

THE EFFECTS OF PROGRAMED GRAMMAR AND JOURNAL
WRITING ON STUDENT WRITING ABILITY:
AN EXPLORATORY STUDY

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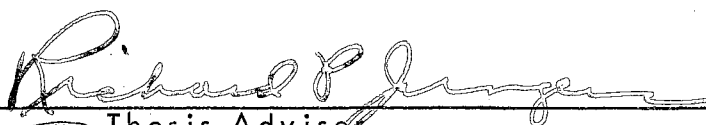
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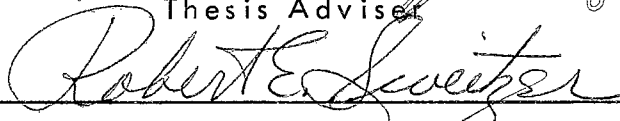
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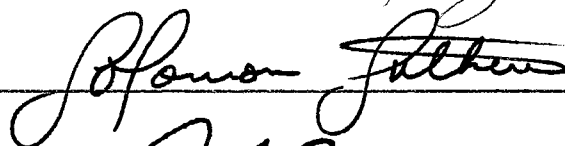
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work in my behalf resulted in more
than the also important "Honest John"
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CHAPTER I

INTRODUCTION

Implicit in the following quotation is general agreement among public school English teachers that a definite need for improvement in student writing ability exists whether or not students go on to college.

If there is one criticism of American education that most teachers, professors, and deans accept as honest and fair, it is that high school students do not write as clearly, concisely, and correctly as they should (19, p. 16).

One may incorrectly read into the above quotation the meaning that student writing today is inferior to compositions of students twenty and thirty years ago. Jewett does not imply this, neither does the research show it. Contrarily, the literature shows no differences in writing ability between today's student penmen and yesteryear's (8, p. 92).

Paucity of studies, investigations, and experiments is not the reason for criticism of writing ability or instruction of students. A review of the literature in the following chapter will indicate that much has been attempted with successful and unsuccessful results. No panacea has evidenced itself.

Through the present study the investigator did not purport to discover a cure-all for writing ills. However, a super-numerary investigation was not the intent. Instead, a novel means was sought to implement an exploratory study in the field of high school student writing.

Specific Statement of the Problem

The hereinafter discussed investigation was to determine whether programmed grammar and/or journal writing would increase student writing ability as measured by an objective, standardized instrument -- the Sequential Tests of Educational Progress (Writing Tests). The study was limited to tenth grade students.

Method of instruction was the independent variable under consideration. The control variable consisted of the pre-test scores made by students on alternate forms of the STEP Writing Tests. The dependent variable was post-test scores of the same students on alternate forms of the STEP Writing Tests.

Definition of Terms

Some key terms and phrases will appear more than once in the explanation of the investigation. It is necessary

that a few of these be defined to facilitate communication between the readers and the writer. Such terms follow:

1. Programed material reflects the careful ordering or programing of both subject matter and the conditions under which one works on the subject matter. The student may work at his own rate of speed through a program arranged in small, sequential steps which require active responses followed by immediate knowledge of results. It is a self-teaching device (26, p. 26). English 3200 was the program used in this study (2, pp. 1-535).

2. Student journal writing consisted of personal experiences and observations. Teachers did not judge or evaluate these writing experiences.

3. Writing ability was measured by student test scores on the STEP Writing Tests. These tests seek to measure comprehensively the full range of skills involved in the process of good writing (23, p. 10).

Limitations of the Study

The experiment was carried on at only one level -- tenth grade. Although certainly a limitation, in light of the rapidly changing stages in maturation of adolescents,

it would not be justifiable to generalize concerning findings in studies encompassing too great an age differential (27, pp. 17-21).

Another limitation came from the researcher's desire to observe the methods under study among students who were sectioned in English classes according to past achievement in English. Resultantly, though the total number of students was 204, the analyzed sub-groups were somewhat smaller.

The investigation could have included more than one school. However, it was the writer's strong belief that tighter controls could be maintained by carrying on the experiment in the school where he was located -- Lawrence, Kansas High School.

Obviously, it was not the purpose to generalize to all high school English classes from findings of this research. The plan was to observe the results then make recommendations for future implementations including adjustments, approaches, changes, and directions so indicated by the study's results.

Basic Assumptions

The following basic assumptions were needed in this study:

1. There is a need for means to improve student writing.

2. Students learn to do by doing; they learn to improve their writing by writing.

3. There is no ultimate authority on what should be done to improve student writing ability.

4. A student who has scored high on the STEP Writing Tests has achieved more than a student who has scored low.

5. The STEP Writing Tests are standardized and thus are suitable as a valid and reliable measuring device of student writing achievement.

6. At no time during the study was attention called to the experiment comparing methods. It is assumed that the Hawthorne Effect was not operating.

Significance of the Study

An important reason students are not required to write more in school is the lack of teacher time to evaluate the results. One set of student themes per week can require between twenty-five and thirty-five hours of a teacher's time (10, p. 6). No research has determined how much extra teacher-unevaluated writing students can do before they begin reinforcing errors of mechanics, organization, etc. A combination of freeing the teacher to more effectively evaluate student writing while students are

teaching themselves grammar and the additional expressional experiences through journal writing could indicate an amount of time and a direction to follow in helping solve the problem.

Independence (competence in basic learning skills) of the learner is a goal many educators strive to realize. The method of free writing through journal entries as practiced in this investigation could provide the learner with a means to reach independence in choice of writing topics; in reflecting on past observations and experiences, resulting in better self-direction; and in forming the habit without teacher assignment.

Past research indicates that the study of grammar results in no more than knowledge of grammar, not in an increase in expressional ability (37, p. 65). Scientifically programmed material may support or refute past research. More important, it may allow the student to teach himself grammatical rules and free the teacher for other more vital tasks of teaching.

