AURAL CUING

AS A STIMULUS FOR REVISION OF EXPOSITORY COMPOSITION

AT THE GRADE-ELEVEN LEVEL

By

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Abstract

The purpose of the study was to examine the effect on the expository writing of grade-eleven students of an aural revision cue. 162 students were randomly assigned to three treatment groups and were asked to produce three drafts of an expository composition. The first treatment group had access to its first draft while composing the second draft; the second group reread its first draft prior to redrafting, but did not have access to the first draft while rewriting; the third group had access to a recording of the first draft, but not to the written first draft. For the third draft, all groups had access to both their previous drafts.

The results showed that those subjects who received an aural cue produced significantly better final drafts than those students who redrafted using the traditional visual stimulus—their previous draft. Furthermore, the former diagnosed significantly more text-base errors in their compositions, and when revising executed significantly more changes affecting meaning, both at the paragraph and the macrotext level. The experimental group diagnosed and executed significantly fewer cosmetic changes. Additionally, the experimental group employed significantly more parallel and extended parallel topical progressions than did the control group.

Treatment group two did not perform significantly better than treatment group one which received the traditional graphic cue. However, the subjects of treatment groups two and three had a common reaction to the absence of their first draft text: they were cautious and critical in their evaluations of their second drafts. The subjects of treatment group one, in marked contrast, gave very positive evaluations after the first revision session. Despite a stated dislike of the experimental treatment, the E.S.L.
subjects of treatment group three achieved double the quality increase of the E.S.L. students in treatment group one.

Interviews conducted with subjects of the experimental treatment support the notion that such a stimulus may serve as a powerful heuristic for revision. Students commented on the potential usefulness of the aural cue for overcoming textual saliency, for achieving a sense of distance from their work and a sense of audience, and for diagnosing problems of logic and meaning in their work.
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CHAPTER 1 THE SCOPE OF THE STUDY

Background of the Problem

If one examines historically the change to literacy at the level of the society, one is confronted with fascinating, and at first glance, contradictory data: educated members of so-called literate cultures of the past were not literate in the absolute sense that we normally apply to the word. Despite the vaunted literary production of the Classical period, indeed of Western society until the Age of Reason, authors until relatively recently have functioned in a hybrid manner, in which organizational patterns characteristic of oral and literate discourse interact.

Unlike Homer, whom we would term illiterate, the dramatists, historians and philosophers of the Greco-Roman period began to record their ideas using a phonetic alphabet; the result was a series of artifacts which have produced aesthetic and intellectual pleasure for two thousand years. Furthermore, as Ong (1977) and Havelock (1963) both point out, the development of an abstract writing system was for Western society a tool of immense power: it permitted, and perhaps even produced, the capacity for objectivity and logical thought progression which culminates in the paradigm shift to scientific thought which appeared in the seventeenth century and underlies our own age.

Perhaps because so much of the antique world comes alive through the writings of the period, it is difficult to avoid the notion of a student of the period diligently studying his Aristotle or Thucydides, much as a modern student might do, concentrating on the scripted word. However, at the societal level, cultural oracy does not fully give way to literacy until the eighteenth century. Written discourse before this time had not the heuristic
and analytical functions which it has today; rather, it served to record and preserve.

In this role, the written word remained essentially subordinate to the spoken word. Discourse still retained its ancient rhetorical purpose of immediate and direct interaction with other individuals; the audience is not distant or unknown, but present before the speaker or writer. Since the oral tradition persisted for two millennia before yielding to the new way of thought embodied in literacy, many traces of this lingering presence of oracy can be found. For example, classical teachers placed considerable importance on the final two canons—delivery and memory—which are largely ignored by modern rhetoricians. Until the late Middle Ages, one had to hear the word to grasp it fully; silent reading was almost unknown until the Renaissance, and indeed we still use the term "audit" to apply to an accounting process which has become purely literary. Even as late as 1610, the Douay Bible exhibits as its principal structure what the Prague school of linguists term a sequential topical progression—an essentially oral organizational structure. In contrast, the New American Bible uses parallel topical progression—a literate form dependent on logical array.

Cultural oracy exhibits characteristics parallel to those of beginning writers: experience is organized mnemonically and serially; information is conveyed through the concrete and the particular; sound is as important in organization as in presentation; situational, aggregative, repetitive, empathetic and conventional techniques are preferred to logic. In contrast, the literate communicator eschews thematic recurrence and episodic structure in favour of abstract, logical, analytical, objectively distanced composition. There is a stylistic movement from sequences, formulae, set phrases, expected modifiers and clichés to a more personal diction executed
by means of logical relations and lexical complexity. To learn to write, then, seems to require the organization of one's reality using formal logical procedures. Yet, one is struck by the fact that on the cultural level, the shift from oracy to literacy was of long duration, and that the two basic thought paradigms underlying oracy and literacy coexist within the same culture during the period of transition.

To become literate, the beginning writer must move through the same trajectory as the culture as a whole has done. Flower and Hayes (1980), Bereiter and Scardamalia (1982) and Perera (1986) all note that this transition lies at the heart of the process of learning to write. Informed opinion now speaks of a continuum of discourse: spontaneous speech, discussion, story telling, narrative writing and exposition exist on a gradient of relatively decreasing contextualization and increasing lexicalization. Movement along the continuum is determined by the internalization of new logical and categorical ways of organizing reality.

However, to assume that the change from oracy to literacy is a natural process with its own entelechy may be misleading: most speakers of the world's languages are not literate; although the movement from oracy to literacy is unidirectional and, in a physicist's sense of the term, irreversible, the process may be arrested at any stage. Just as oracy and literacy coexisted over a long period of time at the cultural level, so the majority of "literate" individuals may actually be in a hybrid state of literacy in which oral and literate devices commingle.

The Problem

Since Emig's (1971) seminal work, educators have focused more on writing as a process than on writing as a product. Initially, researchers
examined the perceived process as a series of activities; the resulting models, such as Rohman's (1965) pre-write, write, re-write, and Britton's (1975) conception, incubation, production, were linear. At the end of the decade of the seventies, this serial perception began to give way to a more subtle perspective. Perl (1979), Pianko (1979), Sommers (1980), Matsuhashi (1981), Flower and Hayes (1981a) all noted the recursive nature of composition. This non-linear concept was perhaps most fully articulated in Flower and Hayes (1981b) cognitive process theory, in which the several components of the writing process--planning, translating and reviewing--are modelled as equipollent elements occurring achronologically.

Over the past ten years, researchers have begun to study revision as a discrete element of the writing process. Although Humes (1983) optimistically stated that: "Revising is the most accessible part of the composition process . . ." (p. 210), investigators have been somewhat in the position of physicists viewing a cloud chamber: the textual trace of the operation is obvious, but the underlying complexity remains the subject of theory. Generally, two avenues of research have been followed in an attempt to understand and explain this complexity: (a) examination of the results of revision, and (b) theoretical speculation as to its causes. The investigative techniques used to examine the results and nature of revision have generally been at what Bereiter and Scardamalia (1983) have referred to as levels of inquiry three and four, i.e., text analysis and process description. For example Perl (1979), Bridwell (1980), Bartlett (1982) and Faigley and Witte (1981) examined student texts; Nold (1981), Flower, Hayes, Carey, Schriver and Stratman (1986), and Matsuhashi (1987) have focused on analysis of oral protocols of writers in an attempt to discern the actual process of revision as it occurs.
From the work of these and other researchers, a general set of characteristics of successful and unsuccessful revisors has begun to take shape (Stallard 1974; Beach 1976; Sommers 1980; Bridwell 1980; Faigley and Witte 1981). Poor revisors revise in a linear manner, and are overly concerned with conforming to linguistic convention. Although they may add material, they rarely make fundamental changes to the meaning and structure of their texts. Good revisors, however, review their work frequently, attend constantly to their broad goals and rhetorical situation, often re-forming large segments of text as an apparent result of this strategy. Although student or inexperienced writers often recognize the need for revision, they are frequently unable to execute the required operation. Put another way, the difference between the revision strategies of skilled and unskilled writers lies not necessarily in the amount of revision, but rather in the ability to carry out revision successfully.

Several researchers have suggested that poor writers have a truncated revision strategy because of the constraining presence of the existing text. The text seems to affect the reader/revisor in two ways. First, it seems to prevent distancing; that is, it remains what Flower (1980) calls "writer-based", part of the global context of the writer. Bartlett (1981), for instance, found that students were able to correct errors in the work of others which they were unable to correct in their own work. Secondly, the graphic text itself seems to create an excessive cognitive demand which precludes more than superficial revision. Stallard (1974), Shaunghnessy (1977), Perl (1979), Sommers (1980), Faigley and Witte (1981) all note that poor writers are primarily concerned with formatting, or superficial graphic and lexical changes which do not affect textual meaning. The possibility that the presence of the text itself might be a cause of low-level
revision behaviour seems likely in view of successful experiments made to facilitate revision by reducing the saliency of the graphic stimulus. Bereiter and Scardamalia (1982) have used contentless cues to direct the attention of the writer to supra-graphic revision. A second promising technique, employed by James (1987) and by Matsuhashi and Gordon (1985), was to deny to the revisor access to the written first draft.

A useful perspective of the process by which a writer comes to interiorize the logical structures of written discourse may be gained from an examination in the interdependent and complementary relationship of the graphic and acoustical modes. Key elements of a written text exist in the spoken equivalent, in progressive, thematic relation to one another; that is, both hearing and reading involve the recipient in a coherent structure over time. Indeed the test of good organization in speech or writing is whether an experience of coherence over time is produced. This macro-structure of topically related units forming a coherent unity, frame or gist, exists in both modalities as a purposeful series of conceptual structures.

Nevertheless, although an underlying structural similarity makes possible the interpenetration of strategies of speech and writing, should the communication function require it; and although research models of comprehension need not distinguish between graphic and acoustical input, certain distinctions are apparent between the two modalities. First, the exoskeleton of a text is in syntactical or lexical form, while that of speech is wholly or partially in para- or non-linguistic form. Secondly, Hildyard and Olson (1982) found that although only an abstract representation of a sentence remains after a few seconds for both readers and listeners, the latter are better than the former at structural recall, worse at incidental recall. Horowitz and Berkowitz (1967), Berger and Perfetti (1977), and
Smiley, Oakley, Worthen, Campione and Brown (1977) found evidence that both memory and comprehension are better apprehended through the aural modality.

How a student revises or even whether he or she revises seems to be dependent on an understanding of the text. Problem representation—the congruity of rhetorical goals and text—is critical, since it both triggers revision and makes revision possible. Successful revision is dependent on the degree to which changes made to the text conform to the writer’s intentions and the rhetorical situation. Since distancing seems to be an essential component of production and revision of reader-based prose, a key question arises: how can the writer become his or her own audience? Witte’s (1983) exploratory study of topical structure and revision suggests that revision is made possible by both an awareness of the hypertheme or gist of a text, and by an understanding of the topical structure within the text. A successful revisor must understand which parts of the microstructure may be modified or discarded without altering the macrostructure which is the focus of the text. This sense of fit between macrostructure and microstructure constitutes a textual cause of revision.

Given that the acoustical mode is apparently superior to the written mode in terms of a global, semantic appreciation of a text, i.e., its gist, it seems possible that revision might be facilitated by the use of this mode. Listeners react to structural, central or thematic aspects of a text. Since successful revision decisions, both during and after translation, are based in part on a mental construct of the discourse topic, listeners may have an advantage over readers. Furthermore, the work of Torrance and Olson (1984) suggests the possibility that writers of a wide range of abilities can use the aural mode for critical purposes. Since children and adults lacking
the skills of literacy are capable of the initiation and maintenance of
discourse topics in conversation, one might expect to find in a poor reader
or writer the cognitive capacity to respond to higher rhetorical problems.
Finally, it is possible that a listener might discern logical weaknesses in the
microstructure of a text. Since, in conversation, much semantic information
necessary for coherence is conveyed through para- or non-linguistic clues,
one would expect the absence of these elements to trigger a sense of
ambiguity, dissonance or incoherence in the listener.

Purpose of the Study

Oracy and literacy stand in an interdependent relationship, yet the
potential role of oracy in revision strategies has not been examined. Current
models of revision are literacy-centered, and do not seek to employ oracy in
a facilitative role. The purpose of this study was to examine the effect of an
aural review of a first draft text both on the revision strategies of student
writers and on the quality of subsequent drafts produced by these writers.
In order to investigate whether a hearing of a text influenced the students'
methods and final products, the following questions were asked:

1. What are the effects of hearing a text on:
   a. the quality ratings of students' drafts?
   b. the students' self-evaluations of their drafts?
   c. the ratio of high- and low-level revisions made to the second draft?
   d. the topical progressions used by students in their second drafts?

2. Are the effects of hearing a text related to:
   a. students' attitudes toward writing?
   b. students' attitudes toward revision?
   c. students' general scholastic ability?
Definition of Terms

1. Revision. Sommers (1979) noted almost two dozen words used as synonyms for revision. For the purposes of this study, revision means both the evaluation of his or her text by a subject, and the execution of changes perceived necessary. The result of revision is an observable or inferable difference between a first and a subsequent draft. All revisions are observable; however, certain revisions, in addition to affecting meaning at the microstructural level, also imply a change in the macrostructure.

   a. Level 1 Revision. The terms high-level revision, substantive revision and text-base revision are used as synonyms to indicate revisions which affect the degree of information a text contains, or alter the presentation of information so as to affect the macrostructure or the microstructure of a text. In this study, level 1 revision means additions, deletions or rearrangements which alter the hypertheme of a text: i.e., its macrostructure, not its microstructure.

   b. Level 2 Revision. In this study, level 2 revision means additions, deletions or rearrangements which affect meaning within the microstructure of the text, i.e., at the sentence or paragraph level. Such revisions, insofar as they constitute what Faigley and Witte (1981) term a "meaning change", may be considered substantive, and may be expected to affect the quality of a text. They do not, however, affect the hypertheme of a text.

   c. Level 3 Revision. Level 3 revisions are what Faigley and Witte (1981) call surface changes. Many of these changes are superficial or cosmetic, what Faigley and Witte term
formal changes: those modifications in spelling, grammar, punctuation and format which represent an attempt to conform to the modal and grammatical requirements of the grapholect. Faigley and Witte distinguish between formal changes and a second group of alterations which they call meaning-preserving changes. Any modification to the text which does not affect meaning, that is, which serves to paraphrase but also to preserve existing information or concepts, is also termed level 3 revision.

2 **Hypertheme.** The hypertheme is the gist, or discourse topic, of a text, as might be represented by a summary. Synonymous with macrostructure, it need not be explicitly stated in a text. The hypertheme is the answer to the question "What is this text about?", and is derived from interaction of the text and the reader's prior knowledge. The raters assessing the revision level discussed at length the topic assigned to the subjects, in order to begin the assessment with knowledge bases as similar as possible.

3. **Topical Progression.** Inter-sentence patterns which constitute structures within a text are classified as sequential progressions, parallel progressions, or extended parallel progressions (Danes, 1974). Sentences are composed of two parts: the theme, usually the grammatical subject, and the rheme or comment, which delivers new information. In sequential progressions, the comment of the preceding sentence becomes the theme of the following sentence. In parallel progressions, the topics of a series of sentences are referentially identical. An extended parallel progression is simply a parallel progression temporarily interrupted by a sequential progression.
4. **Aural or Acoustic Cue.** In this study, these terms mean the writer's hearing his or her own text. Either the whole text or a part of the text may constitute the cue.

5. **Oracy.** Synonymous with orality, this term lacks the negative connotations of illiteracy. It means the production and comprehension of oral discourse.

**Assumptions**

The study proceeded subject to the following assumptions regarding the nature of the study, the methodology and the subjects:

1. That the use of an acoustic cue did not, because of its novelty or because of the unexpected (by the students) logistical procedures, unduly inhibit the students' ability to carry out the task of revision.

2. That the students were able to execute the revision assignment within the seventy-five minute period provided by the school timetable.

3. That the students were motivated to produce a second draft of their composition.

4. That the second and third drafts showed sufficient magnitude of revision to allow the analysis to provide meaningful results.

5. That the randomization procedures were successful, ensuring that the students in all treatment groups did not differ significantly in number, sex distribution, writing apprehension and writing ability.

6. That any attrition of subjects was random and did not affect the results.
Limitations

Conclusions drawn from the results of this study were limited by the following considerations:

1. The classroom procedures had to be carried out within the period of two weeks, a relatively short duration.
2. Only grade eleven students in a single suburban high school were used as subjects.
3. Complete control could not be exercised over the subjects' familiarity with the topic, over the effects of previous instruction, or over the subjects' preferred style of revision.
4. Although all instructors were briefed on the procedures for each of the writing sessions, and although uniform written instructions were given to the subjects, different instructors may have affected classroom procedures.

Significance of the Study

This study is significant because revision, or more to the point, lack of revision, is a cross-curricular problem. If apprentice writers can be encouraged to mimic the revision behaviour of good writers by means of a relatively simple intervention, then a potential exists for general improvement in the product of student writers. The study will expand on the work already done by James (1987) and by Matsuhashi and Gordon (1985) concerning the negative influence on substantive revision of the presence of the graphic text. Furthermore, if aural cuing produces modifications different from those made by writers who were simply denied access to the written text, our understanding of the relationship between idea structure in oral and written discourse will be improved. Finally, successful
substantive revision as a result of aural cuing would lend support to Witte's (1981) notion of the critical importance of the perception of hypertheme in relation to the textual microstructure as a cause of revision.
CHAPTER 2 REVIEW OF RELATED LITERATURE

This chapter reviews the findings and range of research in the two areas which are critical to the study. First, the literature on revision will be examined, particularly those studies dealing with the saliency of the graphic text and with the revision behaviour of apprentice writers at the high school and college level. Secondly, since this study focused on the impact of aural language on the production of written discourse, current knowledge of the relationship between oracy and literacy will be surveyed. This overview will provide a background against which the purpose and construction of the study may be more clearly viewed and understood.

Revision Models, Behaviour and Effects

In the sixties and seventies, revision began to acquire a distinct place in the then current linear models of the composing process. These models were structurally tri-partite, and revision comprised the final stage. Rohman (1965) suggested a pattern of prewriting, writing and rewriting; similarly, Murray (1978) saw composing in terms of prevision, vision and revision. These early models mark a shift in the importance of revision: it is no longer seen as an essentially cosmetic operation, an attempt to cleanse a paper of potential targets of the marker’s red pencil, but rather as a critical stage in the composition process, equal in importance to prewriting and transcription. Without revision, a composition remains incomplete.

Britton’s (1975) model of the writing process also held three stages: conception, incubation and production. Revision here is a more subtle process whose position is not fixed, but can appear in either of the last two
stages. This notion that revision might occur at various times during text production was demonstrated in the work of Perl (1979), Sommers (1980) and Faigley and Witte (1981), all of whom noted that good writers write recursively; their attention ranges backwards and forwards in their text as they compose. The inherent rigidity of the linear models, in which revision is seen as the last stage in a chronological series, gave way to what might best be called holistic models. Della-Piana (1978), Bridwell (1980) and Nold (1981) all produced models which conceived of revision as an intervention process, triggered by some sense of dissonance, a conflict between intention and text (see appendicies W and AE for models). Sommers (1979) states: "...it is possible to view the composing process as a hierarchial set of subprocesses" (p. 47). She argues that revision is a sub-process of reviewing and that revision can interrupt composing at any point, in other words that it can be embedded or nested in other processes. The idea of a hierarchical, rather than a linear, model of revision was further developed by Nold (1981) and Flower and Hayes (1981).

The most complete expression of the holistic model is the cognitive process model of Flower and Hayes (1981). In this model (see appendix Y), a small number of writing processes are affected by the writer's knowledge of topic, audience and plans, by the rhetorical problem, and by the text produced. Both pre-textual revision and retranscription are affected by the writer's ability to use the processes of planning, translating and reviewing. In Flower and Hayes' hierarchical and infinitely flexible structure, revision is a sub-process of reviewing, and can occur at any point during the composing process. Revision is driven by a conscious monitor, a hypothetical agent "...which determines when the writer moves from one
process to the next" (p. 374). That is, revision is the reconstruction of an existing or foreseen text, based on some consciously, or perhaps even subconsciously, perceived inadequacy in that text. The model was further refined in Flower, Hayes, Carey, Schrider and Stratman (1986). In their model of revision (see appendicies X and Z), the scope of the revision task is consciously set during the task definition phase. What follows is evaluation, a generative process based on an apprehension of the gist obtained through reading the text: the reader must comprehend, evaluate and define perceived problems. Subsequently, problems are given some form of representation, and strategies are selected to cope with the difficulty. The detection of a problem in the text, or the experience of a sense of dissonance, is, as Witte (1985) notes, only the first step in revising. Flower et al. stress the importance of the second aspect of problem representation: the diagnosis. If the disjunction cannot be resolved in the light of new information generated which assesses the congruity of the textual gist with the writer's intention, and permits the writer to categorize the problem, then the writer will often fall back on the less effective strategies of paraphrasing or re-drafting.

Research has provided evidence that experienced and inexperienced writers, at the high school and college level, use different revision behaviours. The terms "inexperienced" and "experienced", although they are applied to a narrow age grouping of 17 to 19 years, are nonetheless problematical insofar as, in different studies, they span a large range of abilities. "Inexperienced" writers run the gamut from Pianko's college freshmen to Perl's E.S.L. level students; "experienced" writers span the range from competent high school seniors to professional writers or teachers. Bearing this operational difficulty in mind, however, one notes the
emergence of a pattern or profile. Emig (1971), Stallard (1974), Perl (1979), Sommers (1980), Pianko (1979), and Humes (1983) note that inexperienced writers revise little, focusing on superficial lexical, spelling and punctuation changes. Their view of the process of composition is that it is linear (Crowley 1977; Pianko 1979). In marked contrast, experienced writers frequently re-read large sections of their text, and make changes involving larger syntactical units (Sommers 1980; Faigley and Witte 1981; Flower and Hayes 1981).

Beach (1976) suggests that student writers at the high school level focus on the superficial aspects of their text because they have internalized a checklist approach, learned from teacher or textbook models of revision. While poor revisers in his study attacked their problems serially, the good revisers were able to view their text in the more general terms of high rhetorical goals, apparently envisioning their complete second draft even as they revised. Stallard (1974) found similar behaviour. Good writers revised more often, especially at the sentence and paragraph levels, and paused frequently to achieve a more global view of their work. Sommers (1980) and Pianko (1979) also have offered the suggestion that skilled writers characteristically pause to reflect on their existing text. Bridwell (1980), studying the transactional writing of grade twelve students, found that "...[her] data support the notion that there are developmental differences in both the tendency to revise and the ability to revise successfully."(p. 218). Other evidence however, suggests that there is no even gradient, representing the shift from surface to text-base changes, from the work of young writers to that of older writers.
The study conducted by Sommers (1980) is important because of its implications concerning the effects of graphic text on student writers' revision strategies. Groups of student and adult writers wrote three essays, each of which was twice revised. The students were apparently sensitive to lexical repetition, but not to conceptual repetition; revision, for the students, was a narrow, uncreative process of re-wording. The text seemed to absorb all the cognitive resources they were able to deploy, with the result that they were unable to re-see their work from a high-level rhetorical perspective. They revised linearly, and in contrast to the experienced writers who employed a holistic perspective and frequent re-readings, the students made no attempt to find or re-form the text's overall meaning.

Beach's (1979) study of between-draft revision by high school students also points out the difficulty student writers have in detaching themselves from their writing in order to obtain a more global critical perspective. One treatment group revised using self-rating scales to judge focus, sequence, support, quality and need for change. A second group used written teacher evaluations. The final drafts of the second group were rated significantly better in degree of clarity, fluency and support. Possibly, the teacher's evaluation was in some way more specifically directive; it is not clear whether the evaluations given by the teacher were substantive or procedural. Beach claims that the teacher's evaluation gives the writer another perspective by which he can judge the effectiveness of his writing. Some form of distancing is necessary to measure how well the intended meaning has been communicated. This perspective shift, Beach speculates, has made possible revision at a higher level.
Hull (1987), in a study of the editing processes of more and less skilled college writers, found that both groups did better on error correction when working on papers other than their own. When editing their own papers, they corrected fewer errors of convention and of meaning. Since all the papers were read silently, the apparent problem in distancing would not be completely attributable to the salience of the text. Hull speculates that these findings, like those of Bartlett (1982), might mean that the writers' awareness of their own rhetorical intentions can block error detection in some way.

Bridwell (1980) examined grade twelve students' revising strategies. Randomly selected student work was examined for revisions made during three periods: in-process first draft, between drafts, and in-process final draft. Most revisions were done in process, during the second draft stage. The recursiveness and the focus on lexical and punctuation changes echo the results of Perl and Sommers, and, in the case of the poorer writers, confirm the problem of textual saliency. The patterns of revision which appeared are perplexing. First, both the better and poorer writers, measured in terms of the quality of their final drafts, fell into two camps: those who revised extensively and those who revised little. One inference that could be drawn is that some writers carry out extensive high-level revision in their minds prior to translation. Faigley and Witte (1981) noted the same phenomenon in their study. Of more importance was the overwhelming number of positive correlations between the difficulty levels of revision conducted during the second stage with quality. Poor writers revised scarcely at all at this stage; good writers revised more, and at a higher level. Bridwell's study underlines the problem which the presence of the graphic text seems to
present to unskilled writers, and suggests the importance and potential of interdraft revision; but one wonders if the construction of the experiment might have actually inhibited text-base revision. Revision was not specifically required at any stage; students were told to make what revisions they wished directly onto their papers—perhaps a difficult task if substantive revision is to be carried out. It is also of interest that no between-draft revisions were included in the typed copy of the final draft unless they had been included in the student’s final draft. Lastly, although most revisions occurred on-line during the final draft, it is not possible, except where these revisions had been indicated in the inter-draft stage, to know when the revision was actually planned.

There are anomalies, then, in the general pattern of behaviour. In her study of grade twelve students, Bridwell (1980) noted that not all good writers revised extensively, nor did all poor writers revise little. Schwartz (1983), investigating the revision patterns of college students, found similar unexpected variations in behaviour. Faigley and Witte (1981) also noted the unpredictability of revision patterns, and suggest that perhaps some experienced writers carry out extensive revision prior to the beginning of translation. Crowhurst (1986) in a study of grade-five and grade-seven students, found, "...no clear evidence that better writers made more revisions or different kinds of revisions than average writers". (p. 223). In an attempt to explain the inconsistent revision behaviour of good writers, Applebee (1985) suggested that experienced writers internalize certain forms from which they can produce satisfactory first drafts without revising; revision is triggered, he suggests by a novel problem. Crowhurst (1986) speculates that some good students, who have learned that they can produce an adequate
paper *alla prima*, are simply unmotivated to make the effort required by revision. Studying the composing behaviours of eight experienced graduate student writers, Harris (1989) found a spectrum ranging from one-drafters to compulsive multi-drafters. The former are apparently resistant to producing a second draft, and appear to revise on-line or even before transcription; the latter seem to depend heavily on seeing what they have written. Witte (1985) reported anecdotally similar polarized behaviour. Bridwell-Bowles, Johnson and Brehe (1987), after examining experienced writers adapting to the use of a word processor, found a similar pattern, concluding that these writers fell unpredictably into pre-translation and on-line revision groups.

The apparent difficulty in drawing hard and fast conclusions about revising patterns may be due in part to the manner in which research has been carried out. Witte (1985) observed:

...the amount of re-transcription is altogether dependent on at least two factors that are commonly ignored in revision research—the nature and complexity of the writing task itself and its relationship to the quality and kind of planning and pre-textual revision that occurs (p. 261).

This notion of a pre-text or projected text, which a writer might revise more or less extensively before producing a first draft, could explain the ambiguous results of revision: fewer revisions do not necessarily result in lower quality; good writers do not necessarily revise more than unskilled writers.

Just as the revising patterns differ, so do the effects of revision. Stallard (1974), in a study of high school students, found that good writers, who made more revision changes than a control group, were also more
successful in their efforts to revise. Bamberg (1978), studying college students, also noted that good writers made more revisions, and found an overall improvement in their text. The National Assessment of Educational Progress (1977) and Bridwell (1980) noted that the effect of increased revision was apparent in the quality of good grade-twelve students' final drafts. Hillocks (1982), examined the revision practices of grade-seven and grade-eight students, and found that teacher-focused attention on pre-writing strategies resulted in more successful revision, both directly and in conjunction with teacher comments. In contrast, however, Hansen (1978) found no differences between the revised texts of college students receiving extensive revision instruction and those of students who were taught only to edit mechanical errors. Beach (1979) noted that high school students assisted by teacher evaluations revised more effectively only in the category of support. Bereiter and Scardamalia (1982) noted a tendency for revision to have a negative effect in the work of grade eight students, and Bartlett (1982) found no difference in the quality of first and second drafts of high school and elementary students. Sommers (1980) found that inexperienced writers were quite ready to revise, but were not capable of improving their texts. Calkins and Graves (1979a, 1979b), observed the types of revisions done by elementary school children and found that, given guidance, young writers are capable of extensive revision.

The differing effects of revision might be partially accounted for by researchers' differing notions of what revision is. Nold (1981) criticized the NAEP assessment on this basis, arguing that revision should not be judged simply on the basis of the raw number of alterations to a text. Faigley and Witte (1981), too, have argued that raw numbers of revisions make up too
coarse a means of viewing the process. Their taxonomy was developed to reveal the effects of revision on meaning (see appendix AA); they define successful revision in rhetorical terms: the text must be aligned with the intent and the rhetorical situation. The cognitive ability, or lack of it, to achieve this congruence of text and context is the focus of Flower's (1979) investigations. She suggests that poor revision can be accounted for in terms of an inability to switch from 'writer-based' to 'reader-based' prose. Successful revisers apparently achieve a distance from their work which results in their being able to judge their work on the basis of logic and explicit, shared language and context. Scardamalia (1977) echoes this idea; she points out that young children revise poorly precisely because of the inability to take the perspective of another mind, to anticipate, by moving away from private context and associative language, the response of a reader.

