents are trying to protect the child [12-second pause]. Parents are trying to protect the child. All right, it's probably a cycle diagram. I'll try and draw a diagram, too, here. All right, you have a parent--that's the mother. Parents protect their kids, then--well, it isn't really much of a cycle diagram. Well, sort of, because then the [12-second pause] --actually, I don't know. I'll start writing. All right, what else is there along with that relationship? [5-second pause]. Well, the parents are losing their little kid--they're all the same with that. Well, not always. It just kind of depends on the family. Why is it better from one family to another, from one relationship with another? Communication is very important [8-second pause]. I don't know . . . [end of tape].

By the end of the class period, Fran was ready to begin drafting. Like Jim, she prepared a brief outline before starting, but on the whole their approaches were entirely different. She used material from the heuristic exercises selectively and arranged and adapted it as she wrote. She began her rough draft with a dialectic, as planned, but substituted the following for the one she had begun during the oral-composing session:

"Dad, could I have the car tonight?" "What, why? Where do you want to go?" "Dad, what's your problem why do you have to take a spazz and put me through the third degree every time I ask for the car? And what if I don't feel like explaining my every move to you?"

This paragraph was eventually cut from the paper. Indeed, there was

evidence throughout Fran's completed rough draft of a tortuous, untidy process of development based on but not tied to her initial prefiguring. She revised her work extensively before preparing this final version:

#### Parent/Teenager

The relationship between parents and teenagers is usually a difficult situation. Often there is a number of problems with communication or truthfulness in the relationship of a teen and his or her parents. Although the interactions may not always be good, they are very important! Despite the number of difficultys involved, it is definately worth the effort for a teen to work on the relationship between his/her parents and himself/herself.

All relationships have their difficultys but the one between a teenager and his/her parents has a number of special problems. Teenagers are at a particularly difficult point in their lives. They haven't been completely accepted by the adult world, but they are way past the "kiddie" stage. They are fighting for independance and the right to make their own decisions. The parents are usually having difficultys watching their "babys" becoming adults. A parent may feel (particularly a parent who has always worked soely inside the home) useless, not needed, or rejected as their child begins depending on them less and less. A mother/father may also want to protect their child from the "realitys" of the world for just a little longer. These over protective parents treat their teenager as a child. Unfortunately, this may cause the teens to simply stop discussing decisions over with their parents. Instead, they'll simply not bother to include their parents in on the fact that there is a decision to be made. The Teen years is a time when one rels heavily on friends. Often it's difficult for a teen to find time to spend with his/her family as well as friends. A teenager and his/her parents must overcome these problems to develop a relationship.

Even though the relationship may be a difficult one, it is extremely important. Your parents are usually the only people to fully accept you, no matter how many faults or problems you may have. So, although they may be over-protective and a royal pain sometimes, it's great to know they'll always be there when you truly need them. If you take the time and make the effort to talk to your parents you may find they've been through a number of the same problems your presently fighting. They've probably

already had to deal with a first date, telephone call, rotten old witches for teachers, and getting in or out of cliques. They'll usually be able and willing to offer helpful hints and encouragement!

The most important aspect of any relationship is communication, and it must be a two sided communication. Communication is particularly difficult in the parent-teen relationship. Teens often forget their parents were once teenagers themselves and may be embarrassed to discuss certain subjects with them; sex, drugs, the opposite sex. Parents may also be unwilling to bring up some topics, for they worry their daughter or son will think their being nosy or prying. Therefore, both partys must go out of their way to talk, but the result, a good relationship, is well worth the effort.