Hypotheses to be Tested

Because students were randomly selected and assigned by low, middle, and high past achievement, the comparisons will be made by method only. They follow:

A. There will be no significant differences at the .05 level in methods of instruction of the low achievement groups. More specifically:

1. There will be no significant differences at the .05 level between low achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be no significant differences at the .05 level between low achievement Group 1 and Group 3 students in pre-post gain as measured by the STEP Writing Tests.

3. There will be no significant differences at the .05 level between low achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

B. There will be no significant differences at the .05 level in methods of instruction of the middle achievement groups. More specifically:

1. There will be no significant differences at the .05 level between middle achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be no significant differences at the .05 level between middle achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

3. There will be no significant differences at the .05 level between middle achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

C. There will be no significant differences at the .05 level in methods of instruction of the high achievement groups. More specifically:

1. There will be no significant differences at the .05 level between high achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be no significant differences at the .05 level between high achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

3. There will be no significant differences at the .05 level between high achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

The non-directed research hypotheses would follow in similar manner:

A. There will be a significant difference at the .05 level in methods of instruction of the low achievement groups. More specifically:

1. There will be a significant difference at the .05 level between low achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be a significant difference at the .05 level between low achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

3. There will be a significant difference at the .05 level between low achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

B. There will be a significant difference at the .05 level in methods of instruction of middle achievement groups. More specifically:

1. There will be a significant difference at the .05 level between middle achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be a significant difference at the .05 level between middle achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

3. There will be a significant difference at the .05 level between middle achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

C. There will be a significant difference at the .05 level in methods of instruction of high achievement groups.

More specifically:

1. There will be a significant difference at the .05 level between high achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

2. There will be a significant difference at the .05 level between high achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

3. There will be a significant difference at the .05 level between high achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter will be divided into two parts. The first relates to what has been done in the field of student composition, in general. The second section of the chapter deals with the utilization of programmed instruction.

Composition and Grammar

Pervading the field of student compositional skills, whether it be a general history of the field or the researches in teaching methods, is the word -- grammar. In one of the standard and best references books in the field of education -- The Encyclopedia of Educational Research -- the editors assign equal importance (in upper case letters) to "LANGUAGE, GRAMMAR, AND COMPOSITION," at the beginning of the section on "ENGLISH" (31, p. 454). The thread named grammar thus permeates the entire field of English composition research.

As long ago as 1917, James Hosis (17, p. 6), in a report sponsored by the U. S. Bureau of Education, took the school

composition program to task as dominated by grammatical analysis and as too exclusively preoccupied with writing at the expense of speech. It seems that during the twentieth century the pendulum has swung from too much emphasis on composition to too much on speech to where it now resides in criticizing lack of student writing ability.

Among the recommendations in the Hosis report was the one that grammar and usage should not be taught in isolation from oral and written composition, but should be applied to the improvement of both (17, p. 16-17). The nature of the present study indicates that grammar and writing can be used jointly.

Emphasis on "imaginative and creative composition without losing sight of the importance of literary types of writing or the use of literature as a starting point" has been the subject of much research (35, p. 47).

Much agreement is in evidence for the case of using student writing for real and vicarious experiences, and for heightening powers of observation and judgment (5, p. 116). The journal writing inclusion in the present study is reinforced by such beliefs.

In investigating grammar, language, and composition, Lyman (21, p. 203) brought out the danger of appraising

composition by exclusively mechanical standards such as the use of composition scales which emphasize technical correctness to the neglect of such considerations as content, organization, and creative imagination. The use of the STEP Writing Tests takes heed of Lyman's investigation summaries.

To overcome common student distaste for English, Jewett (19, p. 129) suggested several practices for improvement of instruction in the language arts. One of these was free, unassigned writing similar to the present study's journal endeavors. The Wichita, Kansas school system revised its English curriculum in light of many of Jewett's proposals (33, p. 274).

In separate articles, DeBoer (7, pp. 118-20) and Gunn (16, pp. 96-101) pointed out the continuing domination of grammar over composition. Both investigators also produced evidence of the success of informal and varied assignments and practice in writing. The concept of functionalism in the application of grammar to composition (like the joint use of English 3200 and journal writing on the same days) is reinforced.

While most teachers have been willing to concede the falsity of high correlation between grammar and mental discipline, they persistently hold to the contention that

grammar has instrumental values for students in the learning of their language (31, p. 461). However, Boraas (3, pp. 95-97) studied "the correlations between knowledge of grammar and proficiency in various areas of subject matter." All correlations were low, but he found a higher relationship between achievement in grammar and in mathematics than between achievement in grammar and in composition abilities.

The most disheartening (for teachers who believe it must be stressed) of all studies of the teaching of grammar are those dealing with the retention of grammatical knowledge. Miller (25, pp. 525-26) knew her students had extensive instruction in grammar from the fourth grade on. In testing her group of selected seniors, she found that no single item of grammatical information was adequately held by even a majority of her class. "Grammar has been taught," says Searles (31, p. 461) "and the casual observer . . . inevitably comes to the conclusion that it has been well taught. The inoculation has not taken." Grammar via the programmed route has not been researched in relation to writing enhancements in student performances. Perhaps, its inoculation will take.

High school teachers fear that students will be at a disadvantage in their college work if they do not have

grammatical information. Thirty odd years ago in a study by Smith and McCullough (36, pp. 23-25) this was discounted. These researchers showed that seventy-five per cent of college placement tests had no items of grammatical information. Rosemary Smith (37, p. 120) demonstrated that students "coming from a program rich in writing experiences with a minimum of mechanical drill succeeded better in college than did students who had much grammar and little writing." The experimental accent in this study is on much writing and scientifically programmed grammar.