Some researchers hold that revision is a skill which some writers never master simply because of the cognitively complex activities which revision requires. Matsuhashi (1981, 1987), after studying writers' protocols, views writing as a cognitive process of extreme density; problems of translation, audience, text, intention, and memory must be synthesized along a forward moving time line. Humes (1983) also suggests that many writing processes seem to occur, at least in terms of real time, simultaneously. Nold (1981), however, makes the point that the subprocesses in her model cannot operate simultaneously; even experienced writers have a finite capacity to process data. Flower and Hayes (1981) postulate the presence of a monitor to organize and execute inter-process switching during composition; however, it would seem that the monitor can
be subject to cognitive overload in inexperienced writers (Flower et al. 1986). Beach (1976) writes that although most students probably have criteria for revising and the capacity to apply these criteria, cognitive overload prevents them from executing the task; he suggests that the sequential manner of revising employed by student writers is an attempt to reduce cognitive complexity. Scardamalia and Bereiter (1983) noted a similar effect in a study of the revision of children; the children used revising cues which enabled them to conduct revision at a local, though not a global level. The usefulness of a focusing activity was shown in a study by Wallace and Hayes (1991), in which two groups of college freshmen revised a prepared text. The treatment group, which received significantly higher quality ratings, received eight minutes of instruction on global (text-base) revision just before the assignment. The authors conclude that their treatment had a facilitating, rather than a modification role, in the revision process of the subjects. They conclude: "...we believe that most of the skills exhibited must have been present before instruction and that the effect of instruction was simply to recruit these skills for application to the immediate revision task" (p. 64).

Bereiter and Scardamalia (1982) note that to revise, writers need to operate iteratively; they must use their own output as input. However, the problem of responding to a stimulus without losing one's objective distance can be great. Working with grade-four and grade-eight students, Bereiter and Scardamalia (1987) found that the subjects "...would appear to be surprisingly capable when it comes to making evaluations of their writing" (p. 277). However the students were seldom able to go beyond the evaluative to the diagnostic and remedial phase of the experiment.
Apparently, the input from the existing graphic text tends toward dominance, especially in the work of beginning writers. In a subsequent experiment using the same compare-diagnose-operate procedural facilitation with grade-six and grade-twelve students, the researchers found that the grade-twelve subjects had been partially able to internalize the facilitative procedure, and were able to improve their texts. Perl (1979), Sommers (1980) and Faigley and Witte (1981) all observe that poor revisers are overly concerned with the graphic text. Referring to the model of text production suggested by Kintsch and van Dyck (1978), Faigley and Witte claim that poor revisers' obsession with the microstructure of the text prevents their gaining access to the macrostructure, or gist; without this perspective, revisions affecting meaning are unlikely.

Exactly why the text is a problem for writers, especially beginning writers, is not known. Perl (1981), Sommers (1980) and Faigley and Witte (1981) have noted that the process of rescanning is observable in almost all writers. In the case of inexperienced writers, concern for the graphic correctness seemed to have a negative effect on the quality of their revisions. The degree of rescanning may vary according to the written discourse mode. Britton (1975) and Matsuhashi (1983) suggest that rescanning is more necessary for the expository and argumentative modes. Such an increased demand for re-scanning, coupled with the problem of a salient graphic text, might explain the difficulties encountered by poor writers writing in these modes.

James (1987), working with community college students, applied two treatments, one of which denied the reviser access to his first draft text, the other of which permitted such access. James found that more text-base
changes occurred in the second drafts of those students who did not have access to their original text. These same students, when creating a third draft, were able to synthesize the contents of the previous two drafts, to which they were given visual access. The quality ratings of their third drafts were better than those of the students who had enjoyed continual access to a first draft. James concludes that the release from the constraints of textual salience, in students of all abilities, facilitates access to a latent capacity to revise at high levels.

Matsuhashi and Gordon (1985) conducted a related experiment on college freshmen, using three revision treatments. One group was told to revise and improve a paper; a second group was told to add five things to the essay to improve it; a third group was told to turn over their papers, to list, without viewing the original text, five things which would improve the essay, and to write out and insert the new material where needed. It is important to note that the third group was also told to indicate with a number exactly where the five additions were to be made; while no doubt intended to reduce the presence of the text, this directive could be understood as a procedural facilitation which could bias the results of the study. Of the third treatment group, only 7.5 percent made only surface changes, compared with 14.3 percent of the second group and 40 percent of the first group. In the first group, no one made only text-base revisions; in the second group, 5.7 percent made only text-base revisions; in the third group, however, a significant 34.5 percent made only text-base revisions. It would seem that the inaccessibility of the text, even though temporary, facilitated in a dramatic way the carrying out of revision at higher levels. This study did not examine the relationship of G.P.A. to revision strategy,
although random computer assignment was used to create 'typical' groups for each treatment.

Although the current model views revision as an activity which can occur at any time, it is possible that the periods immediately before and after translation provide the experienced writer with a natural stage in which to conduct a global overview and assessment of his work. The good writers in Bridwell's study made nearly thirty percent of their revisions after rereading the first day's work during the process between drafts. De Beaugrande (1984), noting that following translation, the cognitive processing load is generally lower than during translation, implies that this moment might be the best time to intervene. He uses the concept of "threshold of termination" to express the writer's apprehension of a perceived point of closure, a point at which the text may be re-examined in terms of its intended purpose and meaning, and new thresholds set. Scardamalia and Bereiter (1985) describe this resetting of thresholds as a dialectical process, an interaction between a rhetorical space that deals with the composition itself, and a substantive space dealing with the writer's beliefs and knowledge. One might hypothesize that, if the graphic text dominates the reviser's mental processes, this critical interaction could be suppressed or eliminated.

The influence of revision on the meaning of text is the subject of an important study by Faigley and Witte (1981). Revisions of eighteen writers, equally divided into inexperienced, experienced and professional groups, were analyzed. The procedures were similar to the Bridwell study in that the subjects wrote and revised over a three day span. The experimenters noted that the inexperienced writers made mostly surface changes. For the experienced and professional writers, 24 percent and 37 percent respectively
of the changes were modifications to the text-base; that is, the meaning of a section, or even of the overall paper was altered. Experienced and professional writers made more revisions of all kinds during the actual transcription of the first draft. Such behaviour supports Flower and Hayes' finding that expert writers often stop briefly to make retrospective modifications to a text while moving forward writing the text. The poor writers tended to write straight through to the end of the draft. The period between the drafts was important for all the writers in the study: most revisions of all types occurred at this time. For the beginning writers, who made fewer changes during the composing of the first draft, this revision period after translation may be critically important: if they are to generate new text, this is where they must do it. The authors concluded that successful revision results not from the raw number of changes a reviser makes, but from the degree to which the changes make the text fit the intentions and the rhetorical situation. The plaintive conclusion bears on the proposed study: "Somehow we must teach our students to distance themselves from what they have written, to get them to see it again, then revise...." (p. 411).

Studies of revision have tended to focus on the observable results of revision: the kinds of revisions carried out; the points when writers revise; the different revision behavior of writers of different abilities. However, Witte (1985) makes the point that research that limits itself to examining only changes in drafts in inherently reductionist, i.e., such research subtly implies a linear sequence. In his study on the possible relationship of topical structure and revision, Witte (1983) attempts to shed light on the causes of revision: rather than examine meaning as a result of revision, he examined
revision as a function of meaning. Using the work of the Prague school of linguists, which focuses on features above the level of the sentence, Witte examined the possibility that revision may be cued by an apprehension of the relationship between and among the sentences within whole texts. A group of eighty university students, with a broad range of writing abilities, was asked to read and revise a passage of writing. The revisions were rated for quality and analyzed for number of words, t-units, clauses, topical progressions, t-units within each type of progression. Witte concluded that revisers base their decisions on a mental construct of the discourse topic or hypertheme. Low-score revisers were apparently unable to understand the semantic relationships between the sentence topics. High-score revisers, on the other hand, achieved a coherence based on a macro-propositional perspective; they were aware of semantic relationships occurring across formal sentence boundaries. Understanding the gist, or macrostructure of a text, seems to be critical to the production of "reader-based" prose. Without this view, a reviser cannot align, or re-align, his or her text and intentions; revision will remain ambiguous or superficial.

Although the results of investigations into revision have produced a series of inconsistent and sometimes even contradictory results, after more than a decade of research, some understanding of this rather enigmatic aspect of composition has been gained. Currently, revision is viewed as a constellation of inter-related cognitive processes, operating as a global strategic act (Flower, Hayes, Carey, Schriver and Stratman 1986). Apparently achronological, revision behaviour and revision results differ from individual to individual. However, there is a tendency for poor writers to be preoccupied with surface text rather than the meaning of the text as a
whole. Lastly, there is evidence that denial of access to the graphic text makes possible, or perhaps forces, higher level revision.

Oracy and the production of written discourse

Is the oral state of mind different from the literate state of mind? Havelock (1963, 1986) argues that the adoption of the phonetic alphabet by Europe initiated fundamental changes, not just to the culture, but to the mental processes of each individual in that culture who became literate. In oral cultures, composition exists for the storage of information. Thought is converted to rhythmic talk; any new information occurs as an echo of something already said. Most importantly, speech is inseparable from the speaker. The abstraction of the written letter, that graphic symbol of an acoustic symbol, completely separate from semantic or ceremonial meaning, breaks down the tradition of poetical wholeness in favour of more distant relationships. As the written word becomes separate from its author, so does the actual content of the written discourse. Havelock (1982) speculates that:

...as separate entities, they [the thoughts in the written discourse] seem to require a separate source, not a linguistic one associated with the speaker's tongue or mouth, but a mental one of a different order located in his consciousness. To produce them, the consciousness is required to activate itself, by question, search, investigation, examination and the like (p. 233).

The associative thought of oracy is replaced by the linear logic of literacy. Recent ideas in contrastive rhetoric support Havelock's thesis. Bar Lev (1986) claims that different languages favour different rhetorical patterns. He describes modern English as hierarchical, dependent on logical constructions such as subordination. However, Havelock (1986) further notes that: "...the languages and thought forms of primary orality...lasted on
long after the invention [of the alphabet] occurred" (p. 90). Language controlled acoustically and language controlled architecturally coexisted in tension, i.e., oral and literate thought and compositional forms are not mutually exclusive; all language is a collective act aimed at making meaning.

Ong (1982) differentiates between primary orality, that untouched by the written word, and secondary orality present in a literate society, in which oral and literary devices intermingle. He analyzes texts of various periods to show that the additive, echo-based techniques peculiar to oracy yield slowly to the subordinative techniques necessary to the the linear analytic thought associated with writing. The seventeenth century is seen by Ong (1977) as a bridge period: the existential oral tradition as seen in Shakespeare and Spenser yields to the logic of Milton and Descartes. The individual, if he or she is to become literate, must pass through a transition period similar to that which the culture underwent. Watson and Olson (1987) perceive the school as an area in which the oral and the written intermingle. Oral discourse in school, often depersonalized and remote from immediate experience, is different from the oral culture of the child; it has many of the features of written discourse.

Bereiter and Scardamalia (1987) have produced a model of composition which links the cultural perspective of Havelock and Ong to the actions of the individual. They view composition as falling into one of two broad categories: knowledge-telling and knowledge-transforming (see Appendicies AB and AC). Each type is driven by different forces. The basis of knowledge-telling is the retrieval of content from memory in response to topical or genre cues. More importantly, knowledge-telling does not provide a means for finding and organizing content with the reader's
needs in mind; it operates without strategic goals, and other components of problem solving. "There is nothing in the knowledge-telling process per se that would induce the writer to formulate overall plans" (p. 358).

Knowledge-telling is a natural and efficient solution to the challenge of generating text without external support. The distinct feature of knowledge-transforming lies in a capability to formulate and solve problems. This type of composing is based on "...a two-way interaction between continuously developing knowledge and continuously developing text" (p. 12), the sort of cognitive process represented in Flower and Hayes' composing model.

Knowledge-telling is a strategy produced by an oral language production system: unable to function interactively, it falls back on whatever resources it can. In contrast, knowledge-transforming is a mark of mature literacy. It is autonomous.

Studies of writing and of speaking have tended to go their own separate ways, since linguistic studies determined that the products of speech and of writing differ: speech is viewed as social, rapid, repetitive, serial, dependent often on intonation contour or non-linguistic behaviour such as gestures; writing is seen as solitary, slow, logical, decontextualized, dependent for meaning on lexical density and syntactic complexity (Chafe 1982; Cook-Gumperz and Gumperz 1981; Tannen 1985; Horowitz and Samuels 1987). Fondacaro and Higgins (1985) have further suggested that oral and written communication emphasize different goals. In conversation, the social aspects of meaning take priority over logical or propositional aspects; the reverse occurs in writing.

Literacy succeeds oracy, and it has been proposed that the transition from the oral to the written mode should form an essential aspect of the
pedagogy of composition. Flower and Hayes (1980) use the term "writer-based prose" to characterize writing which has the idiosyncratic bias and egocentricity of speech. Bereiter and Scardamalia (1982) reinforce this claim, declaring that: "...learning to write depends on revamping the language production system so that it can function autonomously" (p. 3). In their experiments with young children's composing, they have attempted to apply various facilitative interventions, directed toward the alleviation or elimination of conversational symptoms. To deal with the same perceived problem, Graves (1978) developed a series of intermediate mechanisms, interventions to make easier the radical and complex shift from conversation to composition.

King (1978) suggests that children's speech from dialogue to monologue be studied to try to see the transitional stages in the shift from oral to written composition. Such an inquiry would be consistent with Ong's (1977,1982) theories on the impact of the written word on the noetic structures of human consciousness. Bereiter and Scardamalia (1982) argue that this shift from dialogic to monologic discourse represents a major cognitive development in the child, without which effective composition (and revision) would not be possible. Michaels and Collins (1984), observing children's oral and written reactions to a film, found that a child who relies heavily on prosodic or non-verbal signalling in oral discourse may make the transition to literacy only with difficulty. More importantly though, they found that some children's oral discourse did not depend on prosodic or paralinguistic cues for cohesion. That is, the researchers identified two distinguishable oral discourse styles, one of which was much closer to writing. Collins (1984) further notes that any developmental transition
between the two modalities does not occur predictably or linearly; the shift, he suggests, occurs in a series of variable stages, an equilibrium periodically punctuated by a sudden cognitive spurt. This change is the focus of speculation by other researchers as well. Flower (1979) writes of the critical difference between reader-based and writer-based prose as being the distinguishing feature which separates the skilled from the unskilled. The distancing which this shift makes possible, argue Faigley and Witte (1981), enables the writer to operate as reader, to identify confusing or incorrect features in his or her text. In that this reader stance makes problem recognition possible, it is the sine qua non of revision.

The classification of discourse as speech on the one hand, or writing on the other, seems, however, far too coarse a scale. Indeed, the notion of the two modalities existing in a bi-polar relationship is no longer valid. Two schools of thought have developed on the question of oral and written discourse. The rather more traditional view is expressed by Chafe and Danielewicz (1987). After studying four types of discourse produced by twenty adult subjects, in which the researchers examined lexical choices, clause construction, sentence structure, and level of vocabulary, they conclude that written language is much more complex than oral language. Nystrand (1987) argues that the functional differences between oral and written language result in qualitative differences in discourse form and organization. Horowitz and Samuels (1987) also stress the apparent differences between orality (phatic, episodic, using prosodic and paralinguistic devices, dependent on shared contexts) and literacy (employing lexical cohesion, nominalizations, anaphoric and cataphoric relations). In contrast, Halliday (1987), who also examined lexical density, number and
types of clauses, organization of complex clauses, and the use of nominals, argues that spoken and written language are complex in different ways and that there are many elements characteristic of both types. Perfetti (1987) is consistent with Halliday, affirming that the formal aspects of speech and print are different when different registers are involved, but similar when a single register is involved.

Danielewicz (1984) has proposed a model of a continuum of discourse, between the extremes of spontaneous speech and expository writing. Her view allows for more subtle classification of discourse, and is directed toward the operational features of language: each point on the continuum, she suggests, represents a linguistic form directed at a particular communication function. Goals, content and structures may require that strategies of speech and writing interpenetrate, depending on the function desired. Danielewicz cites the example of six writers, ranging from grade eight to adult, who surprisingly showed little variation in the number of structures used in both unplanned spoken and planned written work.

In 1988, Biber attempted to answer for once and for all the question of the differences between the oral and written modes. He felt that contradictory results were due to poor or simplistic research: the use of undefined terms, uncontrolled communicative tasks, focus on a few texts, genres, and linguistic features. Biber identifies six dimensions of variation among texts and examines the relations between twenty-three oral and written genres, almost a million words, with respect to these dimensions. He found: "...no difference; with respect to each dimension, written and spoken texts overlap" (p.160). He notes that there exist variations within genres and even variations on dimensions within genres; however, he claims that the text
is governed by the communicative function of the communication. Because writing tends to convey meaning through lexical density and compression, it gives the impression of being more structured than conversation. At one level, this is so; the embedding essential to writing is less common in speech; the organization of speech is apparently less regulated and complex. Beaman (1984) suggests, however, that both modalities are equally complex, that the sentence density of speech is cognitively equivalent to the lexical density of writing. Oral and written narratives, she claims, are close together on the language continuum. In this notion, she supports Halliday's (1979) thesis that spoken language is as complex as written language; her ideas give support to Biber's study. If Beaman and Biber are correct, it is possible that hearing an essay and reading the same essay may be adjacent points in the field of discourse; listening to a text may offer the benefits of re-scanning without the problem of textual saliency. Nevertheless, the exact relation of the two discourse modes has not been determined for certain. Macaulay (1990) examined syntactical differences in five genres in both oral and written modes. Her conclusion echoes Chafe: she asserts that: "...written speech [her term for writing] alone seems to favour complex structures" (p. 162). She found that texts in the two modes could be differentiated on the basis of the predominant direction of information flow, "...either back- or left-directed in the case of the written text or right-directed in the case of the oral" (p. 167).

That all language should be viewed as a synergistic unity is perhaps a useful idea. Phelps (1980) suggests that language ought to be viewed as a symbolic act, rather than as a text (the traditional view) or even as a process (the contemporary view). He defines the classroom as a domain of action
which includes reading, writing and speech. This interdependence of modalities is discussed at length by de Beaugrande (1984), who points out that children learn that, in order to do reading and spelling best, they must employ both graphic and acoustic modes. He suggests a complementary relationship between the two modalities:

Sound is more temporally oriented, and images are more spatially oriented. The acoustic modality offers a continuous representation, whereas the visual modality offers a discrete one. In exchange, the components of the visual configuration are simultaneously available, while those of the acoustic one appear in succession. Therefore, the visual knowledge guides segmentation, whereas acoustic knowledge guides sequential ordering (p. 225).

Text, says de Beaugrande (1987), has a dual nature; it is "...a linear graphic entity and a global semantic entity" (p. 22). One might speculate that the written text may help the reader to recognize surface features or form, but that a heard text may help the reader perceive the main ideas or structural form.

Bracewell, Frederiksen and Frederiksen (1982) note that the separation of production from comprehension is one feature that distinguishes written from oral, but note that comprehension and production are mixed in oral language processing of pre-literate children. Any theory of the development of literacy skills, they argue, must treat the two processes together. They see all successful communication as requiring the establishment of a common frame or structure. Conversation, like writing, exhibits a macro-structure of large, topically related units. Frederiksen, Frederiksen and Bracewell (1987), studying children's text production, note that when discourse structures are analyzed, writing and speech exhibit a
purposive series of structure building frames or conceptual structures, all subordinate to a macro-proposition or gist.

In written text, the text structure itself is the means of expressing the frame; that is, the reader uses the text structure to infer the conceptual structure envisioned by the writer. Gumperz, Kaltman and O'Connor (1984) echo the ideas of Frederiksen et al. The former use the idea of cohesion as a starting point for the comparative analysis of speech and writing. They view translation from the modality of speech to that of writing as a process of realizing through lexical complexity what would be conveyed by other means in speech. The researchers note that the key elements of the written text would also be in the spoken equivalent, and in a progressive, thematic relation to one another: the idea of gist, or frame, or conceptual structure is essential to both speech and writing. Rubin (1984), commenting on the effect upon the writer of physical separation from the reader, says that: "...written composition [must] be self-contained and autonomous...all information needed to interpret the meaning [must] be linguistically packaged" (p. 217). This package constitutes the gist or structure of the essay, and is parallel to the paralinguistic or contextual exoskeleton of conversation.

De Beaugrande (1987) concurs with the idea that the speaker/hearer constructs ideas into a coherent unity, although he states that at present there is no consensus concerning the role of visual processing of the graphic text and of aural processing for the acoustic text. Certainly, research has shown that writers attend recursively to the graphic text; apparently they are also able, by means of memory, to attend recursively to the aural trace of what they have said or heard, insofar as it is accessible in conceptual structures.
Elbow (1985) claims that writing and speech need not be seen in terms of discrete processes at all; he suggests a view similar to that of Danielewicz and Biber: that each medium draws on various mentalities, depending on how and where it is to be used. He criticizes the traditional speech/writing dichotomy on two levels. First, he says, good writing has many essential qualities which would usually be associated with speech—for example voice and involvement with the audience. More importantly, he notes that although we are in the habit of thinking of speech operating in time and writing in space, this concept is incorrect. The text as an artifact exists in space; however, it is akin to speech in that readers receive it over time.

Because language is time-bound, its meanings cannot actually enter our minds through our eyes—its meanings must detour through memory. The test of good organization in writing, as in speech, is whether it produces an experience of structure and coherence for the audience in time (p. 295).

The essential process of reading a text is more like listening than looking, in that both hearing and reading involve a limited focus, moving through time. From the perspective of comprehension, hearing a text, then, is closer than one might think to reading a text.

While written and spoken text have some common structural features, oral communication nevertheless typically relies on prosodic or paralinguistic cues for much of its semantic force and organizational coherence, and on interlocutory activity to resolve ambiguity. Lacking these non-linguistic and contextual aids, a listener is dependent on the structural cohesion of the text for whatever meaning he or she can make. A flawed text might be expected to produce in the listener a sense of something wrong, a dissonance. The work of several authors lends support to the idea that
aural cuing might stimulate or help the writer to revise his text. Gumperz et al. (1984) suggest that because much semantic information is conveyed in spoken language by paralinguistic clues, the absence of their linguistic equivalents in a written text could trigger a sense of confusion in the reader. This ambiguity, which would cause interrogation in a conversational situation, should prompt in a reader a desire for clarification. A listener to the same text might be even more tempted to revise than a reader, however, since, *qua* hearer, he or she would have to shift to a higher level rhetorical perspective, reacting to coherence and thematic structure, and would be largely unable to deal with surface textual features. Chafe (1984) and Winterowd (1975) have made observations that suggest a facilitative potential for acoustic cuing; that is, that the aural cue itself might allow the writer to process his existing text with an aim to revise. Chafe observes that, since English speakers read at double the speed at which they speak or listen, heard prose would be processed at only half the rate of read prose. This reduced speed might allow the writer to better assess the fit of the text and his or her goals. Winterowd notes that speakers of a language normally understand at a higher level than they can write, and that therefore it makes sense to have them criticize first in an oral/aural mode. De Beaugrande (1987) makes the point that the composition process, with all its sub-processes, is extremely difficult to alter once it has become routine. "...the use of aural stimulus might have a supplementary initial benefit of breaking up habitual composing patterns" (p. 25).

There is anecdotal evidence that the use of the acoustic mode is a valuable aid to criticism and composition, and therefore potentially to revision. Professional writers have used the technique of aural cues: The
Paris Review gives the example of Truman Capote who always reads his first draft to a group of friends in order to receive their criticism. Woodson (1985) has demonstrated that dialogic prompts aided beginning oral-based writers to produce monologic language patterns. Lewis (1981), describing the Nairobi College writing programme, which focuses on a specific group of unskilled writers, students who have been unsuccessful because of their use of vernacular black English, says that the revision process is always initiated by having the student read his paper to the class, which then reacts critically. Naturally, the peer reaction prompts the revision by the writer; however, what is important is that the initial criticism by the peer group is stimulated by an aural presentation of the text. The usefulness of an aural cue in a collaborative pedagogy was shown by Clifford (1981), who used small group response to a read draft as an essential part of his decentralized program. Yet another variation on the use of the oral/aural mode as a revision cue is the peer criticism as used in the independent writing group. Gere and Stevens (1985), reporting on a study of one such group, specify the procedures to be used: the writer reads his work twice to his listeners, who have no manuscript before them. No note taking is permitted during the first reading. The oral response of the group to this aural stimulus serves an essential purpose, according to the authors:

...[the language] tells the writer how the reader/listener makes meaning with what has been written....The [response] language of these writing groups is sharply focused on the stimulus of the text....(p. 97).

As with the Nairobi Program, the initiating act which precipitates the critical response is a form of acoustic cue. An interesting feature of these uses of the aural mode is that they are apparently not subject to constraints imposed
by age, ability or number. While it is true that in no case is the listener
listening to his own text, one might expect that a writer, on hearing his own
work, would show some of the critical ability that he would display on
listening to the composition of another. Freedman (1987), studying peer
response groups in grade nine classes, found that subjects who read their
work aloud spontaneously criticized their work, even though they had been
explicitly asked not to do so. The supervising instructor commented that: "I
want kids to hear their own writing. Other kids' suggestions are an added
benefit, but I want them to hear their own work, critically" (p. 103).

Some degree of independence of oral and reading skills is implied in
the work of Torrance and Olson (1984). Using a small sample on a narrow
range of oral tasks, they noted that the initiation and maintenance of
discourse topics in conversation is not related to reading skill. This result
suggests that in the case of a poor reader, whose level of reading ability
might well inhibit effective revision, there exists a cognitive capacity to
comprehend and potentially to respond to higher level rhetorical problems.
This notion that every speaker of the language possesses a cognitive ability
which he or she is prevented from fully exploiting has been the subject of
anecdotal comment by several writers. Perl (1979) and Sommers (1980)
comment on the multiplicity of ideas held, but not really expressed, by their
unskilled writers. Judy (1976) analyzed two examples of very poor student
writing to show that beneath a barely literate veneer, there lay a substratum
of thought which was the core of a good response to the topic. Articulation
and coherence, not ideas, were lacking.

Flower and Hayes (1980, 1981a, 1981b) have drawn on their analyses
of composing aloud protocols of experienced and novice writers to produce
a model of writing as a constellation of cognitive processes. Critical to the elaborated revision model of Flower, Hayes, Carey, Schriver and Stratman (1986) is the notion of problem representation. While some of the information writers need may exist in the form of stored problem representations, many rhetorical problems require a unique representation. The authors infer from the protocols that writers construct a progressive representation of their rhetorical goals--audience, voice, meaning and style--as they write; that is to say, evaluation occurs almost continuously. Revision, the authors hypothesize,

...is a process that not only draws on the writer's knowledge, but actively generates new knowledge. Its two major processes, evaluation and strategy selection, work in an active interplay with three kinds of knowledge: the goals a writer has (and may modify as a result of evaluation); the problem representation the writer creates during revision; and the strategies he or she can bring to bear (p. 21).

Evaluation is potentially continuous; in fact it is continual, since it is a sub-process of the three main writing processes to which the monitor directs conscious attention. After extended composing episodes, writers evaluate their texts and attempt to create representations of any problems discovered. Despite being just as concerned with text, and almost as concerned with meaning, as experienced writers, novice writers have difficulty in problem formulation. This difficulty may take several forms: inability to detect problems; inability to diagnose; or the selection of an inappropriate revision strategy. The authors believe that the root of the difficulty lies in the creation of a representation or gist of the text, and that as he or she reads the text, the reviser must construct a plan so as to compare his or her intentions with the existing text. If the notion of structural coherence or gist applies
equally to oral and written work, then novice writers may have a latent
capacity for revision to which they cannot gain access. Perhaps reduction of
textual saliency by replacing the graphic cue with an aural one would enable
these writers to better define consciously their rhetorical problem.

Sigel and McGillicuddy-Delisi (1984) point to the link between verbal
teaching strategies and the development of children's representational
abilities and intellectual skills. In a study of pre-school children, the
researchers controlled parental verbal behaviour at three distancing levels,
during the completion of two tasks. It was found that the verbal interactions
had the potential to force the child to distance himself from the ongoing,
observable field. Distancing in the child was activated by the
representational content, not the form, of the verbalizations. Reciprocally,
high-level distancing strategies encouraged effective representation of the
child's experiences. In an interesting parallel to the problem of textual
saliency, it was found that over-reliance on the form of the message tended
to obscure the content.

The reaction of the reader/listener to written and oral discourse is
important in understanding certain similarities between the two modalities.
In an experiment to test memory after reading and listening, Sachs (1974)
had her college-level subjects listen to passages, then, after a brief
interruption, listen to a series of sentences. The subjects had to judge
whether or not the sentences were different from the ones they had heard in
the passages, and to categorize the changes. A second treatment group went
through a parallel procedure in which the passages and sentences were read
rather than heard. Sachs found that, although readers tended to remember
more of the surface structure features, formal and lexical changes were less
accurately perceived in both modalities than were semantic changes. These latter changes of meaning were detected at the same level (80 percent) in both the auditory and visual treatments. It was inferred that, regardless of the modality of the input, only an abstract representation of sentences is retained after a few seconds. Since the exact wording of sentences is not stored in long-term memory, superficial editing becomes an impossibility without the presence of the text. Sachs noted that memory was generally superior in the auditory mode, and suggested that there might exist a special store for acoustic/phonetic input.