Roberts (28, p. 9) points out the untenability of the point of view that there should be no systematic study of grammar. He said, "We cannot really define the concept sentence short of describing English grammar." The problem is, of course, that many educators (teachers and administrators) believe grammar is functional regardless of the context in which it is presented. Herein lies the crux of the present study's one experimental group. The group working in English 3200 writes each day grammar is taught. The hypothesis here is that grammar will make a difference when studied on the days student writing is done.

An implication for the present study is found in Frogner's (12, pp. 518-26) comparison of two teaching

methods in sentence structure. The "thought approach" emphasized meaning and thought exclusively; the "grammar approach" supplemented the "thought approach" with grammar and drill. Her study involved two grade levels -- ninth and eleventh. The grammar units paralleled the ones used in this study. Results of her unit tests in elements of sentence structure favored neither approach. However, the "thought approach" in both grades studied was superior to the "grammar approach" for all pupils with I.Q.'s below 105. There was little difference between methods among superior students. This should not lead one to the erroneous conclusion that it makes little difference how high achievement students are taught, nor to the conclusion that slow students do not benefit by learning grammar.

Of the eleven studies "documenting the uselessness of formal grammar in building compositional skill," only two dealt with high school age groups. Frogner, already cited, and Segel and Barr (32, pp. 401-02) studied tenth and/or eleventh graders. Neither used standardized tests to measure differences.

Writing further of transfer value of grammar, Stephens (40, pp. 1539-42) says that transfer appears to be a function of a student's intelligence and his ability to generalize.

Citing Stephens, Meckel (24, p. 981) goes on to say, "...it appears that the value of grammatical knowledge would be best tested in an experiment that utilized intelligent pupils who had received instructions to the point of mastery of principles." No such studies have been made although the present one compares three different groups of high achievement students.

Summarizing his review of the research, Meckel (24, p. 981), in part, states:

1. There is no research evidence that grammar as traditionally taught in the schools has any appreciable effect on the improvement of writing skill...

3. There is no conclusive research evidence, however, that grammar has no transfer value in developing composition skill.

4. More research is needed on the kind of grammatical knowledge that may reasonably be expected to transfer to writing. For example, commonly accepted principles of transfer of training would not lead an experimenter to expect much transfer value from knowledge of grammar which has not included the knowledge and ability to apply grammatical principles to the construction of the pupil's own sentences.

5. Research does not justify the conclusion that grammar should not be taught systematically.

6. There are more efficient methods of securing immediate improvement in the writing of pupils than systematic grammatical instruction.

Implied in Meckel's last statement is the idea that a great deal of writing should take place with the study of grammar -- the idea of the present research.

Meckel (24, p. 982) goes on to say, "There is, therefore, great need at present for new and differently conceived studies." Hopefully, this is one.

It was the design of the present study to add practice in writing to the experimental groups in hope of determining whether this helped to increase student writing ability. Experimental evidence on the relation of practice to skill is meager. Lokke and Wykoff (20, p. 439) experimented with two freshman classes of college students. They concluded that the extra writing practice cut the failures by sixty-six per cent and resulted in better than fifty per cent increase in grades.

In a less sophisticated study, but one using a greater number of students, Dressel, Schmid, and Kincaid (9, pp. 285-93) compared the improvement of students doing the most writing with improvement of students performing the least. The "most" and "least" were determined by the results of a questionnaire. The authors concluded that practice made no difference. Freshmen in college, numbering 2400, took part.

In a study that shows some similarity in method to the present one, Maize (22, pp. 26-28) used remedial college students. He compared a control group following a workbook drill on grammar and who wrote fourteen weekly graded themes, with an experimental group writing forty ungraded themes. The latter themes were commented on in class by students and instructor. The experimental group showed greater improvement on an objective, standardized instrument--the Rinsland-Beck Natural Test of English Usage.

The journal writing activities in this study were designed to be entirely student originated; that is, teachers did not assign topics. Meckel reports on an early study in the category of composition assignments. In the study, Sofell (38, p. 83) compared compositions written on self-chosen topics with a like number written on assigned topics. On the semi-objective Hillgas Scale, the students who originated their own topics fared better.

Edmund (11, pp. 248-49), using elementary children, compared pupil written stories about live experiences and the same children's stories about experiences derived vicariously from books, television, and radio. Fifth and seventh grade youngsters wrote higher quality creative

compositions on live experiences than on vicarious experiences. In a separate look at ninth graders, using the same format, Edmund found no differences.

Clark (4, pp. 150-55) observed the writings of pupils in twenty-one kinds of writing situations and additional voluntary assignments. He concluded that when students wrote on topics involving their own feelings and emotions, their writing had more quality and held reader interest.

In all the studies on types of assignments for student writing experiences, the researcher found one type recommended by every investigator. This was the writing assignment encouraging students to write from their own interests and needs. In line with this is the journal writing of the study presently under consideration.

Programed Instruction

Not in keeping with the footnote style of this study, and certainly unlike most doctoral theses, the following quotation will not be identified until the writer of this paper comments after the quote is read:

Text-books often state what habits are to be formed without giving the reader exercises in forming them, but this is not a necessary feature of printed matter. Text-books on geography, history, spelling, English composition, grammar,

economics, philosophy or sociology could, by the exercise of enough ingenuity, provide for the actual information of habits in the way that books of examples to be done in arithmetic, or sentences to be translated in Latin, or experiments to be done in chemistry do.

Text-books still less often guide the pupil to think out conclusions himself so far as he can. They commonly give the results of reasoning and perhaps problems demanding reasoning, but they do not so manage the latter that the pupil at each stage is helped just enough to lead him to help himself as much as is economically possible. They do not, that is, usually get the full value of the questioning, 'developing,' inductive, and experimental methods of teaching. Nor do they usually give work in deductive thinking so arranged as to stimulate the pupil to make and test inferences himself.