Other experimenters have used, as did Sachs, reading versus listening as a variable in experimental design; their results indicate that orality has strong links to memory. Horowitz and Berkowitz (1967) experimented with recall protocols of adult listeners and readers. One treatment group acquired a text by reading; a second group acquired the same text by listening. The researchers found that the protocols of listeners were more accurate and contained more text units than did the protocols of readers. Subjects who listened before repeating a story produced a larger corpus, more ideas, fewer omissions of important units, and a stylistically superior reproduction. They also produced more distortions than those who read. The researchers note that: "...it seems clear that these differences [between speech and writing] must be largely attributable to the nature of the thought process _in alliance_ with the mode, rather than to the nature of the mode, itself "(p. 214). Berger and Perfetti (1977) performed a similar recall experiment on skilled and unskilled readers at the grade-five level. For both types of readers, oral presentation resulted in better recall than written presentation. Skilled readers achieved higher scores than the unskilled
readers, suggesting that reading and listening comprehension may be closely related. Smiley, Oakley, Worthen, Campione and Brown (1977) working with grade-seven subjects, obtained similar findings. Good readers recalled a greater proportion of the stories they read and heard than did poor readers. Interestingly, the good readers tended to recall a unit if it was important to the story's structure, whereas the poor readers' protocols were not as closely liked to the structure.

Hildyard and Olson (1982) continued the examination of comprehension and memory in the two modalities. Treatment groups in both grade three and grade five were given narratives accompanied by four types of statements. The statements concerned implicit and explicit structure, and implicit and explicit detail. The researchers hypothesized that the listeners would attempt to build a representation based on structural information, and that the readers, perhaps because of the saliency of the graphic text, would pay more attention to incidental aspects. It was indeed found that listeners were slightly better at structural recall, and markedly worse at incidental recall. Also, Hildyard and Olson found that the comprehension and memory of high reading level students were superior to those of average and low-level readers in both modalities. This suggests that because of a broad cognitive superiority, and a concomitant reduction of cognitive overload, good students may be more capable of exploiting acoustic input, or indeed any input. There was also in this experiment evidence of a developmental aspect: the grade-five students performed better at the recall of implicit detail. The experimenters concluded that listeners react to thematic or central aspects of a story, whereas reading distributes memory more broadly across the written textual representation.
Marshall and Gluck (1979) inquired into the relationship of the structure of the text and the recall of information from the text. Two groups, one from a community college, the other from a private university, were tested for the comprehension of written discourse. The researchers found that the more explicit the information, the better it was recalled. Also, when the reading level and organization of the text were manipulated to make the text less clear, less able students had more difficulty with recall. Apparently, badly written text causes confusion and dissonance in the reader. It seems possible that this state of imperfect recollection could be the springboard for high-level revision. Also important is the fact that the comprehension model that Marshall and Gluck proposed does not differentiate between graphic and acoustic input.

The role of memory as an aspect of revision has seldom been investigated, though it seems clear that much of a draft is available for recall and revision. Garrett-Petts (1981) found that college students were able to revise drafts from memory and were able to add new material to these revisions. James (1987) made similar findings; his college students produced higher quality revisions when deprived of the stimulus of their first draft.

Just how the cognitive processes of speech and writing are connected is not clear. Perfetti (1987), discussing the acquisition of literacy, proposes a model of shifting asymmetries to illustrate the change from oracy to literacy (see appendix AD). He suggests:

...any two interrelated systems are unequal in their mutual interdependence. One system is psychologically primary and the other is psychologically secondary. The system that is secondary uses components of the system that is primary (p. 356).
Since for children and typical adults, speech is psychologically primary, their writing and reading is to a greater or lesser degree dependent on their oral and aural capacity. That such capacity can comprise a powerful resource is suggested by several researchers. Elbow (1987), writing on the problem of audience, claims that if students relax, they can "...effortlessly call on social discourse skills of immense sophistication" (p. 65). Witte (1985) suggests that all writers, beginners and experienced, have access to a variety of schemata. He surmises that people normally acquire these plans as users of oral, and later written, language. Most importantly, he believes that these structures "...can be used either as organizing principles in memory or as organizing principles during text production and comprehension" (p. 275).

In summary, the research of the past fifteen years has begun to provide a conceptual framework for the investigation of revision. It has been found that poor or beginning writers have characteristic revision profiles or behaviours which differ from those of experienced writers. The former tend to revise linearly, focusing on superficial errors; the latter tend to carry out higher level revisions: reforming, reorienting, reorganizing, redrafting (Stallard 1974; Beach 1979; Pianko 1979; Sommers 1980; Bridwell 1980; Faigley and Witte 1981; Flower and Hayes 1981). Just why beginning writers find revision to be difficult is not completely known; however, certain researchers (Beach 1979; Sommers 1980) have theorized that the presence of the graphic text itself creates a cognitive inhibition which prevents poor writers from deploying appropriate organizational strategies. Experimental research by Matsuhashi and Gordon (1985) and
James (1987) confirmed the suggestion that the absence of the text might facilitate higher level revision.

Faigley and Witte (1981), and Witte (1983) focused on textual meaning as a stimulus for revision. This concern for meaning was further elaborated by Flower, Hayes, Carey, Schriver and Stratman (1986) in their cognitive model of revision. The experimental and theoretical work of these researchers suggest that effective revision requires a global perspective of the text, i.e., a knowledge of the gist of the text. The challenge, then, is to make the beginning writer aware of this gist, a task made all the more difficult since the presence of the written text seems to act as a barrier to the novice's ability to perceive the hypertheme. The present study hypothesizes that a writer, by virtue of his oracy, possesses the cognitive organizational tools necessary to construct the gist of a text.

Studies of the relationship between oral and written language offer support for the idea that oral and written language are not mutually exclusive, but rather are complementary and similar. Therefore, it seems possible that knowledge of the one modality might serve to facilitate expression in the other. Halliday (1979), Danielewicz (1984), Elbow (1985) and Biber (1988) have produced an integrated vision of language in which differences are due not to modality, but to rhetorical function. Fredriksen, Fredriksen and Bracewell (1987) found that oral discourse, like written discourse, was built on a series of conceptual frames, subordinate to a macrostructure or gist. The work of Horowitz and Berkowitz (1967), Berger and Perfetti (1977), Smiley, Oakley, Worthen, Campione and Brown (1977), Hildyard and Olson (1982) and Torrance and Olsen (1984) suggest that the oral modality is superior to the written modality for the recall of the
structural elements of a text, i.e., its gist. Perfetti (1987) uses the notion of psychological primacy to theorize that a student's acquisition of the elements of one system (reading and writing) is dependent on the internalized elements of a previously learned system (listening and speech).

Vygotsky (1962) claims that the writer must construct an abstract representation of the audience, that he or she must in a sense be the audience. In the present study, it was hoped that by being placed in the position of listeners, that is, by hearing their own texts, the inexperienced writers would experience the feeling of being both senders and receivers of the communication. Each writer would be his own audience. It was hypothesized that, as listeners, the subjects would be able to utilize their latent capacity, a function of their oracy, for diagnosis and substantive revision. Perhaps Elbow (1985) best summarizes the potential for employing oracy to increase literacy:

Teachers and researchers sometimes describe the weakness of certain student writing as stemming from an inability to move past oral language strategies and a dependence on local audience and context. But in reality those pieces of writing should be given the opposite diagnosis: the student has drifted off into writing to no one in particular. Often the student need only be encouraged to use more of the strategies of oral discourse and the discourse snaps back into good focus, and along with it usually comes much more clarity and even better thinking (p. 292).
CHAPTER 3 PROCEDURES

In this chapter an explanation will be given of the methods used in the study. Such methods were directed at producing answers to the research questions posed in chapter one, and discussed in chapter two against the background of related research.

Pilot Study

The original impetus for this research arose from an observation made in a case study conducted by the researcher. The subject of the study, on hearing her own text read back to her in the absence of her written text, suggested a series of substantive revisions, both for an expository composition and for a narrative. The literature reviewed in chapter two does indeed suggest that level one and level two revision, that is, operations resulting in a meaning change at either the microtextual or macrotextual level, would be likely to occur both as a result of acoustic cuing and as a result of the absence of the printed text. Before proceeding to a full-scale study of the effects of an aural cue, however, it was decided to conduct a pilot study of a single class. In addition to confirming the general thrust of the full-scale study, the pilot study served four valuable purposes. First, it enabled the researcher to finalize and modify the procedures required for the study; also, it gave the instructors who were involved in the conduct of the experiment an opportunity to become familiar with the logistical procedures and method of the study; additionally, it provided a set of drafts which were used for rater training; lastly, it provided material for the application and evaluation of the modified revision taxonomy used in the full-scale project.
Before the pilot and the full-scale study could be begun, appropriate documentation, describing the design of the experiment and outlining the manner in which permission of parents and guardians would be obtained, was submitted to and approved by the University of British Columbia Behavioural Sciences Screening Committee For Research and Other Studies Involving Human Subjects. Additionally, formal written permission to perform the experiment was obtained from the principal of the school involved and from the district superintendent. Discussions within the English Department at the school were initiated; the department unanimously agreed to support the research.

The school in which the experiment took place has a three-tiered composition program; every incoming grade-eleven student enrolls in one of the following: the standard composition course, the advanced composition course, or the remedial composition course. Enrollment in the remedial course occurs as a result of counselling; however, the decision of whether to enroll in the standard or the advanced composition course is left to the students. Most, but not all, choose a section suited to their writing ability.

The pilot class was randomly selected from among the standard grade-eleven composition sections in the school (n=25). The students in the class were randomly divided into three groups, corresponding to the three treatments, and were asked to write an in-class essay on the topic developed by the teachers involved in the study (see instrumentation). Also, the students were asked to evaluate their work on a one to six scale (see Appendix Q). Three days after completing the essay, each student received written instructions for one of the three treatments. During the three-day interval, the first drafts of the third treatment group had been tape-recorded by the researcher and an appropriate number of listening posts had been set up in the
classroom prior to the first revision period. The students had not been told that they would have an opportunity to revise, but at the beginning of the first revision period, they were told that their revised drafts would count for fifty percent of the mark for the assignment. It was hoped that this division of marks would encourage those students who would respond well to a second chance, as well as sufficiently motivate those writers who might have been happy to stick with what to them seemed a satisfactory first draft. The instructor's role was minimal: firstly, to clarify any confusing points in the instructions to the students; secondly, to ensure that the procedures were carried out in the manner prescribed; thirdly, and importantly, to make the revision period seem a logical and normal extension of the work already done by the students, i.e., their first drafts. The treatments for the three groups were as follows:

1. Group one had its papers returned upside down and unmarked. The students were asked to turn over their papers and to read the instructions printed on the cover sheet. These instructions asked the students to reread their essays, to list on a separate paper provided five things that seemed wrong or lacking in the first draft, to write beside these diagnoses the means by which the student thought improvement might be carried out, and finally, to produce a second draft.

2. Group two had its papers returned upside down and unmarked. The students were asked to turn over their papers and to read the instructions printed on the cover sheet. These instructions requested the students to reread their essays, to list on a separate paper provided five things that seemed wrong or lacking in the first draft, to write beside these diagnoses the means by which the student thought improvement might be carried out. The first drafts of treatment group two were then collected and the students were requested to
write a second draft. Unlike the subjects of treatment group one, the subjects of treatment group two, after the diagnosis part of the session, did not have the benefit of their first draft to refer to.

3. Each student in group three was asked to move to the listening post bearing his or her name, where a printed instruction sheet would be found. The instructions asked each student to listen to the recording of his or her essay, more than once if the student wished, to list on a separate sheet provided five things wrong or lacking in the first draft, to write beside these diagnoses the means by which the student thought improvement might be carried out, and to produce a second draft. Unlike those students in treatment group two, the subjects of treatment group three did not see their first draft at all during the first revision session.

At the conclusion of the first revision period, all students were asked to evaluate their work, as they had in the first session. The evaluations, the diagnosis/correction sheets and the revised drafts were collected and coded for author, teacher, class and session by the researcher.

Three days after the first revision period, the subjects underwent the second revision period. Each student was given back his or her first and second drafts, unmarked, and asked to produce a third draft. The instructor explained that he or she was pleased with the revision done so far, but that more time and effort should produce a much better piece of writing the students would be proud of. The students were told that because there would be three drafts, the grading had been changed to 30 percent, 30 percent and 40 percent respectively for the first, second and third drafts. Ten minutes before the end of the period, the students were asked to evaluate their work, as they had previously, and to complete the writing apprehension and revision questionnaires. At the conclusion of the class, the evaluations, the three
drafts, and the questionnaires were collected by the researcher and coded for author, teacher, class and session. Complete data sets for seventeen of the twenty-five subjects in the pilot study were assembled, consisting of three drafts, three evaluations, two questionnaires and one diagnosis/correction sheet for each subject.

Treatment one represented the traditional or conventional stimulus for revision, i.e., the student was asked to modify an original draft which he or she retained during the revision process. The purpose of treatment two was to investigate whether, as James (1987) and Matsuhashi and Gordon (1985) found, the presence of the text itself tends to become a barrier to substantive revision. Treatment three was an attempt to suppress completely the inhibiting presence of the graphic text during the first revision session, and to allow the subjects complete access to their oral/aural resources. Treatments two and three were similar insofar as the first draft text was not present during the actual composition of the second draft; they differ in that the review of the first draft prior to revision was visual in treatment two, aural in treatment three.

Following the third revision period, a random sample of twenty compositions from the pilot study was analyzed in two ways. The first analysis involved the use of a simplified three-level revision taxonomy based on that developed by Faigley and Witte (1981). Level one revision corresponds to a change in the macrostructure of the text. Since part of the rationale for the acoustic cuing was based on the apprehension of gist, it was essential to use such a category. Level two revision represents a less radical revision operation, but nonetheless one which causes a meaning change within the microstructure of the text. These two levels correspond to Faigley and Witte's two categories of text-based changes. For the purposes of this study,
Faigley and Witte's two categories of surface changes—formal changes and meaning-preserving changes—have been combined into one category: level three. The two types of surface change are responses to different forces: one, the learned rules of grammar, spelling and syntax; the other, perhaps a more vague semantic or aesthetic impulse. Neither of the level three changes represents a modification of the meaning of the text. Faigley and Witte's categories of revision operation—addition, deletion, substitution, permutation, distribution and consolidation—were retained to describe the range of revision behaviours observed in the pilot study. In the second stage of analysis, the drafts were also examined for topical progressions as outlined in Witte's (1983) investigative study. These analyses were performed by the researcher and another instructor, and their objective was to determine the workability of the classification systems intended for use in the full-scale project.

A second random group of twenty drafts was holistically evaluated for overall quality by the researcher and another instructor, not involved with any of the composition classes in the experiment, using the six point scale employed in marking the compositions on the Ministry English 12 exam (see Appendix AF).

Modifications Stemming from the Pilot Project

Discussions with the instructor who had supervised the pilot class and with the instructor who had assisted with marking identified several problems which resulted in modifications being made to the research plan before the full-scale project was begun.
1. Logistical difficulties with treatment group three

Two problems arose concerning the application of treatment three. First, obtaining and setting up sufficient tape recorders and listening posts proved difficult, though not impossible. Nevertheless, there remained the possibility that on the day of the first revision session, there might not be sufficient machines for treatment group three. Secondly, the last minute setting up of some of the machines, and the necessity of the students' moving from their normal seats to a seat at the back or side of the room, used some of the time available for the revision. The teacher of the pilot class suggested that students be asked to bring to the first revision session personal stereos with headsets--the Walkman type of cassette recorder. This proved to be an elegant solution, eliminating both time-consuming set-up and movement of students.

2. Problem of student attitudes

The subjects of the pilot class exhibited certain attitudes which were a cause for concern. They were not eager to revise, even given the 50-50 division of marks for the first two drafts, and the 30-30-40 division for the three drafts. In the opinion of the instructor supervising the pilot class, this reticence arose from the students' concept of revision: they could not understand why a simple editing process should require so much additional effort and time. The possibility of an intervention before the experiment proper, perhaps consisting of a two period exploration of the possibilities of revision, was rejected, since it would confound the experiment by adding yet another treatment, one very much subject to influence by the instructors involved. The impression of those instructors involved in the experiment was that this view of revision was widely held by the students, and would be
difficult to modify quickly. In the end, since the students had seemed reluctant to revise, it was decided to try to increase their motivation by increasing the potential reward for spending time on revision. In the full scale study, the announced weighting of the draft marks would be altered to 20-80 and 15-25-60 for the two revision sessions.

An interesting conflict arose in the first revision session. On the one hand, the subjects were somewhat resistant to the idea of producing a second draft, rather than simply cosmetically modifying their first draft. Nevertheless, these same students, once they began their revisions, found that they lacked sufficient time to complete the redrafting. Many asked permission to complete their second and third drafts at home. The students generally were quite unused to writing in a demand situation, in which composition must be done within a set time. Clearly, there was a danger that the pressure of writing under the constraints of time could adversely affect the quality of the revisions; however, just as clearly, it was impossible to give up control of the variables of time and venue. It was decided that two steps would be taken: everything possible would be done to increase the efficiency of the first revision session and increase the actual time available for redrafting. First drafts, written or recorded, and instructions would be waiting at the students' desks, so that the session could begin as soon as the recorders were distributed. Secondly, the students would be advised of the time every fifteen minutes.

3. Difficulties with evaluation

The six point scale used for marking Ministry English 12 compositions was found to be too coarse for the evaluation of the work of beginning grade-eleven students; almost all the drafts evaluated fell into the second and third
categories. In order to achieve a greater range of distribution, the researcher and the instructor who had assisted in the quality evaluations modified the six-point scale. The changes consisted of two more levels, which were added to the lower half of the scale. The researcher and another instructor holistically marked a second random sample of twenty papers using the revised eight-point scale (see Appendix AG). The results were satisfactory in that the marks were distributed over seven of the eight levels, though concentrated in levels two through five. The Pearson correlation for reliability between the raters was 0.79.

Faigley and Witte's revision taxonomy, though comprehensive, seemed to the researcher to be at worst, difficult and at best, extremely time-consuming to apply. Therefore, the researcher and another instructor attempted to analyze a sample of the drafts using a simplified three-level taxonomy. Assigning changes to levels one and three did not prove difficult. Changes which altered the gist of the piece, which would cause a change to occur in a précis, were quite apparent. Similarly, superficial changes were easily identified. The difficulty arose in deciding whether or not a change constituted a meaning change at the microstructure level, i.e., whether it belonged in level two or three. Certainly, there is a sense in which any substitution of a word or modification of a structure affects meaning; one thing is indeed not another. Yet both markers had the feeling that many changes, often rephrasings or changes in vocabulary, were written not so much to alter meaning (though arguably they did) but to make meaning more precise or to alter the register of the paper. The markers often found themselves making the decision based on an intuitive apprehension of the intent of the writer. While subjective, this process proved to be at least workable. On a random sample of twenty papers, the raters achieved a
correlation of 0.83. It was therefore decided to proceed with this analysis in the full-scale study. Furthermore, it was found that Faigley and Witte's revision operation categories, though specifying the nature of the evidence of individual revision operations, were not of use in assigning a particular change to a specific level. Since the object of the analysis was not a detailed analysis of the revisions executed in each paper, but rather the identification of the levels of revision, it was decided not to use the operation categories in the full-scale study. It was felt that once the raters had discussed the criteria for the three revision levels, marking should proceed using the three-level taxonomy to characterize changes, subject to an inter-rater check which would be carried out to evaluate the consistency of the classification.

Selection of Subjects
The subjects were grade-eleven students enrolled in the standard and advanced composition courses given to incoming students in a suburban secondary school. In this school, the required composition component of English 11 is offered as a distinct quarter course of approximately fifty hours' instruction time. Standard and advanced courses are offered, each counting equally as the English 11 composition component. The higher level course is suggested for students intending to pursue post-secondary education; a minimum grade of C+ in English 10 is recommended for those taking the advanced course. The lower-level course places considerably less emphasis on argumentative and expository writing. There is also offered each year a section of remedial English--Communications 11; no subjects were drawn from this third tier.

In the first quarter of 1990-91, there were five sections of the standard course and two sections of the advanced course--a total of 187 students. One
standard section of twenty-five students was used for the pilot study. In
previous years, the students had been assigned to their classes by computer.
However, in the year of this study, the students themselves selected their
instructors through an arena scheduling process, eliminating the randomness
of computer assignment. Therefore, it was not possible to assign the
treatments by class. Random sampling was achieved by the use of a random
number table: students within each class were assigned to one of the three
treatment groups, resulting in approximately equal representation of each
group in each composition section. The numbers for treatment groups one to
three were 55, 53, and 54 respectively.

The final group sizes, after subtracting the pilot group and incomplete
data sets were 34, 34 and 36. Attrition occurred almost equally in all three
treatment groups. However, because of an unexpected absence on the part of
a supervising teacher, the third writing session was improperly administered
to one class. The data sets for this class were removed from the study.
Unfortunately, the class concerned was the larger of two advanced
composition classes offered in that quarter. Its removal, combined with a high
attrition rate in the second advanced composition class, left only eleven
"advanced" writers in the study. As previously noted, the distinction between
the two levels of composition in the school is rather blurred, as the students
are not assigned to the courses. Many students whose main interests are in the
sciences for example, opt for the less challenging course, since the mark
earned will almost certainly be higher than if they had taken the more difficult
course.
Treatments

The treatments remained essentially as they were in the pilot study, subject to the modifications discussed above. Depending on the school timetable, the second session followed between three and five days of the first session; the third session occurred either three or four days after the second session. As in the pilot study, the activities in each session took place during the regular 75 minute period allotted for each course in the school timetable.

**Treatment 1**

Session 1: Students were given written instructions (see Appendix R) to produce in class an expository essay on a topic not previously announced, but generally familiar to all. Near the end of the period they were asked to reread their papers and to rate them using the scale on the sheet provided (see Appendix Q).

Session 2: After reading their first drafts, students were asked to list on the sheet provided them five areas of weakness in their essays, to suggest how the perceived weaknesses could be rectified, and to produce in class a second draft. Near the end of the period they were asked to reread their second drafts and to rate them using the scale provided.

Session 3: Students received back both their drafts. They were asked to reread these and to produce a third draft. As in sessions 1 and 2, they were asked to evaluate the draft near the end of the period. Additionally, they were asked to complete the Writing Apprehension and Revision Questionnaires (see Appendix T) during the last ten minutes of the period.

**Treatment 2**

Session 1: As in treatment one.
Session 2: After reading their first drafts, students were asked to list on the sheet provided them five areas of weakness in their essays, and to suggest how the perceived weaknesses could be rectified. At this point their first drafts were collected, and the students were asked to produce a second draft. Near the end of the period they were asked to reread their second drafts and to rate them using the scale provided.

Session 3: As in treatment one.

**Treatment 3**

Session 1: As in treatment one.

Session 2: After listening to a recording of their first drafts, students were asked to list on the sheet provided them five areas of weakness in their essays, to suggest how the perceived weaknesses could be rectified, and to produce a second draft. Near the end of the period they were asked to reread their second drafts and to rate them using the scale provided.

Session 3: As in treatment one.

**Instrumentation**

*Writing assignment*

Hillock's (1986) meta-analysis of composition research indicates that variations in the framing of topics do not result in significant differences in product quality. Nevertheless, it seemed important to reduce the possible influence of this variable by the use of a single topic. As the study involved a comparison of students' revision under different treatment conditions, it was logical that all treatment groups should respond to a topic of the same difficulty and rhetorical context.

Since all composition students in the school must write a proficiency test in the form of an in-class essay at the conclusion of the quarter, the
instructors involved were not adverse to the use of a topic they had not selected, nor the demand nature of the assignment. Content validity was not a concern for the instructors, there being no literary core for the composition courses; a topic was sought which reflected some aspect of the school or the community familiar to the students. Nevertheless, agreement on the framing of the topic required considerable discussion, since there existed a philosophical split within the English department between those wishing to see more and those wishing to see less expository writing. Also problematical was the question of pre-writing. Clearly the influence of the instructor could be greatly increased if pre-writing activities were carried out; yet to forego the pre-writing stage of composing was anathema to some instructors. Consensus was eventually reached on a general topic—ecology—with which all students had some degree of familiarity, and the assignment was couched in terms which, though theoretically allowing for a narrative response, in fact produced only expository or argumentative essays. The pre-writing stimulus took the form of five statements which appeared on the assignment sheet (see Appendix R).

**Writing ability**

Academic ability potentially influences almost any written product, and ideally, a testing instrument should have been administered to each of the participating subjects. However, since the composition courses lasted for only fifty-two and a half hours in that quarter, several instructors were opposed to devoting more than three classes to the research project. Furthermore, it was hoped that the experiment would cause as little disruption as possible in the regular routine of the classes. Therefore, as a measure of individual scholastic ability, the students' grade point average for grade ten was calculated. The marks for English, social studies, modern language, mathematics, and science
were used, and the G.P.A. was calculated on a five point scale: A=5; B=4; C+=3; C=2; P=1. A modified G.P.A., using only the marks for English and social studies, was also calculated, also on a five point scale. These two courses were chosen on the assumption that most of the formal writing done by a student would take place in these two areas.

Writing apprehension

General academic ability is one thing; attitude towards writing is another. Those who find writing difficult are caught in a psychological loop: the discomfort and discouragement which accompanies the unpleasant task creates anxiety, which in turn functions as a barrier to successful communication. Daly and Millar (1975) developed an instrument to distinguish high anxiety writers from low anxiety writers: the Writing Apprehension Inventory. The W.A.I. consists of twenty-six short statements about writing, to which the respondent is asked to react, using a five point Likert type scale ranging from "strongly agree" to "strongly disagree". This study used this instrument to assess the writing anxiety of the subjects, in order to see whether some students might have been unable to revise well because they were inhibited, not by the treatment, but by their own apprehension.

Daly and Miller's W.A.I. instrument underwent considerable development prior to publication. From the original sixty-three questions which initially comprised the instrument, twenty-six were chosen as sufficiently reliable: the test-retest reliability over a week was .923 (Daly and Miller, p. 245). It was therefore anticipated that a high degree of reliability would occur in the W.A.I. survey, even though it had originally been developed for students of junior college age.
In addition to the face validity which exists in the instrument items, a secondary study (Daly and McCroskey 1975) offered some evidence of predictive validity for the instrument as a whole. It was found that there was a significant effect for writing apprehension on perceived communication requirements; i.e., subjects high in anxiety saw their occupations as having significantly less written communication requirements than did those subjects of moderate or low anxiety.

The results of the survey were analyzed, using the LERTAP program through the University of British Columbia Computing Centre. As expected, a high degree of reliability was obtained. The correlations of each item with the other twenty-five items ranged from a high of .661 to a low of .263. The Hoyt estimate of reliability was .92 (see Appendix D), therefore no modifications were made to the questionnaire.

Attitude Toward Revision

As discussed in chapter two, the revision behaviour profile of a skilled writer differs markedly from that of an unskilled writer: the former tends to see revision an opportunity to re-work, re-order and even re-direct a piece of writing; the latter tends to restrict revision to superficial editing. The two behaviour models presumably arise from a number of sources. The individual's concept of the purpose of revision, motivation, past success both in writing in general and in revising of drafts, confidence in his or her ability to achieve a goal through revision all intertwine to produce an attitude toward the re-examination of a previously created text. For all writers, then, a mature concept of revision is a necessary part of the ability to revise effectively, and therefore communicate well. Put another way, one might expect the ability to revise and the attitude toward revision to be positively correlated.
It was decided to examine the interplay among treatment, quality of revised drafts, actual revision behaviour, and attitude toward revision. In order to gauge the subjects' attitudes toward revision, a questionnaire, based on James (1987) but adapted to the high-school setting, was administered to the students at the conclusion of the second revision session. The revision questionnaire (see Appendix T) used the same five point Likert type scale as the Writing Apprehension Inventory, with extremes of "strongly agree"(1) and "strongly disagree".

The Revision Questionnaire used by the researcher did not undergo the development that the WAI instrument had undergone. The thirty items focused on the subjects' attitude toward writing in general and expository writing in particular, attitude toward and manner of revision, sources of help in revision and specific difficulties in revision. The instrument items seemed to represent the construct which they were attempting to assess. In sum, the researcher relied on face validity of the instrument.

The data from the questionnaire were subjected to the LERTAP program at the University of British Columbia Computing Centre in order to estimate the reliability of the instrument. The inter-question correlation ranged from a low of .058 to a high of .493. The Hoyt reliability figure was .82. There were five items with correlations below .2:

- Item 8: I like to write stories or poems. (.058)
- Item 10: I enjoy reading books. (.164)
- Item 13: I think about what I am going to write for a long time before I start to write. (.105)
- Item 18: I only revise things that I write for English classes. (.188)
- Item 24: Sometimes, my revision is very different from my first draft. (.109)
Each of these statements had the potential for eliciting a broad range of replies. Item 8: Those students who strongly agreed with item 8 might dislike transactional writing, or even imaginative writing if required in the context of the school. Much imaginative writing seems to have a personal talismanic quality for the author and tends not to be revised. Expressed love of the language might, but also might not indicate a student disposed to revise extensively. Item 10: This statement is similarly ambivalent. The literature notes that the relationship between reading and writing is far from clear: good readers are not necessarily good writers, and vice versa (Belanger 1987). Item 13: Researchers have noted various revision styles: some writers seem to revise extensively in a pre-transcription phase; others revise more during or after the transcription phase. Item 18: Students whose concept of revision is limited to editing might fail to revise if they believe that use of the conventions of language will not be a part of the evaluation. Others, whose idea of revision is more complex, might transfer their skills more easily from course to course. Item 24: As with item 18, the response will depend on the students' notion of what constitutes revision.

Since, in addition to using the questionnaire as means of measuring the subjects attitudes toward revision in this study, the researcher would like to develop the revision questionnaire as a diagnostic tool, it was decided to retain items 13, 18 and 24, since the replies to these statements could offer some insight into the respondent's concept of revision. Outliers 8 and 10 were removed prior to the final calculation of data, since the answers given, while of interest, were at best tangential to the construct under investigation. These items lacked face validity. LERTAP was again run, indicating inter-question correlations ranging from .110 to .491. The Hoyt estimate of reliability increased slightly to .83 (see Appendix C).
Millar (1982) has shown that apprentice writers can accurately rate the quality of their own work. In this study, after completing each draft, the subjects were asked to evaluate their compositions using a simple six point scale provided on a separate sheet. Six statements about their compositions were scrambled, and the subjects were asked to select the one which best described their attitude toward the draft they had just finished (see Figure 1). The subjects were not shown the numerical identifiers shown in brackets, as these would have suggested a grade or a rank order for the statements. It was explained orally and in writing that the self-evaluation would not affect the grade the paper would receive.

Fig. 1
Student Self-evaluation Form

[3] It's O.K., but there are several things I have to change.
[6] Bad. I don't want to put my name on it.
[2] Pretty good. I see room to improve it.
[1] Very good. I'm happy to be handing this in.
[4] O.K., but I'm not really happy with it. There are lots of things I would like to change.
[5] Not very good. I should rewrite it completely.

This simple but direct measure was used to assess students' impressions of their drafts immediately after each session. Although Beach (1984) observed wide differences in the ability of students to evaluate their own
work, particularly among highly apprehensive students, it was hoped that a simple holistic measure would yield a general impression of how the subjects in each group felt about their performance. Statements one to three suggest a decreasing approval; statements four to six suggest increasing disapproval. Statements were used in preference to a simple numerical scale because it was felt that if the students were presented with categories in the form of a comment rather than simply a number, they might execute more accurately a global assessment. It was anticipated that the novelty of the second and third treatments might conceivably have a disruptive effect on the students' composing processes, and such a negative effect might have shown up as an unusually low rating after the second draft. The self-evaluations for each treatment group were analyzed to see whether the treatment was related to the self-assessment per draft.

The self-evaluations served three additional purposes in the study. First, they gave evidence that some students may not have executed extensive revision in their second or third drafts because they had already judged one or both of their previous drafts to be adequate, even successful. Secondly, they may suggest that students believe that the execution of low-level revision is sufficient to increase the quality of the paper (see Chapter 4). Lastly, it served to make each session even more discrete. Beach (1984) has argued that to direct the writer's attention to the overall draft can inhibit changes to the text base. Evaluation of the whole draft, he suggests, triggers a premature sense of closure which crystallizes the existing organization of the draft, making subsequent modification difficult. It is possible that this call for summative evaluation partially explains the reluctance of the students to begin the work of revising especially in the first revision session.
Student Diagnosis (pre-second draft)

Problem formulation is critical to the revision of any work, and the question arose of aiding students in the executive task of shifting from generation to evaluation of text. Certainly, procedural facilitations such as those used by Bereiter and Scardamalia (1982) could have been used to focus the subjects' attention on revision. However, whether or not the three treatments would trigger problem awareness and identification was one of the questions of the study; therefore, procedural facilitation, while it probably would have provoked revision, would have confused the issue of the relative effectiveness of the treatments. Given the age level of the subjects, it was hoped that they would display adequate diagnostic ability. The diagnosis sheets were analyzed and information classified as to type. The problems identified were classified in three categories corresponding to the three revision levels in the revised taxonomy:

Type 1: Wish to make modifications which alter the hypertheme of a text.

Type 2: Wish to make modifications which alter the meaning within the microstructure of the text.

Type 3: Wish to make modifications which would not change meaning within the text, or wish to make the text conform to rules of spelling, mechanics and grammar.

This analysis was carried out by the researcher and an instructor colleague who did not supervise any of the classes participating in the study. There was some difficulty in judging the level of the proposed revision contemplated by the subjects, since the students did not elaborate on the faults they perceived. Often the student's proposed solution was of use in categorizing the diagnoses, enabling the marker to infer the level of change
envisioned. The two markers achieved a correlation of 0.69 for the first fifteen papers examined. A discussion followed, and it was decided to opt always for the more conservative revision level; that is, meaning changes would have to be stated or implied by the student. A second sample of fifteen papers produced a rater correlation of 0.86.

A value for the diagnoses done by each subject was calculated. Each problem diagnosed was given the value of its level, i.e., 1, 2, or 3. The values were summed, then divided by five. In those few cases in which the subjects had not indicated five things wrong with their papers, the sum was divided by the number of diagnoses they had made. The individual diagnosis level values ranged from 2.0 to 3.0. This range indicated that some students had diagnosed only level three revisions (3.0), while others had diagnosed problems whose resolution would involve meaning changes, i.e., level one and two revisions.

The mean scores for the types of problems identified were compared for each treatment group (see Chapter 4). The diagnoses, the means which the subjects suggested to correct the perceived problems, and the degree to which these revisions were carried out served as part of the basis of the interviews conducted with a portion of the treatment three subjects after the third session.

Preparation of Tapes for Aural Cuing

It was originally proposed that the tape recorded drafts for treatment group three be prepared by two readers, one male and one female, in order that the possible effect of reader gender on the treatment could be examined. Regrettably, at the time of the experiment, only instructors involved in the experiment were available as readers, so this idea was abandoned. The researcher read the first drafts of treatment group three at slow conversational
speed, attempting to convey what the writers had written: fragments remained fragmented; run-on sentences ran on; subjects and verbs continued in disaccord.

Standardization of Quality Rating Procedures

In the school in which the study took place, each composition student must write a proficiency test in the form of a demand essay which is then marked by some one other than the student's own instructor. Since the staff are familiar with the process of standardizing marking, prior to holistic evaluation of papers, it had been proposed that a double marker system, similar to that used by provincial ministry marking committees, would be used to evaluate all the drafts. However, because the use of markers who had participated in the experiment was not desirable, external evaluators were sought. Two markers were found, instructors of English at a local junior college. Each had over five years' experience in marking placement essays written by students entering the college.

All the drafts were coded for subject, instructor, class, and session. Regrettably, considerations of cost precluded the typing of three hundred and twelve drafts. Two copies were made of each draft, and the two groups of papers were placed in random order. Assignment of each group to a marker was also random.

From the pilot study papers and the incomplete data sets of the full study, a set of eight exemplars was drawn to illustrate the revised eight-point scale discussed in the modifications to the pilot study. The researcher met with the markers at the college, and the study was discussed in general terms. The raters were familiar with the ministry marking scale, which was similar to their own placement rating scale. The exemplars were discussed, so as to
draw out the characteristics which situated each paper on the marking scale, and the raters were asked to read ten papers and assign a mark to each. They disagreed on four of the ten marks; two of the differences were one point apart, and the other two were two points apart. Some time was spent discussing the reasons why those papers had fallen in certain categories. The markers found that they had been ambivalent about two of the four marks, and they were able to agree on a single grade. On one of the others, they were able to move within one grade; on the fourth, no compromise was forthcoming. A second group of fourteen papers was given to the raters, and on the following day their assessments were tabulated. A Pearson $r$ was calculated and the correlation was 0.86. Although the raters were used to working together and had similar experience and expectations of student writing, this correlation seemed quite strong. Therefore a second group of fourteen papers was given to the raters for evaluation. On this occasion, the correlation was 0.73. Each of the raters was given copies of all three hundred twelve drafts, randomly mixed. The raters were asked to mark for one hour per day, to examine the exemplars before starting to mark each day, and to refrain from discussing the study or the marking with each other until after our final meeting. The raters took between fifteen and sixteen hours each to holistically evaluate the three hundred twelve drafts. Approximately three minutes were spent reading each paper.

Correlations between the marks assigned to the three drafts were calculated using the SPSS:X program through the University of British Columbia Computing Centre. The combination of 104 subjects, three drafts and two markers exceeded the maximum of 500 variables; therefore it was decided to do the correlation by draft (see Table 1).
Considering the experience and background of the markers, the unadjusted correlations were not unduly high. Each rater had over five years' experience marking demand essays used to select students for placement in college English courses. Also, although the raters did not communicate during the time they were marking, they were used to working together on this type of evaluation; that is, they had experience in agreement on criteria to be used in holistic marking. The pre-marking rater comparisons had yielded correlations of 0.73 and 0.86, and one notes a steady decrease in the strength of the correlation over the three drafts. Possibly the range of quality increased over the three writing sessions, and while the raters may have found it easier to agree on the poor quality of the first drafts, they apparently had more difficulty in judging the improved versions. Both markers commented on the generally low quality of many of

Table 1
Correlations between marks, by draft, unadjusted and adjusted

<table>
<thead>
<tr>
<th></th>
<th>Draft 1</th>
<th>Draft 2</th>
<th>Draft 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unadjusted</td>
<td>0.72</td>
<td>0.69</td>
<td>0.66</td>
</tr>
<tr>
<td>Adjusted</td>
<td>0.84</td>
<td>0.83</td>
<td>0.85</td>
</tr>
</tbody>
</table>

the drafts, and stated that they had more difficulty grading the average or superior papers than the inferior ones.

The initial ratings were adjusted using a method similar to that used in the marking of grade-twelve provincial exams. The ministry evaluators use Diederich's (1974) method: if the marks are more than one point apart, a third
rater assesses the paper, and the two closest marks are used. Since the six-point ministry scale had been expanded to an eight point measure, it was decided to use a third referee only in those cases in which the scores differed by more than two points. As suggested by Diederich, the two closest marks were retained for the adjusted score, and in no case did the third mark fall exactly between the first two marks. The two marks which each draft eventually received were combined, then doubled to yield a score for that student's draft. Given that a spread of two points was accepted, the strength of the adjusted correlation, 0.83 to 0.85 seems relatively strong.

Analysis of Revision Change Levels

Following the quality assessment, the three drafts of each subject were examined by the researcher and an instructor colleague to determine the levels of the changes which had occurred during revision. Both the second and the third drafts were compared with the first draft, and any changes were assigned one of three levels. As described on pages 9 and 10, changes which affected the macrostructure or gist of the text were termed level one; changes which caused a meaning change at the sentence or paragraph level were termed level two; changes which did not affect meaning at any level were termed level three. A sample of fifteen papers was marked by the researcher and the instructor who had aided in the marking of the pilot group. The correlation between the two raters' analyses was .88.

Sub-analyses: Topical Progression, Number of Topics, Interviews

The second and third drafts of a random sample of twenty subjects from treatment group one and twenty subjects from treatment group three were examined for topical progression patterns. The concept of the three types of topical progression was discussed with the rater who had assisted with the
pilot group assessment. This rater then proceeded to analyze the selected papers. As a reliability check, the researcher analyzed the first fifteen papers; the inter-rater correlation was .82.

It was necessary to create a value for the pattern of topical progressions used by each subject. These values were distributed along a range between the exclusive use of sequential progressions at one extreme, and the exclusive use of parallel or extended parallel progressions at the other. The former might indicate a commitment to oral organizational techniques; the latter, a preference for literary organizational techniques. To calculate an overall topical progression value, sequential progressions were assigned a value of 1, parallel and extended parallel progressions were assigned a value of 5. These arbitrary values were used so as to provide a numerical indicator of the range of topical progressions employed by the subjects. The values for the progressions used were summed, then divided by the total number of progressions used, yielding topical progression values on a scale from 1.0 to 5.0.

The researcher also calculated the number of topics used in the second and third drafts of the sample. A rater check by the same marker who analyzed the topical progressions, using a random sample of fifteen papers, resulted in a correlation of .94.

In the week following the conclusion of the second revision session, the researcher attempted to interview as many of the subjects of treatment group three as possible. The intent was to gather an impression of the students' reactions to acoustic cuing as a revision stimulus, and to investigate their notion and their method of revision. These interviews, each lasting from ten to fifteen minutes, were taped and transcribed for analysis (see Appendix A for sample interviews).
Measures of Initial Equivalence

The characteristics of the treatment groups were examined to verify the homogeneity of the groups. Some differences within the groups were anticipated. For example, E.S.L. students might be expected to perform worse than native speakers; students in the advanced composition course would probably write better than those in the standard composition sections. It was hoped that the randomization of the subjects would eliminate any significant between-group differences.

To establish a ground against which the results of the study might be viewed, that is, to determine whether or not the three groups were equal at the beginning of the experiment, an analysis of variance was done on the first draft scores of the subjects. The first draft constitutes a pre-test, and is therefore the most important measure of initial equivalence. Furthermore, the first draft score was subsequently used as the covariate in an analysis of covariance on the third draft scores. Treatment group, teacher, sex and English status were the factors manipulated. The absence of E.S.L. students in the advanced composition class created cell voids which prevented the calculation of higher level interactions; therefore, the English status variable was dropped from the ANOVA so as to make possible the calculation of two and three-way interactions. The analysis of variance produced $F$ ratios, representing the ratio of between group variance to within group variance; $F$ ratios with probabilities of less than .05 indicate significant differences.

The ANOVA on the first draft score by treatment group, teacher and sex showed a significant variation in the scores achieved by different teachers' classes, but there were no significant main effects indicated for treatment
group or gender. Neither were there any significant two-way or three-way interactions indicated between or among the three variables (see Table 2).

The significant teacher variable in Table 2 is illustrated in the breakdown of the first draft quality scores by teacher and treatment shown in Table 3. This variation among classes is difficult to explain completely; however, some possible explanations can be offered. In the school in which the study took place, two conditions routinely occur which can affect the composition of a class. First, the grade-eleven composition program is offered at two levels--standard and advanced. Since teacher 2 taught an advanced composition section, it is not surprising that the mean score was higher than that of the other classes. Secondly, the students selected their courses through an arena scheduling process in which the students were largely free to choose their instructors. In the past, when this class selection method has been used, there has been noticed a "birds of a feather effect"; standard composition courses which one might expect to be similar differ markedly in tone and achievement. To use a botanical metaphor, the composition classes are heterophyllous. Indeed, the regular English students in classes 1, 3, 4 and 5 fall into two rough groups based on their first draft scores: one high (1 and 3), one low (4 and 5). That heterogeneity should exist between, rather than within classes, is perhaps explained by the programming process which the students must follow.
Table 2

ANOVA on the quality rating (first draft) by treatment group, teacher, and gender.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group</td>
<td>56.629</td>
<td>2</td>
<td>28.314</td>
<td>.784</td>
<td>.460</td>
</tr>
<tr>
<td>Teacher</td>
<td>1055.198</td>
<td>4</td>
<td>263.800</td>
<td>7.307</td>
<td>.001</td>
</tr>
<tr>
<td>Sex</td>
<td>14.866</td>
<td>1</td>
<td>14.866</td>
<td>.412</td>
<td>.523</td>
</tr>
<tr>
<td>2-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment, teacher</td>
<td>185.837</td>
<td>8</td>
<td>23.230</td>
<td>.643</td>
<td>.739</td>
</tr>
<tr>
<td>Treatment, sex</td>
<td>28.596</td>
<td>2</td>
<td>14.298</td>
<td>.396</td>
<td>.674</td>
</tr>
<tr>
<td>Teacher, sex</td>
<td>94.851</td>
<td>4</td>
<td>23.713</td>
<td>.657</td>
<td>.624</td>
</tr>
<tr>
<td>3-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group, teacher, and sex</td>
<td>188.154</td>
<td>8</td>
<td>25.519</td>
<td>.651</td>
<td>.732</td>
</tr>
<tr>
<td>Explained</td>
<td>1567.918</td>
<td>29</td>
<td>54.066</td>
<td>1.498</td>
<td>.084</td>
</tr>
<tr>
<td>Residual</td>
<td>2671.467</td>
<td>74</td>
<td>36.101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4239.385</td>
<td>103</td>
<td>41.159</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The better writers were in classes 1, 2, and 3, and the poorer writers were in classes 4 and 5. The three treatment groups, following attrition, retained approximately the same proportions of good and poor writers. It
Table 3

Means, n's, and standard deviations for first draft quality score across treatments.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td>n</td>
</tr>
<tr>
<td>Teacher 1</td>
<td>8</td>
<td>17.75</td>
<td>4.2</td>
<td>9</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>5</td>
<td>24.40</td>
<td>3.9</td>
<td>4</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>8</td>
<td>15.25</td>
<td>5.8</td>
<td>9</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>6</td>
<td>10.67</td>
<td>6.4</td>
<td>7</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>7</td>
<td>14.00</td>
<td>4.9</td>
<td>5</td>
</tr>
</tbody>
</table>

is, however, interesting to note that treatment group three, whose third drafts showed significant improvement, contained fewer of the better writers and more of the poorer writers. The advanced composition class was also most poorly represented in treatment group three, and best represented in treatment group one.

Of the 104 subjects, fourteen were E.S.L. students. A second ANOVA was run on the first-draft score by teacher, treatment group, sex, and English status. Predictably, English status proved significant (see Table 4). The mean score for the native speakers was almost double that of the E.S.L. students (see Table 5). Since there were no E.S.L. students in Teacher 2's class, higher order interactions were not performed by the program.
Table 4

ANOVA (first draft score) for treatment group, teacher, sex and English status

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group</td>
<td>48.885</td>
<td>2</td>
<td>24.442</td>
<td>.875</td>
<td>.420</td>
</tr>
<tr>
<td>Teacher</td>
<td>852.626</td>
<td>4</td>
<td>213.157</td>
<td>7.635</td>
<td>.001</td>
</tr>
<tr>
<td>Sex</td>
<td>35.881</td>
<td>1</td>
<td>35.881</td>
<td>1.285</td>
<td>.260</td>
</tr>
<tr>
<td>English status</td>
<td>485.870</td>
<td>1</td>
<td>485.870</td>
<td>17.403</td>
<td>.001</td>
</tr>
<tr>
<td>Explained</td>
<td>1587.103</td>
<td>8</td>
<td>198.388</td>
<td>7.106</td>
<td>.001</td>
</tr>
<tr>
<td>Residual</td>
<td>2652.281</td>
<td>95</td>
<td>27.919</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4239.385</td>
<td>103</td>
<td>41.159</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the draft-one scores are examined by teacher and English status, an interesting picture emerges (see Table 6). The E.S.L. students, unlike the majority of native speakers, are assigned to classes, and one would expect their performance to be more evenly distributed than that of the regular students. Nevertheless, the E.S.L. group in class four stands out as particularly weak. One must remember, however, that students designated

Table 5

Means, n's, and standard deviations for first draft quality score.

<table>
<thead>
<tr>
<th></th>
<th>Native speakers</th>
<th>E.S.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>17.07</td>
</tr>
</tbody>
</table>
E.S.L. show a considerable range of writing ability, depending on their education abroad, time in this country, and personal intelligence and motivation. It is possible that the weakest students were assigned to this teacher since he is also an E.S.L. specialist.

Randomization does not absolutely ensure initially equivalent treatment groups. The possibility existed that the students might differ on an important dimension such as scholastic ability; therefore, to verify the success of the randomization procedures, an analysis of variance was done on the G.P.A. by treatment group, teacher and sex. Main effects indicated that teacher and sex were significant sources of variation, $p<0.001$ and $p=0.004$ respectively; no significant two or three-way interactions were found.

To see whether the G.P.A. of E.S.L. students differed significantly from that of the regular English students, a second ANOVA was done on the G.P.A. by treatment group, teacher, English status and sex. The results were similar: teacher and sex showed as significant sources of variation, $p<0.001$ and $p=0.005$ respectively. The females had significantly better G.P.A.'s than did the males. English status was not significant. In neither of these analyses was treatment group significant (see Appendix G).

An analysis of variance was also performed on a modified G.P.A., based on the subjects' marks in English and Social Studies. It was felt that such a measure would more accurately reflect the students' writing ability. As was the case with the ANOVA on the G.P.A., the F values for the main effects of teacher and sex were significant. The classes spanned a considerable range of scholastic ability; females were superior to males.
Table 6

Means, n's, and standard deviations (first draft quality score) for class and English status.

<table>
<thead>
<tr>
<th></th>
<th>Native speakers</th>
<th></th>
<th></th>
<th></th>
<th>E.S.L.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td></td>
</tr>
<tr>
<td>Teacher 1</td>
<td>20</td>
<td>18.60</td>
<td>5.8</td>
<td>4</td>
<td>10.00</td>
<td>5.9</td>
<td></td>
</tr>
<tr>
<td>Teacher 2</td>
<td>11</td>
<td>23.64</td>
<td>3.6</td>
<td>0</td>
<td>Ø</td>
<td>Ø</td>
<td></td>
</tr>
<tr>
<td>Teacher 3</td>
<td>25</td>
<td>17.12</td>
<td>5.9</td>
<td>3</td>
<td>11.33</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Teacher 4</td>
<td>18</td>
<td>14.00</td>
<td>5.6</td>
<td>3</td>
<td>6.00</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Teacher 5</td>
<td>16</td>
<td>14.00</td>
<td>4.3</td>
<td>4</td>
<td>11.00</td>
<td>6.6</td>
<td></td>
</tr>
</tbody>
</table>

None of the higher level interactions indicated significant F-ratios.
Examination of the cell means revealed patterns similar to the ANOVA on the standard G.P.A. Treatment group one, which received the traditional graphic revision cue, was only slightly higher than treatment group three, which received the aural revision cue. Treatment group two, which revised without the presence of a first draft, was lower than the other two treatment groups, but not significantly so. The classes showed the same distinctions as before: class two was superior; classes four and five were inferior (see Appendix H).

In summary, the analysis of the first draft scores established the baseline for the study, indicating that the treatment groups were approximately equal in ability. Data from the analyses of G.P.A. and the modified G.P.A. supported the idea of initial equivalence. Differences within the groups were observed on several dimensions. The five classes differed in
ability and performance; rather than a bi-polar distribution reflecting a division between the advanced and the regular composition classes, a gradient of overlapping results was noted (see Figure 2). Female students had significantly higher scores for G.P.A., modified G.P.A. and revision attitude. E.S.L. students differed significantly from the regular students in the quality of their writing. Despite these differences within each of the treatment groups, no significant differences were indicated between the groups. One may conclude that they were drawn from the same population.

Analysis of Data

For all treatment groups, the means and standard deviations were calculated for the following variables: the three draft scores, G.P.A. and modified G.P.A., writing apprehension inventory score, revision questionnaire score, diagnosis level, evaluation values, and revision level changes in both the second and third drafts. For a sub-sample of forty students in treatment groups one and three, the means and standard deviations were calculated for topical progression values and number of topics in the text.

The primary question which this study attempted to address was whether subjects who receive a revision stimulus in the form of an aural cue would produce papers significantly different in quality from those of students
who received a conventional graphic revision stimulus. To assess the effect of the treatments, an analysis of covariance was carried out on the third draft scores of treatment groups one and three, using the first draft scores as a covariant. A subordinate analysis was carried out to examine the differences between the various treatment groups. The same ANCOVA was done three
additional times: first, all three treatment groups were selected; then the other
two possible pairs of treatment groups—one and two; two and three--were
selected. Finally, an analysis of covariance was done on the second draft
score, with the first draft score as covariate. The purpose of this analysis was
to investigate the immediacy of the effects of treatments two and three. The
level of significance for rejecting the null hypothesis was set at .05.

Following the analysis of covariance, a one-way analysis of variance,
followed by the Tukey's multiple range test, was carried out to test for the
significance of the differences between means from treatment groups one and
three. The Tukey test for multiple comparisons is used if significant F ratios
appear in the analysis of variance; this test is more conservative than the
standard T test since it takes into account the probability that the researcher
will find a significant difference between mean scores simply because many
comparisons are made on the same data. The following variables were
examined: diagnosis level, level of revision change in drafts two and three,
topical progression values, number of topics, and self-evaluations.

The Pearson zero-order product moment correlation for quantitative
linear relationships was calculated for each treatment condition, in order to
assess the strength of the relationship between certain variables. Significant
relationships had been anticipated between the following variables: draft
quality ratings, G.P.A., revision attitude, writing apprehension, diagnosis
level, revision level.

All statistical calculations for this study were done at the University of
British Columbia Computing Centre, using SPSSX 3.0, the Statistical Package
for the Social Sciences.
CHAPTER 4 FINDINGS

This chapter presents the findings of the study, as these pertain to the research questions of the study:

1. What are the effects of hearing a text on:
   a. quality ratings of students' drafts?
   b. students' self-evaluations?
   c. the level of revisions made to subsequent drafts?
   d. the topical progressions used by students in their revised drafts?

2. Are the effects of hearing a text related to:
   a. students' attitudes toward writing?
   b. students' attitudes toward revision?
   c. students' general scholastic ability?

To answer the first question, the differences apparent in Table 7 were investigated; specifically, an analysis of covariance was carried out on the third draft scores with the first draft scores as covariate. Specific group means were compared to assess the effect of the treatment on various aspects of the subjects' revision procedure. To answer question two, correlational data on student abilities, attitudes, and draft quality were examined. Also, the subject interviews conducted after the last writing session were analyzed to shed light on the students' perceptions of the effects of the aural cuing. Finally, tests were conducted to assess the effectiveness of the second treatment and to judge the immediacy of the effect of the treatments.

The principal research question was how the quality ratings of the drafts would be affected by the different revision stimuli represented in the treatments. Most important was the question of whether the aural cue, represented by treatment three, would produce better results than the
Table 7

Means and standard deviations (treatment groups one and three) for each of the three drafts. Gains between draft 1 and draft 3 were 1.94 for treatment group 1 and 3.50 for treatment group 3. These differences are significant at the .05 level of confidence.

<table>
<thead>
<tr>
<th>Draft</th>
<th>Treatment 1 (n=34)</th>
<th>Treatment 3 (n=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Draft 1</td>
<td>16.12</td>
<td>6.4</td>
</tr>
<tr>
<td>Draft 2</td>
<td>16.59</td>
<td>4.7</td>
</tr>
<tr>
<td>Draft 3</td>
<td>18.06</td>
<td>5.0</td>
</tr>
<tr>
<td>Difference (D3 - D1)</td>
<td>1.94</td>
<td>3.50*</td>
</tr>
<tr>
<td>(*p&lt;.05)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

traditional visual cue, represented by treatment one. As Table 7 shows, differences did appear among the groups over the three writing sessions. Both groups improved at each writing session; however, over the three drafts, the papers of treatment group three showed a degree of improvement which was significantly greater than that shown by those of treatment group one.

Effect of Treatments on Quality Ratings

The ANOVA on the first draft scores indicated significant differences for the variables teacher and English status. However, these differences
Table 8

Three factor ANCOVA (third draft score) for treatment groups 1 and 3, teacher and gender.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td>893.327</td>
<td>1</td>
<td>893.327</td>
<td>65.935</td>
<td>.001</td>
</tr>
<tr>
<td>Treatment group</td>
<td>67.509</td>
<td>1</td>
<td>67.509</td>
<td>4.983</td>
<td>.030</td>
</tr>
<tr>
<td>Teacher</td>
<td>111.604</td>
<td>4</td>
<td>27.901</td>
<td>2.059</td>
<td>.101</td>
</tr>
<tr>
<td>Gender</td>
<td>16.045</td>
<td>1</td>
<td>16.045</td>
<td>1.184</td>
<td>.282</td>
</tr>
<tr>
<td>Treatment x teacher</td>
<td>20.914</td>
<td>4</td>
<td>5.228</td>
<td>.386</td>
<td>.818</td>
</tr>
<tr>
<td>Treatment x gender</td>
<td>21.753</td>
<td>1</td>
<td>21.753</td>
<td>1.606</td>
<td>.211</td>
</tr>
<tr>
<td>Teacher x gender</td>
<td>20.791</td>
<td>4</td>
<td>5.198</td>
<td>.384</td>
<td>.819</td>
</tr>
<tr>
<td>Treatment group x teacher x gender</td>
<td>133.171</td>
<td>4</td>
<td>33.293</td>
<td>2.457</td>
<td>.058</td>
</tr>
<tr>
<td>Error</td>
<td>663.879</td>
<td>49</td>
<td>13.549</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1933.486</strong></td>
<td><strong>69</strong></td>
<td><strong>28.022</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

were to be found within all treatment groups, rather than among the groups; i.e., initially, the groups were equivalent. In order to control completely for variations in the first draft scores, an analysis of covariance was computed on the third draft scores with the first draft scores as covariate. The primary research question of this study was whether aural cuing for revision would produce significantly better results than the traditional visual cuing. Treatment number one represented the traditional visual cuing, with the text present during redrafting; treatment three was an aural cue for revision in which the first draft text was heard, not seen. These two treatment groups were selected for the initial analysis, which showed a probability of 0.030 for the F-ratio for the treatment group variable (see Table 8). When the E.S.L. students were excluded, the probability of the F-ratio for treatment group changed to 0.023 (see Appendix L).
Treatment group is the only significant variable listed under main effects. The analysis did not indicate any significant two-way interactions; however, the three-way interaction of the variables of treatment group, teacher and sex approaches significance at 0.058. A sub-analysis provided a perspective of the treatments' effects by class, gender and English status. Examined by class, the third-draft scores of treatment group three are higher than those of treatment group one in each of the classes. As can be seen in Table 9, class 2, the advanced composition section, predictably outperformed the other four classes. Nevertheless, after the first draft score has been controlled for, class alone is not a significant variable. The superiority of treatment group three also occurs if treatment group scores are examined by sex. There is, however, a noticeable difference between the males and females. Given the girls' statistically significantly higher scholastic ability, as indicated by the G.P.A. and the modified G.P.A., one would have predicted that, in each treatment group, they would outscore the boys. While this was the case in treatment groups one, the boys in treatment group three outperformed the girls; in neither case were the differences statistically significant. Finally, while native speakers of English in treatment group three received higher quality ratings than did their counterparts in treatment group one, E.S.L. students in treatment group three received lower ratings than did those in treatment group one, perhaps reflecting the difference in G.P.A. between these two E.S.L. groups (See appendix Al for further discussion of E.S.L. students).
Effects of Treatments on Subjects' Self-evaluations

To test the statistical significance of differences between particular group means, a one way analysis of variance was done for treatment groups one and three, using Tukey's multiple range test—the honestly significant difference test. This test is more conservative than a series of standard t-tests, since the probability of arriving at a false significance increases with the number of tests made on the same data.