Books could be written giving data, directions for experiments and problems with the data, and questions about the inferences. The student could be instructed to read each helping piece of information, only after he had spent a certain time in trying to do for himself what he was directed to do. Such books might be more effective than all but the best tenth of personal teaching, if students would faithfully try as directed before reading ahead for the helps given.

If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print. Books to be given out in loose sheets, a page or so at a time, and books arranged so that the student only suffers if he misuses them, should be worked out in many subjects.

From the point of view of interest in work, personal teaching is usually more sociable, but the difference between it and text-book teaching in this particular could be reduced by skill in organizing the latter.

The evils of rote-memorizing or merely absorptive study on the part of pupils, and of lack of progress on the part of teachers, which are attributed to text-books, are not at all necessary consequences of their use. It is easy to make it more satisfying to pupils to understand than to memorize, and to think than merely to read. A lazy or stupid teacher will not be cured so well by being deprived of all text-book aids in teaching a subject as by being given a dozen such and required to show that he uses them all well.

Finally, many of the evils attributed to the overuse of text-books are really due to misunderstanding and misuse of them. In the case of a good text-book there is reason for every item and for its position in the whole. Too few teachers know the exact purpose of the text-books they use. Too often, a teacher uses a section of a book much as a savage might use a coat to cover his legs; or as a child uses a saw to cut a string, scissors to cut a board, and a padlock as a bracelet.

On the whole, the improvement of printed directions, statements of fact, exercise books and the like is as important as the improvement of the powers of teachers themselves to diagnose the condition of pupils and to guide their activities by personal means. Great economies are possible by printed aids, and personal comment and question should be saved to do what only it can do. A human being should not be wasted in doing what forty sheets of paper or two phonographs can do. Just because personal teaching is precious and can do what books and apparatus can not, it should be saved

for its peculiar work. The best teacher uses books and appliances as well as his own insight, sympathy, and magnetism.

If the reader scanned hurriedly the preceding quotation and did not, as Francis Bacon (1, p. 655) admonished readers of quality treatises, "swallow and digest," he is advised to read it once more before going on. The perceptive pursuer of written words may have guessed by now that the quotation was an anachronistic maneuver used by some writers to drive home a point. The present writer so used this one.

The author, Edward L. Thorndike (41, pp. 164-67) wrote those ideas fifty-three years ago in the year 1912. Here are the insights of a genius. History can very often teach us a lesson in humility, and it does here. The interesting question is: Why could we not see it then?

Though he did not know what it was to be called, Thorndike was, of course, writing about programmed texts. As can be surmised in the reading of Thorndike, none of the underlying principles of programmed instruction is new. The principles on which it is based have long been known, and educators have always recognized the value of active student participation and immediate confirmation of correct responses. What is new is bringing together these principles and techniques in a systematic, controlled approach to

learning. And, like all new developments, programmed instruction poses many questions (26, p. 27). A portion of the study under present consideration is programmed instruction. It is therefore incumbent upon the writer to answer some of the questions mentioned above via a look at the literature of this new field. But first, what is programmed instruction?

In a one-to-one teacher-student situation, the teacher can ask a question, get a response, and immediately evaluate the learning that has taken place. Frequently, however, the exigencies of the classroom forbid following up indications of failure in learning with individual students. Although it is the ultimate to know what each student as an individual has learned in the course of a class discussion, it is generally impossible to discern it (15, p. 3).

An effective programmed course of instruction -- in either book or teaching machine form -- should permit, even demand, a one-to-one situation between teacher and student. In the case of programmed instruction, the "teacher" is the program itself. The student, confronted with a question, answers; his answer is immediately checked when he goes on to the next frame and reads the correct answer. If the answer is incorrect, the student can return to the

previous frame, work out where and how he went wrong, and then revise his previous answer. Thus, he learns each step of the process before he goes on to the following step.

Now that a basis has been established on which the reader and writer can communicate, what is the status of the research in regard to the questions posed by programmed instruction?

The research leaves no doubt that programs do teach. A great deal of learning seems to take place, regardless of the kind of program or the kind of students. Even a bad program is a pretty good teacher (30, p. 11). But how they teach, and what combinations of characteristics make them teach better, is still much in doubt. Schramm (30, pp. 13-14) continued:

The typical theory of learning may have little relation to what goes on in the human being when he learns. The need to study programmed instruction should help to bring theory and actuality closer together. And if research on programs can illuminate learning theory, then we can be confident that improved theory will illuminate and improve programing.

Some things have been accomplished by using programs to telescope learning time. For example, a class of Naval Reservists, needing a cram course in Russian, used a program for the purpose, and as each one finished the program he studied part of a grammar text and listened to tapes of a

foreign language speaker. They studied for ten days, seven hours a day. Their instructor estimated that in the ten days they learned about as much as they would have learned from a semester and one-half of a beginning college course in Russian (30, pp. 14-15).

Because the field is so new, many of the research reports on programmed instruction still appear in mimeographed or offset form, rather than in the journals. Therefore, it is difficult to know whether or not all the research is being reviewed. However, in this study the purpose is not to look at the problem areas of response modes, step sizing, sequencing, comparing different prompting and confirmation methods, branching, pacing, and repetition. The part programming (English 3200) plays in the present experiment is the determination of its indirect effect, if any, on student writing.

Among his many-faceted coverages of the research in a recent article, Silberman (34, p. 185) said:

A growing number of studies reported the results of field tests featuring global comparisons of programmed and conventional instruction. The results of these studies generally tend to favor the program. There is some indication, however, that the students in many of the conventional classes which had a fixed training interval may not have received the same material or may not have used their time as efficiently

as they could, because comparisons of programmed lectures, programmed textbooks, and programmed machines yielded no significant differences. In studies comparing conventional and programmed instruction, the programmed groups usually took less training time: Perhaps the experimental groups worked only on test-relevant material, while control groups covered a wider range of topics. The Hawthorne or novelty effect may also have been operating.