Table 9

Means, n's, and standard deviations (third draft scores of treatment groups one and three) for teacher, gender and English status.

<table>
<thead>
<tr>
<th></th>
<th>Treatment group 1</th>
<th>Treatment group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>Teacher 1</td>
<td>8</td>
<td>19.75</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>5</td>
<td>24.00</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>8</td>
<td>17.50</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>6</td>
<td>17.00</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>7</td>
<td>13.43</td>
</tr>
<tr>
<td>Males</td>
<td>19</td>
<td>17.37</td>
</tr>
<tr>
<td>Females</td>
<td>15</td>
<td>18.93</td>
</tr>
<tr>
<td>E.S.L</td>
<td>4</td>
<td>15.00</td>
</tr>
<tr>
<td>Native speakers</td>
<td>30</td>
<td>18.47</td>
</tr>
</tbody>
</table>
The second research question posed was whether hearing a text would have an effect on a subject's self-evaluation of that text. No significant changes were indicated between treatment groups one and three (see Table 10). There is however, the suggestion of an effect which although not significant, might have stemmed from the aural cuing. If the increase in evaluation is examined between drafts one and two, one notes a gain of .85 for group one, but a decrease of .03 for group three; at .059, this difference is approaching significance. One might have anticipated that the students in group three, having expressed a certain dissatisfaction with their papers after the first draft, would make considerable effort to improve the second draft. That they were capable of producing a better draft is certainly suggested by their quality gains between drafts two and three. Nevertheless, they were only slightly more satisfied with their second draft than with their first. The subjects of group three, moreso than their classmates in treatment group one, seemed to feel that more revision remained to be done.

Table 10

Means, n's, standard deviations and test for significance of self-evaluations for treatment groups one and three for each of the three drafts.

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft 1</td>
<td>1</td>
<td>34</td>
<td>2.68</td>
<td>1.3</td>
<td>1.659</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36</td>
<td>3.03</td>
<td>1.1</td>
<td>3.683</td>
</tr>
<tr>
<td>Draft 2</td>
<td>1</td>
<td>34</td>
<td>3.53</td>
<td>1.1</td>
<td>1.743</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36</td>
<td>3.00</td>
<td>1.2</td>
<td>3.683</td>
</tr>
<tr>
<td>Draft 3</td>
<td>1</td>
<td>34</td>
<td>3.97</td>
<td>0.8</td>
<td>1.743</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36</td>
<td>4.22</td>
<td>0.8</td>
<td>1.743</td>
</tr>
</tbody>
</table>
The changes in evaluation over the three writing sessions are of interest, since they point to a degree of uncertainty or anxiety existing in treatment groups two and three during the first revision session. The sense that their drafts had actually decreased in quality was more apparent among the subjects in these two groups. However, after the second revision session, these same subjects showed a more positive attitude toward their writing. These attitudes parallel the quality increases shown by the two groups in the second revision period (see Table 11).

The self-evaluation scale (see Appendix Q) can be viewed as a binary scale: ratings of 1, 2, or 3 suggest dissatisfaction with the writing; ratings of 4, 5, or 6 suggest satisfaction. If the self-evaluations are examined by draft and treatment group, an interesting pattern is revealed (see Table 12 and Figure 3). For treatment group one, the decisive shift from disapproval to

Table 11

Changes in self-evaluation after second and third drafts for each treatment group, showing the number of subjects who gave self-evaluations which were lower, the same or higher when compared with the evaluation of the draft immediately preceding.

<table>
<thead>
<tr>
<th>Treatment group 1 (N=34)</th>
<th>Decrease</th>
<th>Same</th>
<th>Increase</th>
<th>Decrease</th>
<th>Same</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group 2 (N=34)</td>
<td>9</td>
<td>12</td>
<td>13</td>
<td>1</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Treatment group 3 (N=36)</td>
<td>12</td>
<td>11</td>
<td>13</td>
<td>0</td>
<td>10</td>
<td>26</td>
</tr>
</tbody>
</table>
approval occurs after the first revision session; however, it must be noted that their expressed satisfaction does not correspond to a parallel increase in quality at the second draft level.

Effect of Treatments on Revision Execution

As was anticipated, the diagnostic level of treatment group three exceeded that of treatment group one. The diagnoses proposed by the subjects were rated on levels one to three, corresponding to the three

Table 12

Self-evaluations: number of subjects expressing approval or disapproval, per draft and treatment group. Mean quality score represents the external raters' evaluations.

<table>
<thead>
<tr>
<th></th>
<th>Treatment 1. (N=34)</th>
<th>Treatment 2 (N=34)</th>
<th>Treatment 3 (N=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disapproval</td>
<td>24</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Approval</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Mean quality score</td>
<td>16.12</td>
<td>15.53</td>
<td>16.55</td>
</tr>
<tr>
<td>Draft 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disapproval</td>
<td>8</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Approval</td>
<td>26</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Mean quality score</td>
<td>16.59</td>
<td>16.24</td>
<td>16.89</td>
</tr>
<tr>
<td>Draft 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disapproval</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Approval</td>
<td>27</td>
<td>28</td>
<td>33</td>
</tr>
<tr>
<td>Mean quality score</td>
<td>18.06</td>
<td>18.12</td>
<td>20.06</td>
</tr>
</tbody>
</table>
Fig. 3

Quality ratings and self-approval ratings by treatment group and draft. The left-hand scale, quality ratings, appears in the figure as a line graph. The right-hand scale, self-approval ratings appears as a bar graph.

Key: Treatment Group 1 □□□, Group 2 □□□, Group 3 □□□
revision levels: macrostructural changes, microstructural meaning changes, and non-meaning changes. Considering that group three did not have its text before it in graphic form, it was thought that this group would be forced to focus more on meaning level changes, less on cosmetic (non-meaning) changes. Such was the case; the experimental treatment group differed significantly from the control group (see Table 13).

As a group, the subjects of treatment group three carried out more high level revision than did those of the traditional revision group (see Tables 14 and 15). At the point of the second draft, treatment group three made significantly more changes affecting the meaning of the paper, both at the level of the paragraph and at the level of the hypertheme, revision levels two and one respectively. Treatment group one made significantly more changes which did not affect meaning, that is at revision level one. The picture is slightly altered for the third draft. The subjects in group one still made significantly more cosmetic changes than the subjects of group three; however, three changes appear in the macrostructure of one of the texts. The difference between groups on level one changes is no longer significant. Why this occurred is not clear. At the level of the paragraph, however,

Table 13

Means, n's, standard deviations and test for significance of diagnostic level (treatment group 1 and treatment group 3). The diagnostic level value is the average of the levels of revision which the subjects diagnosed: 1 = macrostructural; 2 = microtextual; 3 = cosmetic (non-meaning change).

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG 1</td>
<td>34</td>
<td>2.793</td>
<td>0.25</td>
<td>13.874</td>
<td>.0004</td>
</tr>
<tr>
<td>TG 3</td>
<td>36</td>
<td>2.557</td>
<td>0.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
there was still a significant difference: group three executed more meaning changes.

Any restructuring of the text base of a work requires some thinking about the hypertheme or gist of the piece. The question was therefore posed whether acoustic cuing might cause the hearer to alter the macrostructure of his or her text. This indeed seems to have been the case, although it should be noted that these macrotextual changes occurred in the work of only eight of the thirty-six subjects.

Table 14

Means, n's, standard deviations and test for significance of levels of change between treatment 1 and treatment 3 for draft 2. Level 1 equals changes to the macrostructure of the text; Level 2 equals meaning changes to the microstructure of the text; Level 3 equals non-meaning changes to the microstructure of the text

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Means</th>
<th>S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 (macro)</td>
<td>TG 1</td>
<td>34</td>
<td>None made</td>
<td>7.972</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>TG 3</td>
<td>36</td>
<td>0.19</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Level 2 (micro)</td>
<td>TG 1</td>
<td>34</td>
<td>2.97</td>
<td>3.0</td>
<td>6.098</td>
</tr>
<tr>
<td></td>
<td>TG 3</td>
<td>36</td>
<td>4.72</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Level 3 (cosmetic)</td>
<td>TG 1</td>
<td>34</td>
<td>11.23</td>
<td>6.8</td>
<td>4.014</td>
</tr>
<tr>
<td></td>
<td>TG 3</td>
<td>36</td>
<td>8.47</td>
<td>4.6</td>
<td></td>
</tr>
</tbody>
</table>
Effects of Treatments on Topical Progressions

In his exploration of topical progression and revision, Witte (1983) observed that good revisions exhibited a different pattern from poor ones in that the former employ more parallel than sequential topical progressions. This finding is interesting, since sequential progressions are an organizational form which is primarily oral; parallel progressions on the contrary require the structural logic of written discourse. A sub-analysis was done, using Tukey's test, on a random sample of 20 third drafts from each of treatment groups one and three, to see if different patterns appeared.

Table 15

Means, n's, standard deviations and test for significance of levels of change between treatment 1 and treatment 3 for draft 3. Level 1 equals changes to the macrostructure of the text; Level 2 equals meaning changes to the microstructure of the text; Level 3 equals non-meaning changes to the microstructure of the text.

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Means</th>
<th>S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 (macro)</td>
<td>TGI</td>
<td>34</td>
<td>0.09*</td>
<td>0.5</td>
<td>1.427</td>
</tr>
<tr>
<td></td>
<td>TG3</td>
<td>36</td>
<td>0.22</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Level 2 (micro)</td>
<td>TGI</td>
<td>34</td>
<td>3.61</td>
<td>3.1</td>
<td>6.479</td>
</tr>
<tr>
<td></td>
<td>TG3</td>
<td>36</td>
<td>5.78</td>
<td>3.9</td>
<td></td>
</tr>
<tr>
<td>Level 3 (cosmetic)</td>
<td>TGI</td>
<td>34</td>
<td>13.03</td>
<td>7.4</td>
<td>7.271</td>
</tr>
<tr>
<td></td>
<td>TG3</td>
<td>36</td>
<td>9.11</td>
<td>4.5</td>
<td></td>
</tr>
</tbody>
</table>

* One subject in treatment group 1 executed three macrotextual changes.
As Table 16 shows, the subjects of treatment group three used significantly more parallel or extended parallel progressions in both the second and third drafts.

It is difficult to account for this strongly significant difference simply in terms of the treatment. One would assume that literacy, and the concomitant employment in writing of the structural organization of literacy, is a developmental process; therefore, one would not expect differences to be as striking. The possibility cannot be ruled out that the writers in group three are of a different population: they may simply be better expository writers, those students who have moved farther along the oracy-literacy continuum. Nevertheless, it must be noted that the pretest measures—the first draft scores, the G.P.A. and the modified G.P.A.—did not provide any evidence suggesting that treatment group three was superior.

Table 16

Means, n's, standard deviations and test for significance of topical progression levels between treatment 1 and treatment 3 for draft 2 and draft 3. See chapter three for explanation of topical progression values.

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Means</th>
<th>S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG 1</td>
<td>20</td>
<td>2.57</td>
<td>0.9</td>
<td>13.095</td>
<td>.0009</td>
</tr>
<tr>
<td>TG 3</td>
<td>20</td>
<td>3.60</td>
<td>0.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draft 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG 1</td>
<td>20</td>
<td>2.67</td>
<td>1.0</td>
<td>10.756</td>
<td>.0022</td>
</tr>
<tr>
<td>TG 3</td>
<td>20</td>
<td>3.68</td>
<td>0.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Relationships Between Third Draft Scores and Subjects' Abilities and Attitudes

The question of correlations between certain baseline measures and the results of the treatments, as represented by the quality rating of the third draft scores, is perplexing. One would expect to see a relationship between the final product and both the students' attitude toward writing and revision, and their general scholastic ability. In fact the correlations are all quite weak, accounting for at most a third of the variance (see Table 17). In terms of the data collected, the effects of hearing their text, as manifested in the final draft score, have at best a tenuous relationship to these measures of ability and attitude obtained in the questionnaires.

Table 17

Correlations between third draft score and G.P.A., modified G.P.A., writing apprehension (W.A.), and revision attitude (R.Q.) for treatment groups one and three

<table>
<thead>
<tr>
<th></th>
<th>G.P.A.</th>
<th>M.G.P.A.</th>
<th>W.A.</th>
<th>R.Q.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>p</td>
<td>r</td>
<td>p</td>
</tr>
<tr>
<td>TG 1 (n=34)</td>
<td>.5441</td>
<td>.001</td>
<td>.5739</td>
<td>.001</td>
</tr>
<tr>
<td>TG 2 (n=34)</td>
<td>.3426</td>
<td>.024</td>
<td>.3900</td>
<td>.011</td>
</tr>
<tr>
<td>TG 3 (n=36)</td>
<td>.1890</td>
<td>.135</td>
<td>.4389</td>
<td>.004</td>
</tr>
</tbody>
</table>
Effect of Treatment Three on Revision - Subject Interviews

In the week following the third writing session, the researcher interviewed twenty-eight of the subjects in treatment group three. The interview questions were designed to elicit information about the students' concepts of revision, attitudes toward revision, methods of revision, reactions to the aural cuing, and perceptions of the possible usefulness of the aural cuing technique. Each subject was asked fifteen questions.

Question 1: Do you like to write?
   Yes=20 (71.5%) No=8 (28.5%)

Question 2: Do you do any writing outside of school?
   Yes=11 (39.2%) No=17 (60.8%)

Over seventy percent of the students said that they liked to write; however less than forty percent claimed to do any writing outside of school assigned writing.

Question 3: What does the term "revision" mean to you?

This question asked the subjects for their concept of revision. Although frequent use of phrases such as "improve it", "fix it", "make it better", "make it sound good" indicated an awareness that the purpose of revision was the amelioration of a text, other comments suggested that the subjects considered revision to be editing. The majority of the twenty-eight respondents made one or more comments which concerned modifications which would probably not alter the text base: spelling (7), grammar and mechanics (6), punctuation (5), vocabulary (4), sentence structure (11), checking for errors (7), proof-reading (4), editing (3), re-wording (1). Such a concern for cosmetic change agrees with what researchers such as Perl (1979), Sommers (1980) and Witte (1981) have shown of the behaviour of beginning or inexperienced writers. A few individuals indicated that their notion of revision might involve operations on
the text-base itself. Two subjects felt revision should affect "flow" or "coherence"; another worried about the first draft "not making sense"; a fourth defined the purpose of revision as the increase in "clarity". Only three students suggested that revisions might include additions to the text, or perhaps substitutions. Five interviewees saw reorganization as an essential part of revision, employing terms such as "changing ideas around", "reordering" and the even vaguer "rewrite".

Question 4: Do you revise everything you write?

Whatever their concept of revision might be in operational terms, only half of the students claimed to revise all their writing.

Question 5: Are your revisions very different from your original drafts?

Only eight of the twenty-eight subjects interviewed felt that their revisions were very different from their original drafts. Given the decided focus on superficial changes, seen in their replies to question 3, the absence of dramatic differences between drafts would be expected. Several students noted that the ideas remain the same, although their arrangement and expression might alter.

Question 6: At what point in your writing do you revise? and

Question 7: How do you start to revise?

The majority, twenty out of twenty-eight, indicated a similar pattern of revision activity. They write either until they notice something wrong with their text, or until they reach a specific point, usually the end of a paragraph. This pattern of composition punctuated by revision continues until they believe they have finished their draft, after which they begin another revision episode, usually reading paragraph by paragraph in search of identifiable and correctable errors. A minority of those interviewed said that they write to the end of the first draft before returning to the beginning to revise.
Question 8: What part of revision do you find the most difficult?

The responses to question 8 tend to confirm that many students are concerned with relatively superficial alterations when revising. Seven indicated that the greatest challenge for them was to achieve grammatical correctness. However, it must be noted that four of these seven subjects were E.S.L. students who had been judged capable of functioning in a standard class. Three students found spelling the most difficult aspect of revision; three chose sentence structure; two selected punctuation. It may be that this focus on conventions is simply a case of water running downhill: this type of error may be more easily diagnosed by the beginning writer, and therefore may simply be the type of error which receives whatever attention the student is prepared to devote to revision. Furthermore, they may have learned that their teachers show a keen interest in superficial revision, and that the student ignores editing at his or her peril. Three students said that they found all revision difficult because they could not tell what was wrong with their text.

A minority of the subjects focused on the global impression that their work would create. Two students thought that achieving "flow" or "coherence" was the most difficult part of revision. Two others found "rewording" or the selection of "the right words" the most taxing operation. Three students worried about excising material which was off-topic, "ideas you think are good but really shouldn't be in there". Several students' comments suggested that they viewed revision as a way of adjusting the text to the requirements of their audience, a relatively advanced revision concept. Six students thought that the critical problem of revision was ensuring the communication of the message, or whether the reader would interpret what had been written in the way that the writer wished: "trying to decide if what I wrote means what I wanted to mean". These students used terms such as
"stepping back" and "not being personally involved" to describe the distancing which they found difficult.

Question 9: What was your reaction to hearing your writing on tape?

All of the subjects interviewed found the experience of hearing their own writing to be novel. Eleven students referred to the experience as "strange"; four used the terms "different" or "surprising"; two referred to it as "weird". Apparently, many of the subjects experienced a feeling of being distanced from their own work. Five students found their work "neat" or "interesting", commenting that "it [the aural cuing] gave a different point of view". Three of the students noted that "it seemed like some one else's work". Six expressed disappointment that their writing did not sound as good as they thought it would; two students even characterized their heard work as "terrible" and "horrible".

Question 10: How many times did you listen to your writing?

The number of times the subjects reported listening to their work varied greatly (see Table 18).

These figures may be deceptive. Several students were not quite sure how many times they had listened to their work. Also, it is possible that the subjects listened to some parts of their work many times, other parts only once or twice. Several students mentioned rewinding the tape several times to hear repeatedly a section which they sensed was wrong; this behaviour was also noticed by the instructors supervising the sessions. It seems that the students tried to employ in the aural mode a rescanning process similar to that which they would have used in the visual mode. The novelty of the experience possibly required more listening than might have been the case had the students been familiar with this type of revision cue. One student reported a feeling of panic "because of the spelling and things I couldn't see on it".
Question 11: Did you find anything to criticize in your work when you listened to it?

Eight of the twenty-eight subjects specifically stated that they found criticism of their work easy. Seven students said that they found the process difficult, at least initially. However, there was observed at the beginning of the first revision session a general reluctance to revise, not limited to those students in treatment group three. Two students said that they would prefer to revise by reading their drafts. Both of these were E.S.L. students.

The errors which the students could recall having diagnosed fall into three general groups. First, there were grammatical or structural mistakes that were audible: run-on sentences (1), errors of person (1), errors of tense (1), sentence fragments (1), "sentence structure" (1) and "grammar" (2). Secondly, there were what might be called errors of style: wording (5), awkwardness of expression (4), lack of parallelism (2), repetition (1), "flow" or transition (4). Finally, there were substantive errors which strongly

### Table 18

Number of times subjects listened to their work

<table>
<thead>
<tr>
<th>Times work listened to</th>
<th>Number of subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2 or 3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>3 or 4</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>4 or 5</td>
<td>7</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>
affected the communicative force of the text: "general weakness" (1), too
general content (3), lack of sufficient data (4), nonsensical or unclear sections
(13).

The high number of responses to lack of clarity or logic seems to
confirm the expectation that the logic of oral discourse would serve a listener
to criticize a heard text; an inability to follow the thread of the discourse
prompted a sense of confusion or anxiety, a wish to have the discourse
clarified. Thirteen of the subjects commented that on hearing their work, they
could judge more easily whether or not the writing made sense. Several of
their comments illustrate this perception:

...But you hear whether something makes sense or
not...Means what you want it to mean....

...Once you've written it down, you think that's the
way it should be, that it's right. Then when you go
back over it [i.e., the text itself is visible], it sounds
right again to you, because you don't have... like an
objective opinion...With some one else's voice
reading your work to you...it makes you think 'well,
that really does sound dumb now, so I'd better
change it.'

...I found awkward sentences...things that didn't
make sense...things I might have skipped over if I
had been reading.

...Yeah, I heard lots of things that sounded wrong
when I heard them. I probably wouldn't have picked
it out if I had read it over.

Question 12: Do you feel that you were able to make changes for the better?

All but four of the subjects felt that the changes which they had made
improved the paper. After two revision sessions, such an opinion was hardly
surprising. The four who were unsure were all E.S.L. students. While they
expressed hope that they had improved their papers, they were unsure of their skills.

The researcher received the impression that the students were quite unused to spending such a proportionately long time on revision. Nevertheless, after an initial reluctance to redraft, exhibited during the first revision session, they appeared in the second revision session to draw some satisfaction from a task which had required some effort. In the interviews, their comments reflect this sense that they had by their own efforts imposed a significant change of form on their writing.

Oh yeah...because you hear something that doesn't sound right, so you express the ideas differently the second time around...and then you get new ones....

I took points from both the first two drafts and joined them...whichever parts sounded best.

Yeah, the third one was like really different. For my third draft, I basically copied out my first one, ...but I also took a lot from my second...I could see what didn't work in my first draft.

Even my second draft was better than my first!

The second draft I found really hard. But then once I got both drafts back, then I found it easier. The last paper was better.

Question 13: Have you ever listened to anyone else's work in order to criticize it?

Twenty-two of the twenty-eight subjects said that they had never listened to anyone's work in order to criticize it. Of the six who said they had done so, five indicated that they had only used this technique
occasionally—once or twice in English classes. Two subjects indicated that they had done peer editing in junior high school, but they noted that it had involved reading, not hearing, another's work.

Question 14: Has anyone listened to your work in order to criticize it?

Twenty of the twenty-eight subjects said that they had never had anyone listen to their work in order to criticize it. Of the eight who had done this, three indicated that they had done so only once or twice. The responses to questions thirteen and fourteen underline the novelty of treatment three: few students have used aural editing techniques in the past. Presumably they have not because they have been taught that editing is a graphic, rather than an acoustic process. The five who said that they regularly read their work aloud for an audit seemed to have arrived independently at this technique: it was not something acquired in school. Two recalled learning the process from their elder siblings; the other three were unable to remember when or in what circumstances they began to use aural editing.

Question 15: In the future, could you make use of this listening technique to revise your work?

Twenty-three of the subjects said that they would like to make use of this technique to revise their work in the future. One student was uncertain. The four students who said they would not want to try the technique again were all E.S.L. students.

Summary of interviews

The students appeared to respond easily and honestly to the questions posed by the interviewer. Even if one assumes a margin for lack of candour, forgetfulness, and attempting to please the interviewer, there still comes through the words of the students a feeling that they found the aural cuing a
useful and even refreshing tool for revision. Their remarks can be applied to seven important aspects of revision.

1. The students were aware of the numbing effect a salient text can have on their diagnostic powers.

   When I read it over, I miss a lot.

   Yeah, I was surprised at what I could hear... mistakes...I think I would have missed them if I had just been reading.

2. Certain students expressed the feeling that, on listening to their writing, they were almost forced to revise.

   It was interesting how...it made me change things.

   I liked listening...It made me...I had to re-word a lot.

3. Several students commented that finding errors was easy.

   It was good for finding things that sounded weak.

   I can hear mistakes.

   It's a good way of finding errors.

4. One student specifically suggested that she was able to deploy her aural skills to help diagnose written mistakes.

   Because sometimes hearing is easier than reading it. You're used to people talking and using their... how they use the words and use and stuff, and when you read it, sometimes you just go monotone...So hearing it is better.

5. Diagnosis of problems of logic and clarity was made easier.

   It would be good to get...to hear how it sounds... how clear it sounds.
It's a good way of checking...if it makes sense or not...And if there is something you have to add.

6. Sense of audience is a quality difficult to develop in a writer. Three students made comments which suggest that aural cuing helped to achieve the distancing necessary to write for some one else.

Yeah. Hearing it was a bit like reading some one else's writing. If it's my own writing, I don't notice the mistakes so much. If it's some one else's, you notice the mistakes.

Because I know what I want to say, but sometimes it doesn't sound like I wanted it to. I could tell what it would really mean to some one else.

In a sense when you have read it out loud you can hear where the changes should be... Read your own work, you understand it from your own point of view. But you don't know if everyone else will understand. You understand it in yourself because you've written it. You understand the core of your work. You can make it so they will understand.

7. Two students suggested that they might profitably employ acoustic cuing along with traditional visual cuing for revision.

It would be a way of seeing if the organization was O.K. But I would want to see my draft at some point...I was more comfortable doing the third draft.

It would have to be coupled with the written work... to get at spelling and that.
Textual Saliency

The question of the saliency of the text, as studied by James (1987), and by Matsuhashi and Gordon (1986), was also of interest. Indeed, the notion of textual saliency was an important conceptual underpinning of this study. Whether or not sixteen year old high school students would react in the same way as college students to the challenge of redrafting in the absence of the text of the first draft was not known. Certainly, it was anticipated that the subjects in treatment group three, who were not permitted access to their first drafts during the first revision session, would benefit from being denied visual access to their texts. The inclusion of treatment two, in which students were allowed to view their first draft for diagnostic purposes, but were asked to redraft without their first draft text, was an attempt to provide a slightly different perspective on textual saliency; this group differed from treatment group three only in that the revision cue was visual. Both treatments two and three had in common the absence of the first draft text.

An ANCOVA on the third draft score for treatments one and two indicated significant main effects for teacher and English status, but not for treatment or sex (see Table 19). No significant two- or three-way interactions were indicated. Unlike the subjects in James' (1987) study, the subjects in treatment group two did not revise significantly better when deprived of their original text. When the treatment groups' performances are viewed on a graph (see Figure 4), the revision performance of treatment group two compared with that of treatment group one can be seen as only marginally better than the latter.
Table 19

Factorial ANCOVA (third draft quality score) for treatments 1 and 2. See Appendix M for complete tables.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>1.393</td>
<td>1</td>
<td>1.393</td>
<td>.112</td>
<td>.739</td>
</tr>
</tbody>
</table>

Immediacy of Treatment Effects

It was anticipated that the results of the treatments would become apparent after the third writing session. However, the possibility existed that some differences among the groups might be apparent after the second writing session. Therefore, an analysis of covariance for all three treatment groups was also done on the draft two score with the draft one score as a covariate (see Table 20). The ANCOVA indicated no differences for the treatment group variable.

Table 20

Factorial ANCOVA (second draft quality score with first draft score as a covariate) for treatment groups one, two and three. See appendix O for full tables.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
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</tr>
<tr>
<td>TG</td>
<td>.256</td>
<td>2</td>
<td>.128</td>
<td>.008</td>
<td>.992</td>
</tr>
</tbody>
</table>
Figure 4
Mean quality scores by draft for each treatment group

Summary of Findings
Although measures of initial equivalence indicated that no significant differences existed among the three treatment groups, certain predictable within-group differences appeared: native speakers achieved higher scores than E.S.L. students; subjects in an advanced composition class outperformed their counterparts in the regular composition classes. On the measures of G.P.A. and modified G.P.A., class and gender were significant variables. The
four regular composition sections exhibited a range of scholastic abilities; the girls had higher mean G.P.A.'s than did the boys (see Appendices G,H,L,AH,AI for further discussion).

An analysis of covariance on the third draft scores with the first draft score as covariate was carried out on treatment groups one and three. The ANCOVA showed that those subjects who received an aural cue produced significantly better final drafts than those students who redrafted using the traditional visual stimulus—their previous draft. Furthermore, the former diagnosed significantly more text-base errors in their compositions, and when revising executed significantly more changes affecting meaning, both at the paragraph and the macrotext level. The experimental group diagnosed and executed significantly fewer cosmetic changes. Additionally, the experimental group employed significantly more parallel and extended parallel topical progressions than did the control group.

Treatment group two represented a middle ground between treatments one and three. In this second treatment group, subjects had visual access to their first drafts only during the diagnosis phase of the first revision session; before the redrafting began, their first drafts were removed. This group did not perform significantly better than the students of treatment group one who received the traditional graphic cue. However, the subjects of treatment groups two and three had a common reaction to the absence of their first draft text: they were cautious and critical in their evaluations of their second drafts. The subjects of treatment group one, in marked contrast, gave very positive evaluations after the first revision session.

The experimental treatment was not immediately effective. The ANCOVA on the second draft scores indicated that, following the first revision session, there were no significant differences between the treatment
groups. Only after the second revision session, in which the subjects of all the treatments had visual access to their first and second drafts, did a significant difference become apparent.

Correlations among quality ratings, writing apprehension, attitude toward revision and scholastic ability proved surprisingly weak, or even negative, in all three treatment groups. At most, only about thirty-five percent of the variance can be accounted for. In terms of the research questions, the relationship between the effects of hearing a text on one hand, and the students' scholastic abilities and their attitudes toward writing and revision on the other, is very unclear.

Interviews conducted with subjects of the experimental treatment support the notion that such a stimulus may serve as a powerful heuristic for revision. Students commented on the potential usefulness of the aural cue for overcoming textual saliency, for achieving a sense of distance from their work and a sense of audience, and for diagnosing problems of logic and meaning in their work. They were apparently able to utilize their knowledge of oral discourse as an aid to revision of written text.
CHAPTER FIVE  SUMMARY AND DISCUSSION

This chapter is in two parts. The first consists of a brief summary of the purpose, methodology and results of this study. The second part is a discussion of the conclusions which can be drawn from the study, of the practical implications of the findings, and of possible directions for future research.