One thread seems to be common to a majority of the studies. Roe (29, pp. 54-57) and Wendt (42, pp. 1-4), in separate studies, were able to find no significant differences in learning between programmed materials and a programmed lecture (the ideal comparison). However, learning efficiency is generally greater with programmed instruction than with conventional lectures. And likewise, it is generally greater when the time factor is considered in preparation of programmed lectures.

In this study, the researcher attempted no direct comparison between English 3200 and conventionally taught grammar. Although the same grammar units were covered in control and experimental groups, the control groups' lectures and discussions were not programmed. Therefore, no common test material would have been possible, a common oversight in the studies Silberman calls attention to.

In effect then, any favorable differences English 3200 groups may have over the other groups would be a function of the programing method. Differences, of course, in the study refer not to grammar but to writing as measured by an objective instrument (STEP Writing Tests).

CHAPTER III

METHOD AND PROCEDURE

This study was an attempt to evaluate three different methods of teaching sophomore high school English to determine their effect on student writing ability at the conclusion of the semester. The commonalities and differences in these methods will be discussed in the first portion of the chapter. The second portion will deal with the procedures for implementing the three methods, including the pre and post testing.

The Methods Used

High school English classes are probably taught in as many different ways as there are schools. A similar statement could be made about teaching methods within individual schools though universality would not be as likely. Controlled experiments can help identify effective and ineffective facets of instruction. The present study involved three

methods of instruction but only two points of departure from the basic course of study. These departure points were a self-teaching device known as English 3200, and a free writing exercise called journal writing.

In each category of low achievement, middle achievement, and high achievement, students were randomly and respectively assigned to one of three groups. Group 1, the control group, used one text, Building Better English, from which composition and grammar were taught. Group 2, one of two experimental groups, used Building Better English for composition, and the self-teaching device, English 3200, for grammar. Additionally, Group 2 students took part in journal writing -- a free writing device. Group 3, the other experimental group, used Building Better English for composition and grammar. This group also took part in journal writing experiences.

All three groups -- control, journal writing - 3200, and journal writing -- used Building Better English for composition exercises. All three groups were given the same writing assignments. On Thursday of each week, all students of the three groups wrote papers in class which were evaluated by the respective teachers. One week this required writing consisted of a paragraph developed from a composition exercise

in the text common to all students. On alternate weeks the paper was a one to two page theme developed similarly. These paragraphs and themes were the only teacher-evaluated and required compositions assigned to all students in the experiment.

Units of grammar were also common to all students. Students of Group 2 taught themselves these units via English 3200. The grammar units were the simple sentence; process of compounding; complex sentence; other devices of subordination; achieving sentence variety; recognizing the sentence unit; the smooth-running sentence; subject and verb agreement; solving verb problems; using adverbs and adjectives; solving pronoun problems; and skill with graphics.

Students in Groups 2 and 3 participated in journal writing, a required but not teacher-evaluated composition medium. Group 1 students were given no such unevaluated writing experiences.

Procedures of Implementation

At the beginning of the first semester during the 1963-64 school year, there were 480 students enrolled in sophomore English at Lawrence, Kansas High School. Using the previous year's English class grades as a criterion of selection, 240 of the 480 students were chosen for the experiment and sectioned in three groups.

Group 1 students were taught in the conventional manner, using conventional materials. This was the control group. Group 2 students used a programmed grammar (English 3200) and took part in journal writing experiences. Group 3 students took part in journal writing experiences. Exclusive of the differences mentioned, all three groups used the same course of study.

Control for teacher effect was made by assigning a control (Group 1) and two experimental groups (Groups 2 and 3) to each teacher. Teacher A taught low achievement English students randomly assigned to Groups 1, 2, and 3. Teacher B taught middle achievement students randomly assigned to Groups 1, 2, and 3. Teacher C taught middle achievement students randomly assigned to Groups 1, 2, and 3. Teacher D taught high achievement students randomly assigned to Groups 1, 2, and 3. Table I illustrates the precedingly described design.

TABLE I
RESEARCH DESIGN ELEMENTS

Teachers	Students' level of achievement	Treatment groups	Data Sources
A	Low	Group 1 (control) Group 2 (3200 & journal writing) Group 3 (journal writing)	STEP Tests, pre and post + Teacher interviews
B	Middle	Same as Teacher A	Same as A
C	Middle	Same as Teacher A	Same as A
D	High	Same as Teacher A	Same as A

The make-up of low, middle, and high achievement groups was determined by each student's previous year's English class semester grades. Students in the low achievement groups had made semester English grades of C, D; D, D; D, F; or any combination of these. Students in the middle achievement groups had received semester English grades of B, B; B, C; C, C; or any combination of these. Students in the high achievement groups had recorded semester English grades of A, A; A, B; or the only other combination of B, A.

Students in the study were all high school sophomores. Each had been a ninth grader the year before.

It is customary in Lawrence High School for English teachers to have a student load of approximately 100 during the five periods of teaching duties. Thus, each of the twelve sections in the study possessed twenty students at the beginning of the semester.

The STEP Writing Tests were administered to all 240 students during the first full week of school. Form A of the tests was given at this time in two separate testing sessions. All students who were absent during one or both of the regular testing sessions made up the missed sessions in class on the next day(s). Administration of the tests took place in the individual classrooms by the teachers. During a summer workshop meeting, the researcher instructed all four teachers in the administration of the STEP Writing Tests.

Prior to administration of the tests, all four teachers encouraged their students to perform as well as possible because the results of the test would provide the teacher with knowledge to do a better job in teaching individual students. At no time was mention made of the experiment.

During the summer workshop the four teachers and the researcher agreed that Group 2 would use thirty minutes at the beginning of class on Mondays, Wednesdays, and Fridays to teach themselves grammar through the use of English 3200.

The next twenty minutes would be spent in journal writing activities on those same days. It was thought by all workshop participants that the learning of grammar should be accompanied by writing experiences, evaluated or not.

Teachers and researcher also agreed that Group 3 students would do their journal writing the final twenty minutes of class on Mondays, Wednesdays, and Fridays. Because teacher-taught grammar is less amenable to a planned time-table, it was decided that Group 1 and 3 students would proceed with units of grammar on days as needed with the exception of Thursdays. Thursday each week was reserved for required student writing in all three groups. As mentioned previously, the paragraph and theme writing would be evaluated by the teachers.

Other details of design were completed during the summer workshop. They resulted in the following:

1. Students in Groups 2 and 3 were told the first day of school that they would need a spiral notebook before the second full week arrived. It was believed students would have more interest in the journal writing activity if the notebooks belonged to them from the outset. The spiral notebooks became the student journals.

2. The journals were kept in the classrooms at all times. When not in use, they were kept on a table in the front of each room. To facilitate making journals available, teachers placed journals on the table. Journals were divided according to rows of desks and the order of students in each row. The mechanics of passing journals to and from students required no more than one minute per class period.

3. Copies of English 3200 were kept in the classroom at all times. Although this violated part of an advantage in programed learning -- students working at their own rates could make more use of the programs in depth at home -- results could have been confounded if students from Groups 1 and 3 had access to the programs through friendships with members of Group 2. It was believed also that if the programs were kept in the room, students would not forget to bring them to class on the proper days. A rather unique and interesting result came from this. During the entire semester, not one copy of English 3200 or a student journal was stolen or misplaced.

4. Contrary to the directions in the Preface of English 3200, research has not shown that writing answers in each frame of a program results in more effective learning (14,

pp. 112-14). Therefore, students in Group 2 were directed by their teachers to read each frame, insert the answer mentally, and turn to the next page for reinforcement. Rationale behind this decision was that students could proceed through the program without interruption, allowing a closer simulation of normal reading habits. Also, because students would follow work in English 3200 with journal writing, too much handwriting could become tiring physically as well as mentally.

5. At the conclusion of each unit of English 3200, students were tested. A test booklet accompanies each copy of the programed text; thus, they were not teacher-made. Students were allowed to take these tests during class or by appointment with the teacher before or after school. Just as in Groups 1 and 3, the results of the tests counted toward the student's final grade. Extrinsic motivation was thus afforded students who lacked other reasons to work through the program.

6. Students in Groups 2 and 3 were told at the beginning of journal writing activity that this could be fun if approached in the right way. They were encouraged to think at home the night before a journal writing day, of personal experiences and observations worth recording in their journals. Students were informed that many of history's

famous people kept journals. They were told that journal writing could not only help them become better writers, but that this kind of activity pursued diligently would help them organize their thinking, resulting in better grades in school and more intelligent and interesting conversations with their friends. They were asked to proofread each day what had been written in the journal, not only for mechanical mistakes but for things left unsaid or that could be stated in a more effective manner. Student writers were promised that the journals were their own property and would not be graded by the teacher. However, they were to feel free to consult the teacher for advice in journal writing activities and ask the teacher to read and/or react to any entry the student wanted read. Above all, the teachers pointed out that each student should plan to keep his journal. It could provide the student with a source for better understanding himself and those with whom he comes in contact. It was also stressed that the journal could be of importance someday in understanding his own teenagers. The last statement definitely registered in the minds of many of the students. Many seemed to think they were misunderstood by their parents and other adults. These students believed writing about events in their own world would help parents and other adults understand the student writer. This brought

up the last point teachers made. Students were encouraged to allow parents to read portions if not all of the journal entries.

7. Students in all groups had the same number of required, teacher-evaluated paragraphs and themes to write during the semester. Students in the experimental groups using the journals wrote each week one hour more than control group students. The weekly hour was broken into three daily twenty minute sessions. The first semester included nineteen weeks, seventeen of which were unencumbered with pre and post testing. Therefore, journal writing students had seventeen hours more writing experiences than control group students had.

Group 2 students who finished English 3200 before the semester closed used the extra time to write in their journals and have individual sessions with their teachers. These individual sessions were concerned with student writing progress.

8. The STEP writing tests, Form B, were administered the final week of the semester. The same procedure was used in administering Form B as was used with Form A at the beginning of the semester. Prior to the administration of the post test (Form B), teachers asked students to perform as well

as possible for the purpose of showing how much progress they made during the semester.

Due to schedule conflicts, counselors advising some to change classes, students moving away, and a few dropping out of school, of the 240 who began the semester in Groups 1, 2, and 3, only 222 finished. Seventeen was the smallest number remaining in any one class; thus eighteen students were cast out randomly to gain an equal number in each class section (13, pp. 295-97).

Teacher Reactions

In addition to the administration of pre and post STEP Tests to determine statistical results, it was decided by the investigator and participating teachers that teacher reactions to the experiment would be helpful. Each teacher agreed to note in writing during the experiment all reactions that seemed pertinent.

The investigator suggested that he might create a questionnaire to which each teacher could respond after the experiment was concluded. All four teachers believed it would be more effective and realistic to hold informal discussions. The idea of a questionnaire was discarded, and discussions were planned. Again all agreed that these

discussions should be held with the investigator and four teachers present each time. Rationale behind this was that while one teacher was responding, others (more than just the investigator) might offer insights into the response. If the investigator were interviewing only one teacher at a time, the investigator would not have the benefit of more than one teacher's responses at that time.

It was finally agreed that at least one group discussion would be held, followed by individual investigator-teacher interviews.

Description of the STEP Writing Tests

In exploring the literature, the reader found no entirely adequate measurement medium to assess student writing ability and growth in writing skills. In the various media, either one of two requirements is lacking -- the measuring device does not seemingly measure what it purports to measure or the device is not reliable. However, in practice, classroom teachers across the country use a combination of objective verbal tests and their own graded results of student writing assignments to arrive at the final evaluation of a student's written expressional ability.