Summary

Background.

The Western world, as a culture, took two millennia to move from oracy to literacy. From the time of the invention of the phonetic alphabet in pre-Classical Greece to the Enlightenment, the organizational patterns associated with the two modes of oracy and literacy existed side by side. Not until the seventeenth and eighteenth centuries did the logical and analytical power implicit in the written language finally place this discourse modality in its present pre-eminent position as the principal means by which the culture expresses itself. This study is based in part on the notion that the individual learning to write goes through a transition similar to that experienced by the culture. During this transition, the mental operations associated with oracy and literacy operate simultaneously in the individual, just as they did in the culture as a whole. This coexistence has been perceived to interfere with the development of writing skills in beginning writers; however, it is possible that a student's oral capabilities may be used to facilitate his or her progress in written expression.

Inexperienced writers have a distinctive revision profile. Text analysis and process description by Perl (1979), Sommers (1980), Bridwell (1980),
Faigley and Witte (1981), Bartlett (1982) Flower, Hayes, Carey, Schriver and Stratman (1986) have shown that beginning writers revise little without prompting, are overly concerned with editing superficial errors, rarely make alterations to the meaning and fundamental structure of their text, often fail to improve their work even when they do attempt to revise.

Research suggests two approaches by which instructors of composition might assist their students to revise. Several researchers (Garrett-Petts, 1981; Gordon and Matsuhashi, 1986; James, 1987) have suggested that the text itself is a barrier to revision for beginning writers. Techniques of re-drafting which involve the removal of the graphic stimulus of the original draft have been used to improve significantly students' revisions. A second approach which teachers might use is to exploit the oracy of the student. Danielewicz (1984), De Beaugrande (1984, 1987) and Elbow (1985) suggest that speech and writing are complementary, interpenetrating processes. Frederiksen, Frederiksen and Bracewell (1987) and Gumperz, Kaltman and O'Connor (1984) note that the structure of both spoken and written discourse is subordinate to a macrostructure. Witte (1983) suggests the possibility that the apprehension of this macrostructure is critical to the revision of any text. Hildyard and Olson (1982) found that listeners were better at the recall of structural elements of a text than were readers.

Methodology.

In order to investigate the extent to which students might be made to draw upon their oracy resources to facilitate revision, this study examined the effects of three different revision stimuli or cues: the conventional graphic presence of the original text, the removal of the original text, and an aural repetition of the original text. The study investigated the effects of these three cues on the quality of the revisions, the types of revision executed, the
students' self-evaluations of their work, and the diagnoses of their first drafts made by the subjects. The study also sought to determine whether these effects were related to the subjects' academic ability, their attitudes toward writing and their attitudes toward revision. Also an analysis of the use of topical progressions was done on a sub-sample, and interviews were carried out with a second sub-sample.

A pilot study was conducted to see whether the methodology was well conceived. Twenty-five students enrolled in a standard grade-eleven composition quarter course were randomly assigned to three treatment groups. Each student was asked to compose an essay on an assigned topic during a regular class period. In a subsequent period, the three treatments were administered: the first group received back their first drafts and were asked to produce a second draft; the second group received back their initial drafts, but these drafts were then collected and the subjects were asked to produce a second draft without access to their first drafts; the third group listened to a recording of their first drafts, and, without having the written copy to examine, was then asked to compose a second draft. In a final period, all the subjects received their first and second drafts, and were asked to produce a third draft, consulting their earlier drafts as much as they wished. Each student was asked to evaluate his or her draft at the conclusion of each writing session, and, following the final session, to answer questionnaires on apprehension and revision attitude. Also, before the first revision session, each subject was asked to diagnose five faults in the first draft, and to suggest how these faults might be corrected. It was hypothesized that, as other researchers have found, the graphic text itself would act as a barrier to substantive revision. Furthermore, it was hypothesized that the use of an aural review of the first draft would enable the subjects in treatment group three to
use their knowledge of oral discourse as a means to diagnose problems in their written work.

Following an analysis of a sample for level of revision and topical progression pattern, and the holistic quality evaluation of a second sample of the drafts, modifications were made to the research design prior to the full-scale study. The principal changes were the introduction of a revised rating scale, more appropriate for writers at the grade-eleven level, and the elimination of the detailed description of revision operations, in favour of a simple three-level classification system.

The full-scale study involved six grade-eleven writing classes in a suburban high school, a total of 162 students, having five different instructors who supervised the writing sessions. In each class, subjects were randomly assigned to one of the three treatment groups. The writing topic was a general question dealing with ecology; it was felt that all students would have had some exposure to this subject. Data collection took place over a two-week period, with all writing done within the regular seventy-five minute period. Complete data sets—three drafts, three self-evaluations, one diagnosis sheet, one apprehension questionnaire and one revision questionnaire—were obtained for 104 students.

A simplified version of the taxonomy developed by Faigley and Witte (1981) was used by the researcher and a colleague to assess the levels of problem diagnosis and the levels of revision shown by each subject in drafts two and three. These same raters also examined the second and third drafts for topical progression patterns and number of topics, as discussed by Witte (1983). Two external raters, composition instructors at a local college, carried out holistic quality ratings on each of the 312 drafts.
After the rating procedures were carried out, the data were tabulated in preparation for statistical analysis. The means and standard deviations were calculated for the three draft scores, G.P.A. and modified G.P.A., writing apprehension inventory score, revision questionnaire score, diagnosis level, evaluation values, and revision level changes in both the second and third drafts. For a sub-sample of forty texts from groups one and three, the mean and standard deviation were calculated for topical progression values and number of topics.

An analysis of variance was done on the first draft score, the G.P.A. and the modified G.P.A., and the revision questionnaire scores, to verify that the subjects of the three treatment groups were of the same population. To determine the effect of the treatments, an analysis of covariance was carried out on the third draft scores, using the first draft scores as a covariate. As a means of examining the differences between the various treatment groups, the same ANCOVA was done on each possible pair of treatment groups. Finally, an analysis of covariance was done on the second draft score, with the first draft score as covariate, for the purpose of investigating the immediacy of the effects of treatments two and three. A one-way analysis of variance, followed by the Tukey’s multiple range test, was calculated to test for the significance of the differences between means of the following variables: diagnosis level, level of revision change in drafts two and three, topical progression values, number of topics, and self-evaluations.

The Pearson correlation was calculated for each treatment condition, in order to assess the strength of the relationship between the following variables: draft quality ratings, G.P.A., revision attitude, writing apprehension, diagnosis level, and revision level.

Results.
The prime question of this study was whether an aural cue would facilitate revision. Such was found to be the case. The findings showed that those subjects who received an aural cue produced significantly better final drafts than those students who redrafted using the traditional visual stimulus—their previous draft. Furthermore, the subjects of treatment group three diagnosed significantly more text-base errors in their compositions, and when revising executed significantly more changes affecting meaning, both at the paragraph and the macrotext level than did those students in treatment group one. The group receiving the aural cue diagnosed and executed significantly fewer cosmetic changes in their drafts—changes which had no effect on meaning. Additionally, the experimental group employed significantly more parallel and extended parallel topical progressions than did the control group. No significant differences were found in the self-evaluations of the treatment groups. In sum, the students who heard their drafts read but did not have their hard copy in front of them 1) achieved higher quality final drafts; 2) made more high-level and fewer low level revisions; and 3) employed a more literate organizational form.

The subjects in condition two, those who were denied access to their first drafts after a brief visual review of that draft, did not produce significantly better final drafts than those students in group one, who had their first drafts before them while writing their second drafts. However, between drafts two and three, the students in group two showed greater gains than those in group one, though not as great as those in group three. In their attitude toward what they had written, the students in group two resemble those in group three. Not until they had completed the third draft were they satisfied with their performance. In contrast, a majority (76.4%) of the subjects of group one expressed overall approval of their work after the
second draft, even though this approval did not correspond to an increase in quality. Because of the presence of their first draft, the subjects of group one were able and seemingly content to carry out low level revision. This superficial modification was apparently sufficient to alter their opinions of their work.

Although positive correlations had been expected among quality ratings, attitude toward revision and scholastic ability, these relationships were surprisingly weak, and at times negative, in all three treatment groups. The relationship between the subjects' attitude toward writing and the third draft scores was similarly ambiguous: an expected negative correlation between the above variables and writing apprehension appeared, but was also weak and inconclusive. The correlation coefficients for modified G.P.A. were significant; those for G.P.A. were generally significant; those for writing apprehension and for revision attitude were generally not statistically significant.

In general, E.S.L. students profited less than their native-English speaking counterparts from the experimental treatment. Predictably, their difficulties with the written language were a handicap. One might have anticipated that the aural cue would constitute an additional cognitive burden which would make revision even more difficult. Nevertheless, the E.S.L. subjects in treatment group three showed greater gains in quality than the E.S.L. subjects in treatment group one.

Following the second revision session, interviews were conducted with subjects of the experimental treatment group three. The interviewees indicated that the novelty of the treatment may have had a considerable shock effect. However, the students were almost unanimous in saying that the treatment helped them to criticize their unseen written work, and they suggested that
they would like to try this revision technique in the future. Their comments lend support to the notion that such a stimulus may serve as a powerful heuristic for revision.

Discussion

**Questions of internal validity--history.**

Comments made by the raters suggested that some students seemed much better informed than others about the topic of ecology. Whether these students possessed a richer information store because of personal interest and ability, or because of some other influence, is not known. The possibility that some subjects were exposed to informal discussion of ecology-related topics in other courses, chemistry or geography for instance, cannot be ruled out. Nor is it possible to know what stimuli the students received outside of the school curriculum. In the end, however, the researcher found no reason to believe that the effects were different for any one of the three treatment groups.

The time lag between sessions one and two, and between sessions two and three, is another possible influence on the subjects' final written product. Since the various classes involved in the experiment did not simultaneously execute each stage of the study, discussion among students or individual reflection may have had some impact on the subjects' performance. Again, the researcher can only assume that any interference was the same for all treatment groups.

**Questions of external validity--attrition.**

The truncation of one whole class of "advanced" writers, due to a maladministered writing session, tended to restrict somewhat the population represented in the treatment groups. Nevertheless, enough good writers were
apparently enrolled in the regular composition sections so that one may say that the sample in the study is representative of the grade eleven student body of a suburban Vancouver high school. It is important to note that the standard composition classes were not equally inferior to the advanced section. As noted in chapter four, the regular classes seemed themselves divided into two groups, one more and one less successful. If one looks at the modified G.P.A. in terms of treatment group and teacher, an interlocking pattern emerges. Such a gradient of overlapping abilities would not seem to be the product of a bipolar division of classes into advanced and regular groups. Something more complex has occurred; i.e., many good writers have selected the standard composition course.

**General discussion.**

The treatment group which received an aural cue produced significantly higher quality third drafts than the group receiving a traditional visual revision cue. The subjects of the former group also executed significantly more changes affecting meaning and fewer superficial changes in their work. These results seem to reinforce the ideas of several researchers concerning the apprehension of oral language structure and writing. Elbow (1985) and Frederiksen, Frederiksen and Bracewell (1987) noted that speech, like writing, achieves meaning through coherence—the linkage of units related to a topic. Danielewicz (1984), Halliday (1987), Perfetti (1987) and Biber (1988) claim that spoken and written language have many elements in common, and that differences are due to register or communicative function. The presence of common features and structural characteristics would seem to make possible an interaction between the two language systems. Indeed, Perfetti affirms that such is the case: during the period of acquiring a second language system (writing), the learner will employ components of the language system
acquired first (speech). Both the statistical data and the interviews indicate that the subjects who received an aural cue did in fact use their oral/aural capacity to modify their written work.

In the cognitive process model of Flower, Hayes, Carey, Schriver and Stratman (1986), evaluation, the first step in revision, is directly based on an apprehension of the macrostructure of a text. Effective problem detection and diagnosis requires that the writer be able to compare his or her rhetorical objectives with the gist of the evolving text. What Flower et al. call the "constructive test" (p.27) occurs as the writer oscillates between his or her internal representation of the text and the actual text produced. The results of this study suggest that the focus on higher level structural organization, which the aural cue forces upon the listener, facilitates effective revision. In contrast to the subjects of treatment group three, the students in treatment group one were less able to carry out revision of the text base and more likely to concern themselves with superficial revision.

Flower et al. make an important distinction between detection and diagnosis. Following a negative evaluation, a writer must attempt to construct a representation of the problem. Detection is the sensing of a lack of fit between intention and text; diagnosis is a further step, in which the problem is placed in a conceptual category, additional information is brought to bear on the problem, and solution procedures are sought out. In this study, treatment three seems to have helped some students move from simple detection to the more powerful form of problem representation: diagnosis. However, this movement toward a revision strategy, rather than a rewriting strategy, is dependent, as Flower et al. note, on the writer's possessing a knowledge base of features, patterns, categories and rules.
A latent capacity, in inexperienced or poor writers, to create the architecture required for expository writing has been suggested by several researchers (Judy 1976; Perl 1979; Sommers 1980). Such a potential would seem to be linked to the ability to use the oral modality. The results of this study did not indicate any significant difference, in terms of ability, to the responses to the aural cue; however, those classes which were weaker in terms of the initial measures—G.P.A. and the pretest—performed as well or better than those classes which were stronger. On the pretest, the students in the advanced composition course did write significantly better than those in the regular composition classes. Once the pretest scores were controlled for, class was not a significant variable in the posttest. Nevertheless, the data do hint at a difference in the effectiveness of the treatment depending on the writing ability of the subject. Although within each class, the subjects that received treatment three produced on average higher quality final drafts, the margin of improvement varied greatly from class to class. The advanced writers showed only a 0.91 point gain (3.9 percent) over the three drafts; one of the weaker classes achieved a gain of 5.31 (41.2 percent); the other three classes have approximately the same increase: 2.66; 2.00; 1.90 (15.5, 12.1, and 14.2 percent). However, because of the reduced number of advanced writers (n=11) and the fact that class was not a significant variable in the ancova on the third draft scores, this difference is only suggestive; the absence of the second advanced composition section is indeed vexing. Although reading and writing abilities are far from perfectly correlated, it is interesting to note that studies involving reading ability and speech reveal ambiguous results. Hildyard and Olson (1982), Berger and Perfetti (1977) and Smiley et al. (1977) found that good readers demonstrated superior structural recall (i.e., gist) of heard stories. On the other hand, Torrance and Olson (1984)
found that the establishment of discourse topics (i.e., gist) in speaking was independent of reading skill. One might theorize that aural cuing is more effective for students who are less far along the oracy-literacy continuum, but such a theory remains at this time speculation and a possible topic for future study; the results of this study offer no clear indication that such a benefit occurred (see Appendix AH).

Perl (1981), Sommers (1980), and Faigley and Witte (1981) all observed that the graphic text itself seems to have a strong influence on beginning writers: the concern for superficial correctness seems to affect the process of revision in a negative way. In addition, Hull (1987) suggests that the graphic text serves to crystallize writers' rhetorical intentions, making the detection and alteration of errors in meaning difficult. Saliency of the graphic text is a problem which the aural cue, applied to treatment group three, certainly circumvented. Treatment group three did indeed make more meaning changes and fewer cosmetic changes than treatment group one, whose subjects had access to their texts while redrafting. What is puzzling is the question of why treatment group two, which also did not have access to the first draft while redrafting, did not perform significantly better than treatment group one. Matsuhashi and Gordon (1985) and James (1986) found that depriving the subjects of the initial drafts did provoke higher level revision and higher quality in subsequent drafts. In this study, it must be noted that prior to revising, the subjects of group two did have visual access to their first drafts, unlike the subjects in the studies of James and Matsuhashi and Gordon. This exposure may have attenuated the effect of removing the text during the redrafting phase. However, two observations suggest that for group two, the relief from the constraints of the visual text did produce positive results. First, treatment group two did outperform treatment group
one during the second revision phase, although the difference was not significant. Secondly, the phenomenon of closure, noted by James, or crystallization, noted by Hull, seems to have been prevented by the removal of the first draft. The evaluations of the second draft given by the subjects of group two are balanced between approval and disapproval. Not until they completed their third draft, aided by the presence of their first and second drafts, did they express satisfaction with their writing. On the measure of G.P.A., treatment group two was marginally, though not significantly weaker than the other two treatment groups, and like the other two groups, its subjects were relatively unused to writing in the expository or argumentative modes. Perhaps the ability, age and inexperience of the subjects in group two attenuated the effect of the treatment.

After the first revision session, the difference in self-evaluations approached significance: the subjects of treatment group one, unlike those in the other treatment groups, expressed approval of their work. Why the abrupt change in their opinion at this stage of the experiment? Perhaps the subjects in treatment group one were more anxious about their writing; one notes that, after the first writing session, they did express marginally more dissatisfaction than did the other groups. When they were given the chance to re-write, they did revise, albeit in a generally superficial way. But it would seem that to them, this act of editing was apparently sufficient to alter dramatically their perceptions of their work. It seems possible that an incomplete concept of revision may have combined with the saliency of the first draft text to distort the ability of the subjects to react critically to their own work.

For treatment groups two and three, the shift does not occur until after the second revision session. Several reasons might account for this different
behaviour. It is possible that the treatments themselves somehow created an uncertainty or anxiety among the subjects which made them more critical of their writing. The fact that they were not able to execute low level revision or editing may have prevented their achieving a sense of completion or closure. It is also possible that the treatments in some way interfered with the normal revision pattern, even of those subjects who were disposed toward higher level revision. Finally, perhaps treatments two and three created in the minds of the subjects a dissonance, a conscious perception of unresolved rhetorical problems, which still preoccupied them at the conclusion of the first revision session.

The reaction of the E.S.L. students to treatment three was both predictable and intriguing. Clearly, as shown in the pretest, these students are at a disadvantage in terms of their facility with the written language. Also, given that many acquired their English through a reading and translation method, and given that they continue to use their mother tongue outside the school situation, the E.S.L. students are perhaps at at least as great a disadvantage in terms of their ability to use the spoken language. That the students are aware of this disability was clear in the interviews conducted with the E.S.L. subjects of treatment group three; the subjects unanimously expressed dislike of the aural cue and a preference for the graphic text. The E.S.L. students probably took the task of revision more seriously than the native speakers. The former group's quality gains over the three drafts—2.86 (29.5 percent)—were greater than those of the latter—2.66 (15.6 percent). Such gains might be expected, since the E.S.L. students are in general well motivated. Because these students are still in the process of acquiring basic language skills, they have become accustomed to the necessity of having always to revise their work. However, what is tantalizing is the implication
suggested by an examination of the gains in terms of the treatment received. The E.S.L. subjects of treatment group three increased their mark by an average of 4 (41.67 percent); this gain compares very favourably with that of the E.S.L. subjects in group two (2.4 or 33.33 percent) and group one (2 or 15.38 percent). The low number of E.S.L. subjects (n=14) makes generalization difficult; nevertheless, the above results suggest an avenue of future research.

A most intriguing piece of data was the significantly greater use of parallel progressions by the writers in treatment group three. The use of such structures implies an evolved organizational pattern, quite different from the associative, sequential patterns of oracy. Witte (1983) found that better revisors used more parallel topical progressions, and the possibility cannot be ruled out that the use of such structures marks the writer who has moved beyond hybrid literacy to the logical realm of hierarchical subordination required by expository and argumentative prose. To judge from their use of parallel and extended parallel progressions, the subjects of group three seem to have been more literate writers, and therefore more capable of expression given the constraints of the writing topic. And yet, the statistical measures do not suggest that this group differed in any important way from treatment groups one and two. How can one account for this apparent contradiction? Perhaps the answer lies in a paradox: the aural treatment seems to have enabled the subjects of group three to better deploy their resources of literacy. There would seem to be two means by which such an effect could have occurred. First, the aural cuing might have made the writers more aware of problems of structure and clarity—problems which in expository writing can be best resolved by the employment of logical subordination, i.e., parallel topical progressions. Secondly, the aural cue must certainly have temporarily
eliminated any problem of the saliency of the graphic text, thereby providing
the subjects with a window through which the larger rhetorical questions
might be viewed without distraction. These possible causes are not mutually
exclusive; on the contrary they are potentially mutually reinforcing,
synergistic. One suspects that they both underlie the revisions of the students
in treatment group three.

It is interesting to observe that at the first revision stage, there are no
significant differences in the quality ratings among the groups. One might
wonder why, if the treatments do have different effects in a subsequent
revision session, the subjects did not profit immediately. Probably the most
important factor which might explain this lag is student attitude: they were
perhaps willing to edit, but not to re-draft. The instructors commented on the
students' grudging acceptance of the task in the first revision session. The
subjects simply did not wish to abandon the work they had already completed
in the initial session. Two of the teachers remarked that some of the subjects
in treatment group three tried to copy out parts of their original, as though
they were taking *dictée*. Nevertheless, at the third session, the students in
groups two and three, had in their two drafts more material to synthesize into
a third draft.

A second possibility is that the unexpected nature of the revision stimuli
might have temporarily blunted the effect of the treatment. The novelty was
mentioned by almost all the students in the post-writing interviews. While no
interviews were carried out with the subjects of treatment group two, one
might speculate that they too found their revision processes inhibited by the
novelty of the treatment during the first revision session.

A third reason might lie in the nature of the subjects' oral and writing
capacities. If, as has been hypothesized, these students are for the most part
hybrid literates, they are caught in a literacy double-cross. If the notion of irreversibility applies to the development of literacy, then they must, when writing, function in the graphic mode, however difficult that may be. While acoustic cuing might have enabled them to employ their aural sense of structure to detect problems, the application of a diagnosis for revision perhaps required the presence of the text. Once again, anecdotal comments from the supervising instructors were revealing. They noted a definite sense of relief, especially among the members of treatment group three, when the subjects received their two first drafts before the final re-write.

The researcher hypothesized that those students receiving the acoustic revision cue would benefit from their aural ability to perceive the gist of a discourse. They then would modify their work to fit what they saw as the hypertheme, or perhaps they would alter the hypertheme itself. Certainly, the subjects receiving the acoustic cue did execute more meaning changes at the paragraph or sentence level. The notion of textual saliency could explain this difference: the very presence of the text might have inhibited revision of the text base by the subjects of treatment group one by focusing the revisor's attention on the graphic quality, rather than on the quality of the underlying structure. The students of treatment group three apparently were in some way more free to play with their text, adding, deleting, altering or clarifying meaning. It is interesting, however, that only eight of the thirty-six subjects of treatment group three made changes at the macrotextual level. While this number certainly exceeds the single subjects in groups one and two who made changes at the macrotextual level, one is left to wonder why more changes did not occur at this level in the work of group three. Possibly, the production of the first draft required such cognitive effort that, given the chance to revise, the subjects were not prepared to augment or alter any more than was
absolutely necessary. Certainly, their focus seems to have been on carrying out changes at the microtextual level in order, to use Flower and Hayes' (1981) model, that the text should conform as closely as possible to the rhetorical problem. Whether or not each subject's perception of the rhetorical problem was changed, even temporarily, by the treatment cannot be known; there is no way of knowing what internal planning occurred before the transcription phase of the revision sessions. It might be that more alterations of the hypertheme were contemplated than actually appeared in the second draft. Furthermore, the observed tendency to reduce and simplify may be construed as a positive result: Witte (1983) found that the best revisors, as they proceeded through a process of focusing and subordinating, tended to reduce rather than increase the number of topics (See appendix AK). Nevertheless, one wonders whether writers more experienced than the grade-eleven subjects of the study would have been able to respond even more freely to the aural cue, and to restructure their texts more dramatically.

It had been expected that stronger relationships would have been indicated among the draft scores, the revision and writing apprehension scores, the G.P.A. and the diagnosis level; however, most correlations were weak or negative. One source of this weakness probably lies in an unsound measure of expository writing ability: the G.P.A. The measure was not a good predictor of achievement, since the correlation of the final draft score and the G.P.A. accounted for only approximately twenty-five percent of the variance. The grade-eleven course composition is for many the first extended encounter with expository writing. Their modified G.P.A. may reflect their ability to write narrative or descriptive prose, but in many cases, as their third draft marks suggest, they have yet to become comfortable with the more formal writing styles. The modified G.P.A. does not accurately indicate their
writing ability, especially at this critical level, between grade-ten and grade-twelve, when the formal techniques of argumentation and exposition are stressed.

A negative correlation would be expected between writing apprehension and the third draft score, but the weakness is intriguing. Apparently, those students who indicated that they were apprehensive writers managed to acquit themselves relatively better than they might have expected. It may be that they are anxious in the way some students fear exams; when the revision period extended over three sessions, perhaps they were able to calm their fears. Another possibility is that students who desire to succeed may express anxiety about success in terms of fear of writing: any time they take up the pen, they risk not measuring up to their own expectations. They are nevertheless highly motivated, and ultimately, in spite of, or conceivably because of their apprehension, they produce good work. It is also possible that this particular group of subjects, having a fine nose for busy work, approached the questionnaire with indifference. There were, after all, no marks to be had for completing the writing apprehension inventory.

This same indifference may have affected their responses to the revision questionnaire. Also, as discussed in Appendix AJ, there is the possibility that most of the respondents could not, or would not revise beyond a superficial level. It is interesting that the attitude toward revision, at least insofar as it was revealed in the responses to the questionnaire, does not show the same pattern between classes as was observed for the first draft scores, the G.P.A. and the modified G.P.A.; i.e., in the case of the revision questionnaire score, the teacher was not significant. Class two did not appear superior; classes four and five did not appear inferior. Indeed, one of the poorer classes, that of teacher four, posted the highest combined score for both
sexes. The advanced composition class had only the second highest average score. The other weak class was the lowest, but by very little: the difference between the highest and lowest class mean was only 5.07. Following on the significant differences on ability measures observed between classes, this homogeneity was unexpected.

One might have expected the attitude toward revision to be manifested in the written product, and therefore that the questionnaire score would correlate positively with the quality rating for all drafts but especially drafts two and three. Such was not the case; correlations were weak or even negative. Furthermore, the treatment groups show different trends. In the case of treatment group one, the correlations become slightly stronger over the three drafts. Indeed, one would expect such a trend. Group two's correlations rise, then become slightly weaker. Those of group three show a decline. Possibly, treatment three permitted those students with low revision questionnaire scores to execute better redraftings than they might otherwise have done. Also, it may be that in all three groups, attitude toward revision does not contribute directly toward writing ability. Or perhaps more accurately, attitude toward revision, even if correctly measured, is subject to the influence of the subject's motivation, ability to diagnose and correct errors, and familiarity with the discourse type.

The attitudes expressed in the writing apprehension and revision questionnaires may indeed be the true attitudes of the subjects; however, the work being done might have been influenced the interaction of these attitudes with other factors: general motivation, interest in the topic, ability to perform under pressure. One also wonders about the seriousness with which the students approached what they probably perceived as something other than regular class work. The fact that the experiment continued over three periods,
several days, might have created further inconsistencies in effort which would have affected the statistical relationships of the above measures. Certainly, in terms of the data gathered in this study, it cannot be said that a strong relationship exists between the effects of hearing a text on the one hand, and students' general scholastic ability and attitudes toward writing or revision on the other.

Conclusions

From the results obtained in this research project, the following conclusions can be drawn regarding the relationship of differing revision cues and the writing of grade eleven students.

1. Acoustic cuing can serve as a tool to stimulate revision of student texts. The findings showed that those subjects who received an aural cue produced, as a group, significantly better final drafts than those students who redrafted using the traditional visual stimulus—their previous draft.

2. Although no significant differences in the self-evaluations occurred between the treatment groups, it seems that the acoustic cue forestalled the occurrence of the phenomenon known as closure.

3. Acoustic cuing can serve as a means of provoking substantive revisions in a text. The subjects in all three treatment groups, like the inexperienced writers described by Perl (1979) and Sommers (1980), and in contrast to James' (1987) subjects, were generally reluctant to revise beyond a superficial level. In this study, however, those subjects who received an acoustic cue diagnosed significantly more text-base errors in their compositions, and when revising executed significantly more changes affecting meaning, both at the paragraph and the macrotext level, than did those students in the control group. Furthermore, the subjects of treatment
group three, the experimental group, diagnosed and executed significantly fewer cosmetic changes than did the students in treatment group one, the control group. Interviews conducted with subjects of the experimental treatment support the idea that an acoustic cue may be a useful stimulus for revision.

4. There is evidence that the presence of the text itself inhibits substantive revision, as Matsuhashi and Gordon (1985) and James (1987) found. In the case of the writers examined in this study, the saliency of the text already produced may have reinforced an already inadequate revision process. The subjects of treatment group three, who were forced to redraft without their original texts before them, were better able to carry out substantive modifications to that first draft, and were better able to synthesize their first two drafts to produce a final draft.

5. At the grade-eleven level, the degree of anxiety expressed about writing does not correlate strongly with quality ratings achieved by the students.

6. The general scholastic measure G.P.A. is not a good predictor of the quality ratings of the student expository writing at the grade-eleven level.

7. The attitudes towards revision and the concept of revision expressed by the students do not necessarily indicate an ability or a willingness to carry out revision where required. Even an apparent ability to diagnose substantive errors in a composition is no guarantee that the required revisions will, or can be, carried out.

8. Acoustic cuing may be usefully employed with E.S.L. students who have achieved a certain competence level in English. E.S.L. students in treatment group three showed stronger gains than E.S.L. students in the two other treatment groups.
Practical Implications.

Since the sample used in this study was drawn from grade-eleven composition students in a single suburban high school, and since these students wrote and revised a single writing assignment over a two week period, the conclusions drawn from the study are subject to limitations. Given this caveat, however, the researcher believes that several important implications for the instruction of composition arise from the results of the study.