With these things in mind, the researcher sought a test, objective in nature for reliability, but with features that could reasonably be assumed to represent student ability to write. The STEP Writing Tests approximate these desires.

In line with most educational needs, the STEP Writing Tests accent power rather than speed. The Tests are divided into two parts, each with thirty items and a time period of thirty-five minutes. All students in the study under discussion completed both sections on the pre and post tests in the allotted time.

The Tests seek to measure comprehensively the full range of writing skills, including organization (ordering of ideas); conventions (sentence structure, gross errors in word choice, punctuation, and spelling); critical thinking (detecting unstated assumptions, perceiving cause-effect relationships, anticipating reader's needs); effectiveness (adequacy of emphasis and development, exactness of expression, economy, simplicity, variety); appropriateness (choosing level suitable to purpose and reader). No argument is given that these five skills are mutually exclusive (23, p. 3).

An advantage possessed by STEP Writing Tests is the requirement of students to select revisions rather than just identify an error or weakness. Materials that make up the

Tests were selected from "actual student writing in letters, answers to test questions, newspaper writing, announcements, essays, reports, records, minutes, logs, stories, notes, outlines, answers to questionnaires, and directions" (23 p. 5). Each form consists of eight to ten selections followed by several items based on the selection.

In The Fifth Mental Measurements Yearbook, Davis (6, p. 1523) says:

On the whole, the items are clear and direct and require the application of information or skills to new material...

The statistical framework for the tests received expert attention. The items were pretested and analyzed; the forms were equated horizontally, and all raw scores converted to a single scale...

The tests should also be useful for evaluating classes, grades, and larger groups on the basis of the norms supplied. Although the tests might be improved in general design and specific content, the authors are to be commended for making progress in testing some of the important but hard-to-measure skills in good writing.

From the same source, Zahner (43, p. 1524) points out:

Within the limits set any test in composition by the requirements of objective testing, this is a strong test, well conceived and well executed. Its use of student writing as a base is realistic. Its coverage of the details of structure, usage, rhetoric, and logic is wide and nicely attuned to the grade levels tested...

Taken singly, this test at least indicates how much a student knows about the skills of written composition, even though it leaves open the question of whether or not he can apply them in practice; and it directs attention of student and teacher alike to the importance of details.

A widely known name in educational testing, John M. Stalnaker (39, pp. 1524-25), President of the National Merit Scholarship Corporation, states in part:

Some of the claims made for the test would appear to have been written with an eye on sales promotion rather than on any evidence reported. On the other hand, the test, while offering nothing new or distinctive in test construction, appears to have been prepared with care, by competent people using approved procedures. It will doubtless yield results of value in many classrooms.

It was important to the creators of the STEP Writing Tests to construct a sample of schools participating in norming the final forms that represented the total system in respect to some important characteristics known to affect test scores. At the elementary and secondary school levels, STEP testmakers wrote:

There is evidence indicating that test performance varies from region to region. Therefore, schools in the norms sample were so chosen that the representation from each of nine regions is similar to the proportions in the United States... At the inception of the standardization program for SCAT and STEP a random sample of all school superintendents in the country was chosen; the superintendents were asked if they were willing

to participate in some phase of a long-range standardization program. The several samples that were tested in the pretesting, equating, and norms programs were all drawn from the group of superintendents who responded affirmatively to the original questionnaire (23, p. 6).

At the present time, aside from the College Entrance Examination Board Examinations for high school seniors (a secure test), the STEP Writing Tests are the only standardized tests on the market that attempt to measure writing ability, per se. Although that is not in itself a justifiable reason for selecting STEP as the study's measurement instrument, it does indicate that the creators of the STEP Tests attempted to fill a void.

CHAPTER IV

FINDINGS

Because the means of assigning students to teachers was by classification of students' previous year's English course grades, three separate analyses of covariance were made to determine differences or lack thereof between methods of instruction. Three null and three non-directed research hypotheses for each achievement group (low, middle, high) were set up at the beginning of the study. The total of nine null and nine research hypotheses will be discussed in detail.

The first portion of the present chapter will describe and show the results of analyzing the data collected. Three data tables will be shown -- one for low achievement students, one for middle achievement students, and one for high achievement students. Each analysis of covariance was made from the data of the appropriate table.

The second portion of the chapter relates the reactions and findings among the teachers of the study. In a study of

this nature, intelligent recommendations would be difficult to make without the astute observations of the teachers who took part.

Following the directions of the Technical Report of STEP, as soon as data were collected, raw scores were converted to the "score reporting scales" developed by horizontal and vertical equating of the battery (23, pp. 7-9). As a result of the equating it was possible to reduce the effects on reported scores of the random differences between forms. As the STEP statisticians said:

Although the alternate forms have very similar distributions of item difficulties and item discrimination indices, as would be expected, the matching was not perfect. With a limited number of items from which to draw, it was impossible to work exclusively with perfectly matched pairs of items. Furthermore, as is true of statistics in general, item statistics are not perfectly stable (23, pp. 7-8).

Data were analyzed on an electric hand calculator and not on a computer. Therefore, it was advisable to drop a constant from each converted score to relieve the tediousness of dealing with extraordinarily large numbers. The converted scores ranged from 247 to 335 so the constant 200 was dropped from each. This did not affect number relationships but did make the calculations easier.

Low Achievement Groups

Table 1 lists the data for the low achievement Groups 1, 2, and 3 taught by Teacher A. The row ΣX contains the sum of pre test scores (Form A) made by students in each of the three groups. The Total column is at the extreme right of the table. The row ΣY contains the sum of post test scores (Form B) made by students in each of the three groups. The row ΣX^2 is the sum of the individual scores squared in the pre test. The row ΣY^2 is the sum of individual scores squared in the post test. The row ΣXY is the sum of the cross-products of pre and post test scores. The row N represents the number of students in each Group. The other two data tables will be set up the same way. The purpose of the data tables is to show the reader the data before the statistics analysis of variance and covariance are applied. It is interesting to note in each of the tables the differences between pre (X) and post (Y) test sums of scores. Differences are magnified, of course, when these sums are squared. Although significance is not determined at this point, the observer can tell there are differences and in which groups these differences occur.