Teachers of composition need to place more stress on the possibilities that revision offers the student writer, and to integrate revision more completely into the concept of writing. This study suggests that revision, as contrasted with editing, may not be being taught as a part of the writing process in the grades prior to senior high school. Indeed, the sense of frustration observed in the subjects of all the treatments might well have been due in part to the extensive time allotted to revision. The students in treatment groups two and three quite simply did not know what they were supposed to do since they were unable to correct superficial mistakes; the subjects of treatment group one apparently shifted their attention to text-base revision after exhausting the possibilities for superficial editing. From the subjects' viewpoint, there could have been as much novelty in the idea of extended revision as there was in the treatment. Yet, once they began to revise, most of the subjects improved their work, and, according to both the students interviewed and the self-evaluations, were conscious of this increased quality.

Even if the students at the grade-eleven level arrive burdened with limited revision strategies, this study suggests that they are capable of increasing the quality of their writing by executing text-base revision in
addition to editing. Time may be a critical factor; it is easier to come to a text with a fresh eye if several days have passed. Certainly a multi-stage revision timetable, such as was suggested by Garrett-Petts (1981) and used by James (1987), seems to be a useful heuristic which enables the student writers to tap their own language resources to improve their texts.

An aural sense of structure and logic within language constitutes an important resource which even inexperienced writers can deploy in their struggle to write better. Teachers of writing should attempt to exploit this latent capability through the use of modeling behaviour, oral/aural peer editing, and structured aural critiques. If dialect and grapholect are made to interlock and reinforce each other, student writers can perhaps develop the sense of distance from their work which is the sine qua non of successful revision.

Directions for Future Research.

The present study was an exploration. Points that have arisen from the study—the effect of acoustic cuing, the use of aural cuing with various populations, student attitudes toward revision, and the execution of revision—need to be verified and further explored by subsequent research.

The notion of an oracy-literacy continuum is useful for the discussion of writers of differing abilities. Theoretically, apparent differences in writing ability might be accounted for by the subjects' being at different points along the continuum. On a practical level, however, there does not exist an instrument to simply and specifically assess the degree of a subject's progress.
toward literacy. Oracy and literacy can be defined with some degree of operational precision, but the need is for a scale to connect these two poles. If research were to develop such a scale, then investigations might be carried out to determine if, as this study suggests, acoustic cuing is beneficial to students at any level of literacy. In the absence of an oracy-literacy measure, research on acoustic cuing might be carried out with subjects chosen from nearer the extremes of the continuum: intermediate students and university students. The absence of any significant difference between two such groups would allow the researcher to infer, at least tentatively, that the technique is useful for all levels. On the other hand, results of such research might well imply that the aural cuing was more effective for those students near the oracy end of the spectrum.

The results of this study suggest the possibility that aural and visual cuing may interact during the revision process. Perhaps the gains shown by treatment group three were not a product of the aural cuing alone, but rather the result of a combination of the acoustic and the graphic. Just how aural cuing and visual cuing are related is a mystery. Two possible models suggest themselves. The first would imply separate cognitive processing and storage for acoustic and visual input, and would involve two discrete systems; the relationship between the two would be one of similarity. Both would be directed toward the goal of communicating a structured experience, and therefore might be used to reinforce each other. The second would be made up of two complementary and interpenetrating systems, whose relationship was one of congruity. In such a model, all language becomes in a sense, one; differences, as Biber (1988) observed, revolve around register or rhetorical function, not modality. It would certainly seem that oracy and literacy interact, and that this interaction may be a useful tool for the teacher of
composition. It is worth noting that two of the interviewed students made specific reference to a need for the graphic text to complete their revision. Yet these same students felt the acoustic cue to have been quite useful. Their comments suggest the possibility that aural cuing may serve as a catalyst for revision, for both good and poor writers but that some graphic textual input is required if revision in the form of graphic textual output is to occur. Future research on this question might take two avenues. First, an attempt should be made to isolate the effects of aural cuing. Secondly, it would be interesting to develop the ideas used in this study, that is, to observe the effects on revision of various combinations of aural and visual cues. The students' remarks implied that sequence is important; hybrid literacy seems to require both aural and graphic stimulus for revision. Questions of order, frequency and duration of the stimulus have still to be addressed.

In addition to experimental designs, future research might involve case study research. Yin (1987) characterizes a case study as:

an empirical enquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used. (p. 23)

The advantage of the case study lies in its capacity to utilize different sorts of data as evidence--interviews, observations, documents--to attempt to explain a phenomenon. It may well be that revision is such a complex event that only investigation using a broad spectrum of instruments will provide access to its workings.

The decision to revise and the execution of the revision presumably are dependent on two factors: how the student is able to make meaning from the text, and the degree to which he or she is able to play the role of the intended
audience. The students' comments during the interviews conducted for this study lead one to believe that oral protocols of revision activity, using the acoustic cue as a stimulus, might provide much information as to what triggers the impulse to revise. Such a study might also shed light on the lack of correlation between the subjects' concept of revision and their apparent ability to execute revision.

Finally, some attention should be paid to integrating the work done in linguistics with research in composition. Systems of classifying text, such as by topical progression, might serve as tools for the investigation of textual stimuli for revision. Furthermore, such systems might offer an accurate means of determining a subject's ability to write in the expository mode, that is, the extent of his or her development of literary competence from oral competence.
Bibliography


Hillocks, G. The interaction of instruction, teacher comment and revision in teaching the composing process. *Research in the Teaching of English*, 16, 261-278.


Appendix A

Sample responses to interview questions by a native speaker

1. Do you like to write?
   Yes.

2. Do you do any writing outside of school?
   Not much.

3. What do you understand by the term "revision"?
   Changing ideas.... Checking for errors.

4. Do you revise everything you write?
   No.

5. Are your revisions very different from your original drafts?
   Sometimes, but not usually.

6. At what point in your writing do you revise?
   It depends....If it’s something difficult...I’ll stop while I’m writing and change things. But sometimes I just write through to the end and then check over.

7. How do you start to revise?
   [I] read over the thing, paragraph by paragraph...look for things to change: good words, making sure the sentence makes sense...isn’t choppy....I worry about spelling and punctuation later.

8. What part of revision do you find the most difficult?
   Chucking out ideas you think are good but really shouldn’t be in there....Not getting so personally involved in it....You have to kind of step back.
9. What was your reaction to hearing your writing on tape?

   Oh God! It sounded strange. I was surprised how different it sounded.

10. How many times did you listen to your writing?

   I'm not sure. Three or four.

11. Did you find anything to criticize in your work?

   I sure did....It was really hard though...but you hear whether something makes sense or not...means what you meant it to mean....

12. Do you feel that you were able to make changes for the better?

   Oh yeah...because you hear that something doesn't sound right, so you express the ideas differently the second time around....And then you get new ones....By the third draft, it had really changed.

13. Have you ever listened to anyone's work in order to criticize it?

   No.

14. Has anyone listened to your work in order to criticize it?

   No.

15. In the future, could you make use of this listening technique to revise your work?

   I think I might....It was interesting how...it made me change things.
Appendix B

Sample responses to interview questions by an E.S.L. student

1. Do you like to write?
   No..

2. Do you do any writing outside of school?
   No. I don’t.

3. What do you understand by the term "revision"?
   Like I have to read it and correct the mistakes. Spelling, punctuation, the sentences, the construction.

4. Do you revise everything you write?
   It depends what I see.

5. Are your revisions very different from your original drafts?
   More or less the same.

6. At what point in your writing do you revise?
   I stop and check often.

7. How do you start to revise?
   I read it over and I put marks under my mistakes. Then I go back and change. Then I read it over again.

8. What part of revision do you find the most difficult?
   Grammar and spelling.

9. What was your reaction to hearing your writing on tape?
   I didn't like it. I didn't like the topic and I didn't write well on it.
10. How many times did you listen to your writing?

Four or five.

11. Did you find anything to criticize in your work?

I could hear mistakes in the content...too general. And the sentence construction...awkward or badly expressed.

12. Do you feel that you were able to make changes for the better?

I hope so. But I didn't write well.

13. Have you ever listened to anyone's work in order to criticize it?

No.

14. Has anyone listened to your work in order to criticize it?

No.

15. In the future, could you make use of this listening technique to revise your work?

I don't know.
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Results of LTRAP on Revision questionnaire scores

Appendix C

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Results of EPRAF on Writing Apprehension Inventory Scores

Apex dx

160
Appendix E

**Anova on first draft score by treatment group, teacher, and sex.**

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Appendix F

Anova on first draft score by treatment group, teacher, sex and English status

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Appendix G

Anova on G.P.A. by treatment group, teacher and sex

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<tr>
<td>Residual</td>
<td>84.688</td>
<td>74</td>
<td></td>
<td>1.144</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>160.654</td>
<td>103</td>
<td>1.560</td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>

As Table G-2 shows, the GPA differed among the treatment groups, but not significantly. Treatment group two appears marginally weaker than the other two groups.
Table G-2

G.P.A. by treatment group

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group 1</td>
<td>34</td>
<td>3.04</td>
<td>1.33</td>
</tr>
<tr>
<td>Treatment group 2</td>
<td>34</td>
<td>2.60</td>
<td>1.19</td>
</tr>
<tr>
<td>Treatment group 3</td>
<td>36</td>
<td>2.93</td>
<td>1.22</td>
</tr>
</tbody>
</table>

For the five classes, the G.P.A. presents a pattern similar to the first draft scores: classes four and five show inferior scores to those of classes one and three; class two is superior to the other classes. The rank order of the classes is the same, and the scores relative to each other are similar (see Table G-3).

Table G-3

G.P.A. and first draft score (F.D.S.) by class

<table>
<thead>
<tr>
<th>Teacher</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.P.A.</td>
<td>3.14</td>
<td>1.3</td>
<td>4.19</td>
<td>1.2</td>
<td>2.92</td>
<td>1.3</td>
<td>2.27</td>
<td>0.9</td>
<td>2.32</td>
</tr>
<tr>
<td>F.D.S.</td>
<td>17.17</td>
<td>6.5</td>
<td>23.64</td>
<td>3.6</td>
<td>16.50</td>
<td>5.9</td>
<td>12.86</td>
<td>5.9</td>
<td>13.40</td>
</tr>
</tbody>
</table>

That the G.P.A., as a measure of ability or even simply of asiduousness, should be reflected in the quality rating is not surprising.

What is of interest is the pattern among the classes. This pattern seems to
confirm the impression that the students do not group themselves randomly during the arena course selection process.

As the analysis of variance indicates, the females showed a distinctly higher G.P.A. than the males, accounting for the significance of sex as a source of variance (see Table G-4).

These higher achievers, the females, are not equally distributed among the various treatment groups and classes. However, they are not distributed so unequally that any significant interaction occurs (see Tables G-5 and G-6).

Table G-4

G.P.A. by sex

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th></th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>51</td>
<td>2.52</td>
<td>53</td>
</tr>
</tbody>
</table>

Table G-5

G.P.A. by sex and treatment group

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>2.56</td>
<td>1.4</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>3.64</td>
<td>0.9</td>
</tr>
</tbody>
</table>
Table G-6

G.P.A. by sex and teacher

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>Teacher 1</td>
<td>10</td>
<td>2.36</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>5</td>
<td>4.07</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>16</td>
<td>2.53</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>12</td>
<td>2.28</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>8</td>
<td>2.12</td>
</tr>
</tbody>
</table>
Appendix H

**Anova on modified G.P.A. by treatment group, teacher and sex**

Table H-1

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group</td>
<td>5.277</td>
<td>2</td>
<td>2.638</td>
<td>2.260</td>
<td>.111</td>
</tr>
<tr>
<td>Teacher</td>
<td>35.419</td>
<td>4</td>
<td>8.855</td>
<td>7.586</td>
<td>.001</td>
</tr>
<tr>
<td>Sex</td>
<td>12.843</td>
<td>1</td>
<td>12.843</td>
<td>11.004</td>
<td>.001</td>
</tr>
<tr>
<td><strong>2-way interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment, teacher</td>
<td>7.975</td>
<td>8</td>
<td>.997</td>
<td>.854</td>
<td>.559</td>
</tr>
<tr>
<td>Treatment, sex</td>
<td>.683</td>
<td>2</td>
<td>.342</td>
<td>.293</td>
<td>.747</td>
</tr>
<tr>
<td>Teacher, sex</td>
<td>4.900</td>
<td>4</td>
<td>1.225</td>
<td>1.050</td>
<td>.388</td>
</tr>
<tr>
<td><strong>3-way interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group, teacher, and sex</td>
<td>9.037</td>
<td>8</td>
<td>1.130</td>
<td>.968</td>
<td>.468</td>
</tr>
<tr>
<td>Residual</td>
<td>86.371</td>
<td>74</td>
<td>1.167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>162.478</td>
<td>103</td>
<td>1.577</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table H-2

**Modified G.P.A. by treatment group**

<table>
<thead>
<tr>
<th>Treatment group 1</th>
<th>Treatment group 2</th>
<th>Treatment group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Mean</td>
<td>S.D</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>34</td>
<td>3.04</td>
<td>1.3</td>
</tr>
</tbody>
</table>
The overall attrition rate during the study affected all three treatment groups similarly. Nevertheless, the differences in ability between classes raised the possibility that the distribution of writers in the treatment groups within each class might have affected the revision results. If, for example, more of the treatment three writers in classes one, two or three remained in the study, their presence might have significantly raised the quality ratings of the drafts for their group. This was not the case however. When the five classes are placed in three groups representing higher (Teacher 2), average (Teachers 1,3) and lower (Teachers 4,5) writing ability, the number of students per treatment group in each of these new groupings remained more or less even (see Table H-4). In fact, in treatment group three, there were more students from the two worst classes, and fewer students from the three best classes, including the advanced composition group.
Table H-4

Modified G.P.A. by teacher and treatment group

<table>
<thead>
<tr>
<th>Treatment group 1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>8</td>
<td>3.06</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>3.33</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>5</td>
<td>4.40</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.38</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>8</td>
<td>3.06</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2.44</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>6</td>
<td>2.50</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>2.36</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>7</td>
<td>2.57</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1.40</td>
</tr>
</tbody>
</table>

For the modified G.P.A. the differences between the sexes were slightly more pronounced than for the standard G.P.A. (see Table H-5). When distributed among the treatment groups and classes, this source of variation did not appear as significant.

Table H-5

G.P.A. and modified G.P.A. by sex

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.P.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>Mean</td>
<td>2.52</td>
<td>3.18</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Modified G.P.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>Mean</td>
<td>2.54</td>
<td>3.23</td>
</tr>
<tr>
<td>S.D.</td>
<td>1.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>
A comparison of the standard G.P.A. (based on marks in English, Social Studies, French, Science and Mathematics) and the modified G.P.A. (based on marks in English and Social Studies) does confirm a predictable difference between regular and second language English students. Much of the strength of the E.S.L. students' G.P.A. comes from their mathematics and science marks. When the modified G.P.A. is used, their disadvantage when faced with second language use is revealed (see Table H-6).

Table H-6
G.P.A. and modified G.P.A. by English status

<table>
<thead>
<tr>
<th></th>
<th>Native speakers</th>
<th>E.S.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>G.P.A</td>
<td>90</td>
<td>2.83</td>
</tr>
<tr>
<td>Modified G.P.A.</td>
<td>90</td>
<td>2.95</td>
</tr>
</tbody>
</table>
Appendix I

Anova on revision questionnaire by treatment group, teacher and sex

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>2362.483</td>
<td>7</td>
<td>337.498</td>
<td>2.552</td>
<td>.023</td>
</tr>
<tr>
<td>TE</td>
<td>139.882</td>
<td>2</td>
<td>69.941</td>
<td>.529</td>
<td>.592</td>
</tr>
<tr>
<td>SE</td>
<td>718.801</td>
<td>4</td>
<td>179.700</td>
<td>1.359</td>
<td>.259</td>
</tr>
<tr>
<td></td>
<td>1721.258</td>
<td>1</td>
<td>1721.258</td>
<td>13.015</td>
<td>.001</td>
</tr>
<tr>
<td>2-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG x TE</td>
<td>1865.473</td>
<td>14</td>
<td>133.248</td>
<td>1.008</td>
<td>.458</td>
</tr>
<tr>
<td>TG x SE</td>
<td>1000.369</td>
<td>8</td>
<td>125.046</td>
<td>.946</td>
<td>.487</td>
</tr>
<tr>
<td>TE x SE</td>
<td>329.380</td>
<td>2</td>
<td>164.690</td>
<td>1.245</td>
<td>.295</td>
</tr>
<tr>
<td>3-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG x TE x SE</td>
<td>300.633</td>
<td>4</td>
<td>75.158</td>
<td>.568</td>
<td>.687</td>
</tr>
<tr>
<td></td>
<td>1337</td>
<td>1998</td>
<td>167.150</td>
<td>1.264</td>
<td>.279</td>
</tr>
<tr>
<td>Residual</td>
<td>7934.900</td>
<td>60</td>
<td>132.248</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13500.056</td>
<td>89</td>
<td>151.686</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix J

Ancova on the third draft score by treatment group, teacher sex and English status with the first draft score as covariate

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariates</td>
<td>1631.390</td>
<td>1</td>
<td>1631.390</td>
<td>124.362</td>
<td>.001</td>
</tr>
<tr>
<td>D1</td>
<td>1631.390</td>
<td>1</td>
<td>1631.390</td>
<td>124.362</td>
<td>.001</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>85.357</td>
<td>2</td>
<td>42.679</td>
<td>3.253</td>
<td>.043</td>
</tr>
<tr>
<td>TE</td>
<td>152.281</td>
<td>4</td>
<td>38.070</td>
<td>2.902</td>
<td>.026</td>
</tr>
<tr>
<td>SE</td>
<td>.760</td>
<td>1</td>
<td>.760</td>
<td>.058</td>
<td>.810</td>
</tr>
<tr>
<td>ES</td>
<td>98.883</td>
<td>1</td>
<td>98.883</td>
<td>7.538</td>
<td>.007</td>
</tr>
<tr>
<td>Residual</td>
<td>1233.096</td>
<td>94</td>
<td>13.118</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3178.462</td>
<td>103</td>
<td>30.859</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix K

Ancova on third draft score by treatment groups 1 and 3 by treatment group, teacher and sex, with the first draft score as covariate

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariates</td>
<td>893.327</td>
<td>1</td>
<td>893.327</td>
<td>65.935</td>
<td>.001</td>
</tr>
<tr>
<td>D1</td>
<td>893.327</td>
<td>1</td>
<td>893.327</td>
<td>65.935</td>
<td>.001</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>186.551</td>
<td>6</td>
<td>31.092</td>
<td>2.295</td>
<td>.050</td>
</tr>
<tr>
<td>TE</td>
<td>67.509</td>
<td>1</td>
<td>67.509</td>
<td>4.983</td>
<td>.030</td>
</tr>
<tr>
<td>SE</td>
<td>111.604</td>
<td>4</td>
<td>27.901</td>
<td>2.059</td>
<td>.101</td>
</tr>
<tr>
<td>TG x TE</td>
<td>16.045</td>
<td>9</td>
<td>6.284</td>
<td>.464</td>
<td>.892</td>
</tr>
<tr>
<td>TG x SE</td>
<td>20.914</td>
<td>4</td>
<td>5.228</td>
<td>.386</td>
<td>.818</td>
</tr>
<tr>
<td>TE x SE</td>
<td>21.753</td>
<td>1</td>
<td>21.753</td>
<td>1.606</td>
<td>.211</td>
</tr>
<tr>
<td>3-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG x TE x SE</td>
<td>20.791</td>
<td>4</td>
<td>5.198</td>
<td>.384</td>
<td>.819</td>
</tr>
<tr>
<td>Residual</td>
<td>663.879</td>
<td>49</td>
<td>13.549</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1933.486</td>
<td>69</td>
<td>28.022</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix L

Ancova on third draft scores for treatment groups 1 and 3 without ESL students.

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariates</td>
<td>644.779</td>
<td>1</td>
<td>644.779</td>
<td>44.964</td>
<td>.000</td>
</tr>
<tr>
<td>D1</td>
<td>644.779</td>
<td>1</td>
<td>644.779</td>
<td>44.964</td>
<td>.000</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TG</td>
<td>130.377</td>
<td>6</td>
<td>21.730</td>
<td>1.515</td>
<td>.198</td>
</tr>
<tr>
<td>TE</td>
<td>80.553</td>
<td>1</td>
<td>80.553</td>
<td>5.617</td>
<td>.023</td>
</tr>
<tr>
<td>SE</td>
<td>60.411</td>
<td>4</td>
<td>15.103</td>
<td>1.053</td>
<td>.392</td>
</tr>
<tr>
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<td>7.130</td>
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<td>2-way interactions</td>
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<tr>
<td>TG x TE</td>
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### Appendix M

**Ancova on third draft score for treatments 1 and 2**

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<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
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<td>Covariates</td>
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<td></td>
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Appendix N

Ancova on third draft score for treatments 2 and 3

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<td></td>
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Appendix O

**Ancova on second draft score with first draft score as a covariate**

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<th>Source of variation</th>
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<td>97.290</td>
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<tr>
<td>Main effects</td>
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<tr>
<td>TG</td>
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## Appendix P

**Revision change levels by treatment group and draft**

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<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Level 1 (hypertheme)</td>
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<td>7</td>
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<tr>
<td>Level 2 (meaning change)</td>
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<tr>
<td>Level 3 (cosmetic change)</td>
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<td>305</td>
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<table>
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<td>3</td>
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<tr>
<td>Level 1 (hypertheme)</td>
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<td>3</td>
<td>8</td>
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<tr>
<td>Level 2 (meaning change)</td>
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<td>121</td>
<td>208</td>
</tr>
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<td>Level 3 (cosmetic change)</td>
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<td>329</td>
<td>328</td>
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Appendix Q

Self-evaluation form

SELF-EVALUATION FORM       Name:______________________

Students are usually good at assessing the overall quality of their own work. The researcher is interested in your impression of your paper. Your self-evaluation will have no effect on the grade the paper might receive.

Read carefully the six statements below. Place an X beside the one which best describes your feelings about your work.

_____ It's O.K., but there are several things I think I have to change.

_____ Bad. I don't want to put my name on it.

_____ Pretty good. I still see room to improve it.

_____ Very good. I'm happy to be handing this in.

_____ O.K., but I'm not really happy with it. There are lots of things I would like to change.

_____ Not good. I should rewrite it completely.
SESSION 1 - COMPOSITION RESEARCH

Ecology is a word which has become a part of our everyday vocabulary. It seems as though almost everything we see, hear and read resonates with the imagery of ecology: ecologist, ecological, ecosystem, environmentally friendly, green, recycle, ozone layer, greenhouse effect, spill, hazardous waste, - the list goes on and on.

Assignment

In an essay of approximately 300 words, discuss the idea of ecology as it affects you. You may choose whatever title you wish for your paper.

Here are some ideas you might consider, but don't feel bound or limited by them.

1. What you understand "ecology" to mean.
2. How the concept of ecology is affecting your life now.
3. How the idea of ecology will affect your life in the next twenty-five years.
4. Why the ecological movement has become so prominent recently.
5. The role of the individual in society.
SESSION 2 - COMPOSITION RESEARCH - GROUP 1

A professional writer would tell you that when you have finished writing your first draft, you have only made the first step in the production of a piece of writing. The real challenge, and the fun, comes from revising, trying to make something you have already written even better.

Assignment

1. (Time: 25 minutes)
Read your first draft over. You have twenty-five minutes for this part of the assignment, so you may want to re-read your paper several times.

On the left side of the section on page two, list five things that you feel are wrong with your essay: things you would correct in a revision.

On the right side of the section on page two, try to say how you will fix each of the five problems you have identified.

2. (Time: 45 minutes)
Write a second draft of your essay. Try to make the corrections that you have indicated will improve the paper.
### SESSION 2 - COMPOSITION RESEARCH

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
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<td>2</td>
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<tr>
<td>4</td>
<td></td>
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<tr>
<td>5</td>
<td></td>
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</tbody>
</table>
A professional writer would tell you that when you have finished writing your first draft, you have only made the first step in the production of a piece of writing. The real challenge, and the fun, comes from revising, trying to make something you have already written even better.

Assignment

1. (Time: 25 minutes)
Read your first draft over. You have twenty-five minutes for this part of the assignment, so you may want to re-read your paper several times. Your first drafts will be collected after twenty-five minutes.

On the left side of the section on page two, list five things that you feel are wrong with your essay: things you would correct in a revision.

On the right side of the section on page two, try to say how you will fix each of the five problems you have identified.

2. (Time: 45 minutes)
Write a second draft of your essay. Try to make the corrections that you have indicated will improve the paper.
A professional writer would tell you that when you have finished writing your first draft, you have only made the first step in the production of a piece of writing. The real challenge, and the fun, comes from revising, trying to make something you have already written even better.

Assignment

1. (Time: 25 minutes)
Listen to the recording of your first draft. You may wish to listen to it several times, since you have twenty-five minutes for this first part of the assignment.

On the left side of the section on page two, list five things that you feel are wrong with your essay: things you would correct in a revision.

On the right side of the section on page two, try to say how you will fix each of the five problems you have identified.

2. (Time: 45 minutes)
Write a second draft of your essay. Try to make the corrections that you have indicated will improve the paper.
Appendix T

Writing Apprehension Inventory and revision questionnaire

NAME: ____________________

WRITING AND REVISION QUESTIONNAIRES

Directions:

Below are a series of statements about writing. Decide how much you think each statement applies to you, then mark the appropriate letter on the scanner answer sheet. These letters indicate how much you agree or disagree with the statement.

Mark only one letter for each statement. Some of the statements may seem repetitious, however try to focus on each statement separately. Try to be as honest as possible. Obviously, there are no right or wrong answers, only your opinions. Thank you.

Scale:

The letters correspond to the following opinions:

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>strongly agree</td>
<td>agree</td>
<td>uncertain</td>
<td>disagree</td>
<td>strongly disagree</td>
</tr>
</tbody>
</table>

Statements about writing:

1. I avoid writing.

2. I have no fear of my writing being evaluated.

3. I look forward to writing down my ideas.

4. I am afraid of writing essays when I know they will be evaluated.

5. Taking a composition course is a very frightening experience.
6. Handing in a composition makes me feel good.

7. My mind seems to go blank when I start to work on a composition.

8. Expressing ideas through writing seems to be a waste of time.

9. I would enjoy submitting my writing to magazines for publication.

10. I like to write down my ideas.

11. I feel confident in my ability to express clearly my ideas.

12. I like to have my friends read what I have written.

13. I am nervous about writing.

14. People seem to enjoy what I write.

15. I enjoy writing.

16. I never seem to be able to write down clearly my ideas.

17. Writing is a lot of fun.

18. I expect to do poorly in composition classes even before I enter them.

19. I like seeing my thoughts on paper.

20. Discussing my writing with others is an enjoyable experience.

21. I have a terrible time organizing my ideas in a composition.

22. When I hand in a composition, I know I am going to do poorly.

23. It's easy for me to write good compositions.

24. I don't think I write as well as most students in my classes.

25. I don't like having my compositions evaluated.

26. I'm no good at writing.
Directions:

Below are a series of statements about revising. Decide how much you think each statement applies to you, then mark the appropriate letter on the scanner answer sheet. These letters indicate how much you agree or disagree with the statement.

Mark only one letter for each statement. Some of the statements may seem repetitious, however try to focus on each statement separately. Try to be as honest as possible. Obviously, there are no right or wrong answers, only your opinions. Thank you.

Scale:

The letters correspond to the following opinions:

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>uncertain</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>disagree</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Statements about revision:

1. I really enjoy writing.
2. I write for enjoyment outside of school.
3. My teachers think I'm a good writer.
4. My friends think I'm a good writer.
5. I like to write essays.
6. Essays are an interesting challenge.
7. I hate writing essays.
8. I like to write stories or poems.
9. On tests, I prefer objective questions to paragraph or essay questions.
10. I enjoy reading books.

11. I never revise my essays.

12. I always read over any material I hand in.

13. I think about what I'm going to write for a long time before I start to write.

14. I often revise while I'm writing.

15. Other students' comments help me to revise.

16. Teachers' comments help me to revise.

17. I have been taught how to revise in English courses I have taken.

18. I only revise things that I write for English classes.

19. Usually I produce two drafts of a composition before I hand it in.

20. Usually I produce only one draft of a composition.

21. Usually I produce more than two drafts of a composition before handing it in.

22. When I revise, I look carefully at what I have already written.

23. When I am revising, I read my work out loud.

24. Sometimes, my revision is very different from my first draft.

25. I find it hard to revise the ideas of my compositions.

26. I find it easy to revise the wording of my compositions.

27. I find it easy to revise the organization of my compositions.

28. I find it easy to revise spelling and punctuation.

29. I find it hard to revise grammar.

30. I find it hard to make myself clearly understood when I write.
 Appendix U

Sample of revision level changes over the three drafts by a subject in treatment group three

Draft 1 (modified rating=16)

Through the drastic changes to the environment, people have become much more aware of their role in it and the changes that must happen to preserve it. The greenhouse effect, and the destruction of the forests and lakes by acid rain are two such changes that have had a profound impact on society. These transformations have lead to new ways of looking at things.

The greenhouse effect is, perhaps, the most prominent mutation. The media constantly reverberate the warming of the atmosphere and its causes. As a result, the population can not help but have a new attitude towards the use of cars and other methods of slowing this effect. Also, gov't and public agencies have launch large conservationist campaigns to urge people to reduce or avoid the use of cars or other harmful agents. Thus people have become much more aware of what they use and how much or how often they use it. Through the various efforts of different groups people have been more aware of their contribution to the greenhouse effect. But there are other causes of public awakening.

The rapid destruction of our forests and lakes by acid rain is one such cause. Unfortunately, it took the killing of thousands of lakes and hundreds of forests to make them open their eyes to what industry was doing. However, once opened, they did not stand idly by. They lobbied for gov't legislation. They protested in front of factories and steel smelters. They let it be known that they were not going to tolerate this action. Acid rain is a difficult problem to solve but people are trying.

The media have promoted the greenhouse effect and its resolutions. The discovery of dead lakes and forests has brought acid rain to the forefront of public interest. Thus the environmental changes of the earth today has caused people to re-examine there role in it and change there life style accordingly.

Draft 2 (modified rating=22) Revision level changes in italics

In the past century, society has become much more aware of the

L1 - no longer about general public reaction, but

environment. The media and various environmental organizations have rather how that reaction has been orchestrated L2 - additional
lobbied governments, launched large publicity campaigns and produced organizations many publications in an effort to create this public awakening. The further examination of the efforts made by these groups will reveal the effect on the public.

To begin with, the media have developed environmental campaigns to promote the environmental problems society has caused. An example of which are the many television and radio stations that have created special programs to analyze current issues. another example is the increased emphasis news agencies have placed on stories dealing with both the problems and the solutions to the problems of today. These campaigns are an important element in the fight against the destruction of the plant but the lobby groups play a large role too.

The lobbying of governments by various environmental agencies have forced many changes. To begin with, the government stiffened the penalties for those who pollute the air and water. This has made industry much more careful in their endeavors. Also, the government created a ministry to look at the effects of society on the world around it and promote public awareness of its findings. This may be the most beneficial effect of the lobby effort. Although the lobby groups have had many accomplishments, the environment publications they put out are just as important.
The many publications by the various environmental organizations have had a great effect on public attitudes. This is where most of the public knowledge comes from. Greenpeace, for instance, has produced many documents showing the brutality of an oil spill. Likewise, the Earth Firsters produce periodic newsletters to inform its members of its causes. These publication are responsible for informing a large portion of society about what is happening in the environment.

The people of North America are very aware of the environment. This is due, in large part, to the efforts of the media and various environmental organizations. Through the increased emphasis on environmental stories by the media and the pressuring of government there has been complete turn around in public attitudes. Society is aware of the issues, and it must learn to act to correct the problems.

In the past century, society has become much more aware of the environment. The media and various environmental organization have lobbied governments, launched large publicity campaigns and produced many publications in an effort to produce this public awakening. The further examination of the attempts made by these groups will reveal the effect on the public.
The subject has opted to use his second draft as the base text. He has made two level three substitutions (see underlines).

To begin with, the media have developed policies to promote the environmental problems society has caused. An example of which are the many television and radio stations that have created special programs to analyze current issues. Another example is the increased emphasis news agencies have placed on stories dealing with both the problems and the solutions to the problems of today. These campaigns are an important element in the fight against the destruction of the planet but the lobby groups play a large role too.

The revision continues at level three: word substitutions, re-phrasing, spelling corrections.

The lobbying of governments by various environmental organizations have forced many changes. First, the government stiffened the penalties against those who pollute the air and water. This has made industry much more careful towards how their projects will affect the surrounding areas. Also, the government created a ministry to look at the effects of society on the world around it and to promote public awareness of its findings. This may be the most beneficial effect of the lobby effort because it shows how the government has taken notice of the destruction of the environment. Although the lobby groups have had many accomplishments, the environment publications they put out are just as important.
Apart from the long addition near the end of the paragraph, the modifications continue to be level 3.

The many pieces of material published by the various environmental organizations have had a profound effect on public attitudes. This is where most of the public's knowledge comes from. Greenpeace, for instance shocked the world by videotaping the slaughter of dolphins by Japanese fishing boats in the Pacific Ocean. Likewise, the Earth Firsters have changed the image of forestry through the pictures and papers it produces. These publications are responsible for a large portion of what society feels about its practices and the environment.

The last line constitutes a meaning change. Otherwise, the additions, though extensive, are really in the nature of better support.

The people of North America are very aware of the environment. This is due, in large part, to the efforts of the media and numerous environmental agencies. Through their publications and increased emphasis on the environment there has been complete turn around in public attitudes. However, now that society is aware of the issues, it must learn to act to reverse the damage already done.

The changes continue to be at level 3: omissions, substitutions, additions. All the level 1 and 2 changes present in the second draft have been retained in the third draft.
Appendix V

Sample of topical progression analysis. The topic is underlined.

/Extended parallel progression/ People in the latter part of the twentieth century have become very environmentally aware. After many generations of misuse and mistreatment, our world has had enough. It can’t take anymore garbage, destruction of animals or pollution. Our planet is falling apart and people want do something about it. There are three main reasons why the environmental movement has become so prominent in our time.

/Sequential progressions/ Since the beginning of time, animals on this planet have been becoming extinct. In the beginning though, it had nothing to do with humans or their intervention into the animals life. Soon though birds, sea animals, land animals and domestic animals were becoming extinct. The dodo was overhunted and never seen again. This is a tragedy but at the time people didn’t care. They didn’t have the ability to conceive that if you had killed them all, they would never come back. Now, it’s not so much direct killing of animals but indirect. This is caused by destruction of their homes or food supplies. Everyday, another species of animal becomes extinct in the Amazon rain forest. People want to help combat the problem but it takes time, there are many other environmental concerns facing them.

/Parallel progressions/ Every time you drive your car you are contributing to the decline of our air. We have to breathe this stuff every day and maybe our children will also. Even though we know of the problem we find it hard to fix. People like to drive their cars, work in mills and factories. In the city, some days the air is unbreathable. The smog is like a lid on a city, blocking out the sun and locking in destruction. Carbon monoxide in exhaust fumes is deadly. If people took the bus or even car pooled, the air pollution problem would be on the road to recovery.

/Extended parallel progression/ Out of habit, people take their garbage to the curb and then they forget about it. The garbage that a single family home produces in one day is phenomenal. Think of one bag of garbage, per household, per day. All this garbage gets shipped to the local landfill and dumped. Most of the garbage is unable to break down and will sit there for a lifetime. Another major part of the garbage is recyclable products, like tin cans, paper and glass. If people don’t start recycling and buying re-usable products our world will be one big garbage dump. Already we can’t handle the amount of
garbage produced every day. *People* are going to have to make a conscious effort to do something about this problem. *This* is one thing that definitely won't go away if we don't think about it.

/Extended parallel progression/ There are many reasons why the *environment movement* has become so prominent. *People* have become aware of our loss of animals on the planet. Our *air quality* has plummeted drastically. Every day *garbage* is shipped to our already overflowing land fills. *People* are sick of seeing the ruination of our planet and have decided to do something about it. /Parallel progression/ *Our world* is a precious place, if we destroy it, it will never be the same again.
A model for revision in the composition process (Bridwell, 1980)

Appendix

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Appendix X

Cognitive Processes in Revision (Flower, et al.)

Processes

- Task Definition
- Evaluation
  - Read to: Comprehend
  - Evaluate
  - Define Problems
- Strategy Selection
  - Search
  - Ignored
  - Delay
  - Revisited
- Redraft or Paraphrase
- Enter Means-Ends Table
- Modify Text and/or Plan

Knowledge

- Goals, Criteria and Constraints for Texts and Plans
- Problem Representation
  - Detection
  - Diagnosis
    - ill-defined
    - well-defined
- Procedures for improving Text Means-Ends Table
The writer's long-term memory

Knowledge of topic, audience, and writing plans

The task environment

The rhetorical problem
- Topic
- Audience
- Exigency

Text produced so far

Writing processes

Planning
- Organizing
- Goal setting

Translating

Reviewing
- Evaluating
- Revising

Monitor
Appendix Z

The Strategic Choices Allowed by DETECTION AND DIAGNOSIS (Flower et al. 1986)
Appendix AA

Taxonomy of revisions (Faigley & Witte, 1981)

Revision Changes

Surface Changes

- Formal Changes
  - Spelling
  - Tense, Number and Modality
  - Abbreviation
  - Punctuation
  - Format

Text-Base Changes

- Meaning-Preserving Changes
- Microstructure Changes
- Macrostructure Changes

- Additions
- Deletions
- Substitutions
- Permutations
- Distributions
- Consolidations
Appendix AB

Structure of the knowledge-telling model (Bereiter and Scardamalia, 1987)
Appendix AC

Structure of the knowledge-transforming model. (Bereiter and Scardamalia, 1987)
Appendix AD

The similarity between speech and print over four hypothetical observation points. (Perfetti, 1987)

1. BEGINNING READING
   Speech has many unique properties:
   Speech-print overlap ($S \cap P$) is small
   Print is more similar to speech than speech is to print.

2. INTERMEDIATE READING
   Print has more properties than at 1, both unique and shared with speech.
   Print has become more similar to speech and speech has become more similar to print.
   Print is more similar to speech than speech is to print; however, asymmetry much less than at 1.

3. ADULT SKILLED READING
   Print experience has further increased both print's unique properties and those shared with speech.
   Speech has relatively fewer unique properties than before.
   Speech is nearly as similar to print as print is to speech.

4. HYPERLITERACY
   Print experience has exceeded speech experience.
   Speech experiences have become more like print.
   Speech is slightly more similar to print than print is to speech; reversal of asymmetry.
Appendix AE

A model of the writing process (Nold, 1981)

| PLAN                        | . . . Product's intended effect
|                            | . . . Product's intended meaning
|                            | . . . Product's intended audience
|                            | . . . Product's intended person

| TRANSCRIBE                  | Knowledge of Conventions
|                            | . . . Text

| REVIEW                      | . . . Text's effect
|                            | . . . Text's meaning
|                            | . . . Text's conventions

| END                         |

...
EXCELLENT

6 The EXCELLENT paper is original, refreshing, vigorous or interesting. An eccentric paper may signal artistry. Supporting detail is mature and informed. A sense of voice and audience awareness immediately engages the reader. Expression flows effortlessly into a literate, integrated whole. As a first draft, it is virtually error-free.

PROFICIENT

5 The PROFICIENT paper is highly readable, but conventional. There is some originality. The paper is engaging but not as consistently engaging as a 6. Supporting details are appropriate. Organization is consistent in direction and tone. Sentences are controlled, vocabulary varied and errors unobtrusive.

SATISFACTORY

4 The SATISFACTORY paper is adequate and workmanlike, but the ideas are not memorable. Development and supporting details are competently but not expertly handled. Expression is appropriate, controlled and conventional, but lacks sophistication and colour. Errors neither overwhelm the reader nor distort the writer’s purpose.

LIMITED

3 The LIMITED paper is barely acceptable. Content is likely ill-defined, dull, uninspired and juvenile. It lacks focus; examples and details may be trite, simplistic or random. Paragraphs, when present, lack structure; transitions are weak to non-existent. Sentences lack variety, diction is repetitive, and errors obscure meaning.
UNSATISFACTORY

2 The UNSATISFACTORY paper is underdeveloped, incomplete or superficial. Point of view and sense of audience are unclear or non-existent. Examples and details are inappropriate. Expression is awkward and depends on colloquialisms. English idiom is uncontrolled, diction inadequate and error frequent.

UNACCEPTABLE

1 The UNACCEPTABLE paper has neither purpose nor focus. It may be too brief to allow development of ideas. Unity, coherence and emphasis are virtually non-existent. Organization, where present, is illogical, confusing or uncontrolled. Errors in standard English make ideas difficult to understand.
# Holistic Marking Scale Used in This Study

<table>
<thead>
<tr>
<th>Score</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Excellent</td>
<td>Original and vigorous; its sense of voice and audience immediately engage the reader. Supporting detail is mature and informed. Development is complete and well integrated. Error-free.</td>
</tr>
<tr>
<td>7</td>
<td>Proficient</td>
<td>Highly readable, though not as engaging as in 8. Although there is some originality, the paper is conventional. Consistent organization combined with appropriate supporting details. Virtually error-free.</td>
</tr>
<tr>
<td>6</td>
<td>Satisfactory</td>
<td>Workmanlike, but lacking originality. Development and supporting detail competently, but not expertly handled. Expression is conventional. Errors are unobtrusive and do not distort the writer’s purpose.</td>
</tr>
<tr>
<td>5</td>
<td>Limited</td>
<td>Acceptable insofar as there is an attempt to organize the content. Ideas, however, are conventional and are undeveloped. Errors are more noticeable than in a 6, and occasionally detract from expression and obscure the message.</td>
</tr>
<tr>
<td>4</td>
<td>Adequate</td>
<td>Barely acceptable. Content ill-defined and uninspired. Lacking in focus. Supporting evidence simplistic. Paragraphs lacking in structure. Sentences lack variety and diction is repetitive.</td>
</tr>
<tr>
<td>3</td>
<td>Inadequate</td>
<td>Underdeveloped, incomplete or superficial. Point of view and sense of audience quite unclear. Awkward, colloquial expression. Grammatical or dialectical errors tend to prevent communication with the reader.</td>
</tr>
<tr>
<td>2</td>
<td>Unsatisfactory</td>
<td>Frequent errors in standard English make ideas difficult to understand. Point of view almost non-existent. Organization, if present, is confusing. Examples and details are inappropriate.</td>
</tr>
</tbody>
</table>
1 Unacceptable  No apparent purpose or focus. May be too brief to allow development of ideas. Unity, coherence virtually non-existent. Illogical organization. Writer’s ideas made difficult to understand because of errors in standard English.

8 7 6 5 4 3 2 1

Style:
- original........................................................................................................conventional
- sense of audience....................................................................................egocentric
- varied diction..........................................................................................trite or colloquial
- focused........................................................................................................unclear

Organization:
- logical.........................................................................................................illogical
- adequate development..............................................................................short or superficial
- appropriate detail....................................................................................inappropriate detail
- structured paragraphs...............................................................lack of paragraph structure

Mechanics, diction and grammar:
- command of English idiom..............................................................diction errors
- competent use of varied structures....................................grammatical errors
- correct spelling, punctuation..............................................errors in spelling, punctuation
Differences in draft one (D1) and draft three (D3) scores for all classes (TE 1-5), regular English (RE) and E.S.L. students. Modified G.P.A. is shown for each class.

<table>
<thead>
<tr>
<th></th>
<th>D1</th>
<th>D3</th>
<th>M.G.P.A</th>
<th>D3-D1</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
<td></td>
</tr>
<tr>
<td>TE 1</td>
<td>17.17</td>
<td>6.5</td>
<td>19.83</td>
<td>5.4</td>
<td>2.66</td>
</tr>
<tr>
<td>TE 2</td>
<td>23.64</td>
<td>3.6</td>
<td>24.55</td>
<td>2.5</td>
<td>0.91</td>
</tr>
<tr>
<td>TE 3</td>
<td>16.50</td>
<td>5.9</td>
<td>18.50</td>
<td>5.6</td>
<td>2.00</td>
</tr>
<tr>
<td>TE 4</td>
<td>12.88</td>
<td>5.9</td>
<td>18.19</td>
<td>4.7</td>
<td>5.31</td>
</tr>
<tr>
<td>TE 5</td>
<td>13.40</td>
<td>4.8</td>
<td>15.30</td>
<td>5.2</td>
<td>1.90</td>
</tr>
<tr>
<td>RE</td>
<td>17.07</td>
<td>6.0</td>
<td>19.73</td>
<td>5.1</td>
<td>2.66</td>
</tr>
<tr>
<td>ESL</td>
<td>9.71</td>
<td>5.1</td>
<td>12.57</td>
<td>4.6</td>
<td>2.86</td>
</tr>
</tbody>
</table>
Appendix AI

Reaction to treatments of E.S.L. students.

The examination of the third draft scores by treatment group and English status suggests that the E.S.L. students felt the absence of a text to be more of a barrier than an aid to revision (see Table AI - 1). Such an impression was certainly borne out by the interviews conducted with E.S.L. students after the two revision sessions: they unanimously preferred the traditional revision stimulus as represented by treatment one. Given their lack of familiarity with the grapholect, and also the traditional grammar-translation method by which they were first introduced to English, one can sympathize with their frustration at being cut off from their text.

The modified G.P.A., examined by treatment group and English status, suggests that the E.S.L. students in treatment group one were better writers and might be expected to achieve higher scores on a writing sample (see Table AI - 2). However, if the modified third draft scores are examined in detail, a more subtle set of results emerges. Treatment group one students received marks of 22,16,12,10; treatment group two, 12,12,10,8,6; treatment group three, 20,16,14,10,8. The highest scores among the E.S.L. students were in treatment groups one and three. The lowest scores were distributed between groups two and three. This distribution would account for the relatively low average score in group two (see Table AI - 3). A curious finding is the relative success of those E.S.L. students in group three. Perhaps they profited from the treatment more than they realized. Certainly, the novelty of the treatment would have been to them more striking, and perhaps therefore more disconcerting, than to the students of regular English.
Table AI - 1
Third draft scores by treatment and English status.

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>Treatment group</th>
<th>Treatment group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>E.S.L</td>
<td>4</td>
<td>15.00</td>
</tr>
<tr>
<td>Native speakers</td>
<td>30</td>
<td>18.47</td>
</tr>
</tbody>
</table>

Table AI - 2
Means, n's, and standard deviations for modified G.P.A. by English status and treatment group.

<table>
<thead>
<tr>
<th>Native speakers</th>
<th>E.S.L.</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>Treatment group 1</td>
<td>30</td>
</tr>
<tr>
<td>Treatment group 2</td>
<td>29</td>
</tr>
<tr>
<td>Treatment group 3</td>
<td>31</td>
</tr>
</tbody>
</table>

Although there were no significant effects, English status indicated a probability of .087 for the F-ratio. It appears that the importance of the English status factor increased over the two revision sessions, for an ancova for all treatments on the draft three score with the draft one score as covariate showed a significance of .007 for English status (see Appendix J). In this study, it seems that the resources that E.S.L. students were able to
bring to bear on a writing problem were more limited than those of native speakers; therefore, over the long haul, the latter outperformed the former.

Table AI - 3

Means, n's, and standard deviations for E.S.L. scores by draft and treatment group (TG)

<table>
<thead>
<tr>
<th></th>
<th>Draft 1</th>
<th>Draft 2</th>
<th>Draft 3</th>
<th>D3-D1</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>TG 1</td>
<td>4</td>
<td>13.00</td>
<td>7.0</td>
<td>14.50</td>
</tr>
<tr>
<td>TG 2</td>
<td>5</td>
<td>7.20</td>
<td>2.2</td>
<td>8.80</td>
</tr>
<tr>
<td>TG 3</td>
<td>5</td>
<td>9.60</td>
<td>4.7</td>
<td>11.20</td>
</tr>
</tbody>
</table>
Analysis of variance on the revision questionnaire

The first draft score, the G.P.A. and the modified G.P.A. form a basis for comparing the ability of the three treatment groups. The revision questionnaire, as applied this study, is a post-treatment instrument which might exhibit effects caused by the treatment. However, given that revision concepts and practices seem to have a developmental aspect, and that the treatments were of very short duration, it is possible that even though the questionnaire was administered following the third writing session, the responses might reflect attitudes which the subjects held long before the study was conducted. Certainly, it was anticipated that the questionnaire would indicate whether significant differences existed among the three treatment groups.

The analysis of variance on the results of the revision questionnaire indicated that sex was the only source of variation. The significance of the F value for this variable was 0.001 (see Table AJ-1). However, there were no significant two- or three-way interactions; i.e., treatment, class, and gender did not interact to create significantly different results. A pattern similar to the G.P.A. appeared: the females had higher scores than the males both by treatment group and by class (see Tables AJ-2 and AJ-3). More importantly, the range of revision behaviour, as expressed in responses to the questionnaire, is greater among the males than the females. With the E.S.L. students removed, the pattern was essentially the same.

Table AJ-1
ANOVA on revision questionnaire by treatment group, teacher and sex

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Sum of squares</th>
<th>DF</th>
<th>Mean square</th>
<th>F-ratio</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group</td>
<td>139.882</td>
<td>2</td>
<td>69.941</td>
<td>.529</td>
<td>.592</td>
</tr>
<tr>
<td>Teacher</td>
<td>718.801</td>
<td>4</td>
<td>179.700</td>
<td>1.359</td>
<td>.259</td>
</tr>
<tr>
<td>Sex</td>
<td>1721.258</td>
<td>1</td>
<td>1721.258</td>
<td>13.015</td>
<td>.001</td>
</tr>
<tr>
<td>2-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment, teacher</td>
<td>1000.369</td>
<td>8</td>
<td>125.046</td>
<td>.946</td>
<td>.487</td>
</tr>
<tr>
<td>Treatment, sex</td>
<td>329.380</td>
<td>2</td>
<td>164.690</td>
<td>1.245</td>
<td>.295</td>
</tr>
<tr>
<td>Teacher, sex</td>
<td>300.633</td>
<td>4</td>
<td>75.158</td>
<td>.568</td>
<td>.687</td>
</tr>
<tr>
<td>3-way interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group, teacher, and sex</td>
<td>1337.199</td>
<td>8</td>
<td>167.150</td>
<td>1.264</td>
<td>.279</td>
</tr>
<tr>
<td>Residual</td>
<td>7934.900</td>
<td>60</td>
<td>132.248</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13500.056</td>
<td>89</td>
<td>151.686</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table AJ-2

Revision questionnaire scores by sex and treatment group

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>87.79</td>
<td>9.3</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>91.13</td>
<td>9.1</td>
</tr>
</tbody>
</table>

Table AJ-3
Revision questionnaire scores by sex and class

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
</tr>
<tr>
<td>Teacher 1</td>
<td>10</td>
<td>82.10</td>
<td>12.9</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>5</td>
<td>88.00</td>
<td>7.5</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>16</td>
<td>86.19</td>
<td>12.9</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>12</td>
<td>90.42</td>
<td>13.0</td>
</tr>
<tr>
<td>Teacher 5</td>
<td>8</td>
<td>82.13</td>
<td>11.6</td>
</tr>
</tbody>
</table>

Table AJ-4

Correlations: revision questionnaire scores (RQ) with draft scores by treatment group

<table>
<thead>
<tr>
<th></th>
<th>RQ/Draft 1</th>
<th>RQ/Draft 2</th>
<th>RQ/Draft 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group</td>
<td>r</td>
<td>r</td>
<td>r</td>
</tr>
<tr>
<td>1 (34)</td>
<td>0.1259</td>
<td>0.2108</td>
<td>0.3428</td>
</tr>
<tr>
<td>2 (34)</td>
<td>-0.0023</td>
<td>0.2280</td>
<td>0.1960</td>
</tr>
<tr>
<td>3 (36)</td>
<td>0.2100</td>
<td>0.1190</td>
<td>0.1133</td>
</tr>
</tbody>
</table>

Several explanations might explain this low correlation. First, the apparent face validity of the questionnaire might be suspect; the questions themselves, even if answered honestly, might not reveal the subject's
attitude toward revision. However, James (1987), using a similar questionnaire, noted that his college students displayed attitudes to revision which had been found among inexperienced writers by researchers such as Perl (1979), Sommers (1980) and Faigley and Witte (1981). Poor writers are not only burdened with an immature concept of revision, but because of their lack of success, they have a negative attitude toward writing in general. For a beginning writer, perhaps for any writer, one might expect the attitude toward revision to be in inverse relationship to the anxiety toward writing. Indeed, there is a quite strong negative correlation between the revision questionnaire scores and the writing apprehension inventory scores (see Table AJ-5).

A second possibility is that the students understand the range of behaviours which comprise revision, but that they choose to apply what they know infrequently, partially, or not at all. Transactional writing in the

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group 1</td>
<td>-0.7056</td>
</tr>
<tr>
<td>(34)</td>
<td></td>
</tr>
<tr>
<td>Treatment group 2</td>
<td>-0.5499</td>
</tr>
<tr>
<td>(34)</td>
<td></td>
</tr>
<tr>
<td>Treatment group 3</td>
<td>-0.7051</td>
</tr>
<tr>
<td>(36)</td>
<td></td>
</tr>
</tbody>
</table>
school situation, even when motivated by the scourge of marks, simply might not trigger consistent effort nor reveal consistent results. Even leaving aside the subject's interest in the topic, a subject's attitude toward the written product might vary widely from day to day and from session to session, and so his or her score on the questionnaire might therefore show no relationship to what he or she finally produced.

A third possibility is that the students understand the notions implicit in revision, but when faced with the process of revising a text, they are unable to diagnose or perhaps to execute the necessary changes. The correlations between the draft scores and the diagnosis level suggests that indeed there is some interference taking place at this point in the revision process, perhaps a cognitive overload capable of frustrating both detection and repair of errors. These correlations are low, often negative (see Table AJ-6). Apparently, some subjects were able to diagnose problems, but were unable or unwilling to execute the required revisions. Others made superficial diagnoses, but when actually revising, carried out substantive revision. Perhaps this latter group sensed a problem, but as the diagnosis sheet was being completed, was unable to articulate precisely what the error was and how it was to be remedied.

The weakest correlations, and all the negative correlations, occur in treatment groups one and three, which were marginally, though not significantly better than treatment group two on the pretest measures. This suggests the possibility that the better writers did not take the diagnosis phase of the writing session too seriously, understanding it to be some sort of paper work connected to the experiment, rather than a useful aid to their own revision. Many of them apparently only began to deploy their skills once the actual redrafting began. On comparing the correlations between
the diagnosis level, the G.P.A. and the modified G.P.A., one sees that
treatment group two has the highest correlations, though even these
correlations are weak (see Table AJ-7).

It is also possible that the novelty of the aural cuing stimulus, by
which the student did not have access to his first text during the first revision
session, somehow inhibited the normal revision procedure of those subjects
in group three. In the interviews with treatment group three, subjects
confirmed the shock effect of the novel stimulus. Such an effect could have
eroded whatever commitment the subjects brought to the diagnosis phase,
rendering their diagnoses more tentative and hesitant than those of the other
groups, or perhaps causing them to rush through the this phase. The novelty
might also have provoked enough confusion so that the subjects did not
understand what they were doing during this phase of the experiment.

Table AJ-6
Correlations: Diagnosis level and draft scores by treatment group

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>Draft 1</th>
<th>Draft 2</th>
<th>Draft 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (34)</td>
<td>0.0064</td>
<td>0.1599</td>
<td>-0.0506</td>
</tr>
<tr>
<td>2 (34)</td>
<td>0.2349</td>
<td>0.0859</td>
<td>0.1292</td>
</tr>
<tr>
<td>3 (36)</td>
<td>-0.2995</td>
<td>-0.4239</td>
<td>-0.3084</td>
</tr>
</tbody>
</table>
Yet another possibility is that the students understand revision to be an essentially cosmetic operation, a form of editing. The questions which implied that revision is more than editing were perhaps answered in a manner which the subjects hoped would please the reader. The similarity of Revision Questionnaire scores among all the classes tends to support this notion. Students have been taught the outward formulae of revision, and when the catechism is called for, they are ready to recite. Their professed behaviour and their actual process of revision clearly are not, however, congruent.

Table AJ-7

Correlations: Diagnosis level with G.P.A. and modified G.P.A. by treatment group

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>Modified G.P.A.</th>
<th>G.P.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group 1</td>
<td>0.1202</td>
<td>0.0836</td>
</tr>
<tr>
<td>(34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group 2</td>
<td>0.3132</td>
<td>0.1822</td>
</tr>
<tr>
<td>(34)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment group 3</td>
<td>-0.1475</td>
<td>-0.1663</td>
</tr>
<tr>
<td>(36)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A final possibility is that the long and repetitive structure of the revision sessions for all treatments might have affected the results of the revision questionnaire. The supervising instructors observed a general reluctance to revise at the beginning of the first revision session; nevertheless, after the second revision session the quality ratings and the
students' self-evaluations indicate both a real and a perceived improvement in the papers. It is possible either that the subjects reconsidered their attitude toward revision, or that the task of revising caused them to review strategies to which they had previously been exposed.

It might be anticipated that the revision questionnaire skills and the diagnosis level would correlate highly. Students whose revision attitudes indicate a complex pattern of revision behaviour might be expected to consider changes of meaning at the macrotextual level. Once again, although certain subjects may in fact have executed such changes, such execution appears to be entirely independent of their expressed attitude toward revision. The correlations are negative (see Table AJ-8).

Table AJ-8
Correlations: revision questionnaire and diagnosis level by treatment group

<table>
<thead>
<tr>
<th>Treatment group 1</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>(34)</td>
<td>-0.1817</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment group 2</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>(34)</td>
<td>-0.2136</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment group 3</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>(36)</td>
<td>-0.1312</td>
</tr>
</tbody>
</table>

That the revision attitude scores, the diagnosis level and the draft scores do not correlate more strongly seems counterintuitive. Nevertheless, in terms of this study, a given revision attitude as expressed in the questionnaire is of no use in the prediction of the final quality of a paper, nor can it predict the level at which revision will take place.
Appendix AK

Number of topics

Witte (1983) also notes that good revisors tend to reduce the number of topics as they revise, a consequence of opting for the logical subordination implicit in parallel progressions. Such a reduction is not apparent in the work of either group one or group three, presumably because they were lengthening and amplifying their earlier drafts. There were no significant differences in the number of topics either in draft two or draft three between treatment groups one and three (see Table AK).

Table AK

Test for significance of number of topics between treatment 1 (TG 1) and treatment 3 (TG 3) for Draft 2 and Draft 3.

<table>
<thead>
<tr>
<th></th>
<th>TG 1</th>
<th>TG 3</th>
<th>Sum of squares</th>
<th>Mean S.D.</th>
<th>Mean S.D.</th>
<th>F-ratio</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft 2</td>
<td>34</td>
<td>36</td>
<td>21.025</td>
<td>13.75</td>
<td>12.30</td>
<td>1.536</td>
<td>.2227</td>
</tr>
<tr>
<td>Draft 3</td>
<td>34</td>
<td>36</td>
<td>.1000</td>
<td>13.45</td>
<td>13.35</td>
<td>.005</td>
<td>.9430</td>
</tr>
</tbody>
</table>