TABLE II
DATA OF LOW ACHIEVEMENT GROUPS
ON THE PRE AND POST STEP WRITING TESTS

	Group I	Group 2	Group 3	Totals
ΣX (sum of pre test scores)	1250	1131	1142	3523
ΣY (sum of post test scores)	1232	1261	1231	3724
ΣX^2	94066	79439	78422	251927
ΣY^2	92194	96449	90571	279214
ΣXY	92533	86257	83827	262617
N	17	17	17	17

Although the students in this study were selected randomly from the entire sophomore English class enrollment at Lawrence High School and assigned the same way, the criterion of selection and assignment was students' previous year's English course grades. It would not have been safe to assume at the beginning that all students in the low achievement category would behave alike on the pre test just because their previous year's English course grades were similar. The same reasoning applied to students in the middle and high achievement categories. Thus, a statistic was sought which would not have to assume initial equality. Garrett (13, p. 295) writes:

Analysis of covariance represents an extension of analysis of variance to allow for the correlation between initial and final scores. Covariance analysis is especially useful to experimental psychologists when for various reasons it is impossible or quite difficult to equate control and experimental groups at the start: a situation which often obtains in actual experiments. Through covariance analysis one is able to effect adjustments in final or terminal scores which will allow for differences in some initial variable.

A preliminary analysis of variance (Table III) of the pre and post scores, taken separately, shows that the F test applied falls short of significance at the .05 level in both cases. In the case of F_x , it is clear that the X (pre) means do not differ significantly and that the random assignment to Groups 1, 2, and 3 was successful. In the case of F_y , the preliminary analysis of variance of the Y means alone showed no difference. The lack of difference there yields no conclusions at this point; post (Y) scores need to be adjusted for differences in pre (X) scores. Thus, computations were next carried out for the purpose of correcting the Y (post) scores for differences in X (pre) scores.

TABLE III
ANALYSIS OF LOW ACHIEVEMENT GROUPS VARIANCE OF X AND Y
SCORES, TAKEN SEPARATELY:

Source	df	SS _x	SS _y	MS _x (V _x)	MS _y (V _y)
Between	2	508.75	34.16	254.38	17.08
Within	48	8054.94	7254.82	167.81	151.14
Total	50	8563.94	7288.98		

$F_x = 254.38/167.81 = 1.52$	From Table F
	df 2/48
$F_y = 17.08/151.14 = .113$	F at .05 level = 3.18

The F test (Table IV) was applied to the adjusted between and within variances. Though it shows no variability after correcting for variability in initial X scores, the rather high correlation and regression coefficients (.711 and .675, respectively) indicate there is a possible difference between at least two adjusted means. This indicates possible rejecting of at least one null hypothesis.

TABLE IV
ANALYSIS OF COVARIANCE OF LOW ACHIEVEMENT GROUPS

Source	df	SS _x	SS _y	SS _{xy}	SS _{xy}	MS _{yx} (V _{yx})	SD _{yx}
Between	2	508.75	34.16	-72.02	343.41	171.71	
Within	47	8054.94	7254.82	5440.94	3579.58	76.16	8.727
Total	49	8563.69	7288.98	5368.92	3922.99		

$F_{y.x} = 171.71/76.16 = 2.225$
From Table F
df 2/47
F at .05 level = 3.20

After calculating the adjusted Y means (Table V), the Standard Error of the Difference between any two adjusted means was calculated (Table VI). Results of consequently calculated T tests (Table VI) then disclosed that at the .05 level of significance, Group 2 had a significantly higher mean than Group 1. Results of the other two T tests were not significant.

Therefore, null hypothesis A_1 is rejected and the comparable research is infirmed. Null A_2 and A_3 are accepted, and comparable research confirmed. That is, there were significant differences at the .05 level between low achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests. The gains were in favor

of Group 2 students (English 3200 and journal writing). There were no significant differences between Group 1 (control) and Group 3 (journal writing) students. Neither were there significant differences between Group 2 and Group 3 students.

TABLE V

CALCULATION OF ADJUSTED Y MEANS OF LOW ACHIEVEMENT GROUPS

Groups	N	M_x	M_y	$M_{y.x}$ (adj.)
1	17	73.63	72.47	69.47
2	17	66.53	74.18	75.90
3	17	67.18	72.41	73.69
Gen. M		69.08	73.02	

$M_{y.x} = M_y - b(M_x - GM_x)$	For Group 1 = 69.47
	Group 2 = 75.90
	Group 3 = 73.69

TABLE VI
SIGNIFICANCE OF DIFFERENCES BETWEEN ADJUSTED Y MEANS
OF LOW ACHIEVEMENT GROUPS

$$SD_{y.x.} = 8.727$$

SE_D between any two adjusted means

$$= SD_{y.x.} \sqrt{1/N_1 + 1/N_2} = 2.999$$

for $df = 47$, $t_{.05} = 2.02$

$$T_{1vs2} = 75.90 - 69.47 / 2.999 = 2.14$$

$$T_{1vs3} = 73.69 - 69.47 / 2.999 = 1.41$$

$$T_{2vs3} = 75.90 - 73.69 / 2.999 = .737$$

Middle Achievement Groups

Table VII represents the data from the middle achievement groups. The symbols have the same meaning as those in Table I.

TABLE VII
 DATA OF MIDDLE ACHIEVEMENT GROUPS
 ON THE PRE AND POST STEP WRITING TESTS

	Group 1	Group 2	Group 3	Totals
ΣX (sum of pre test scores)	3049	3024	2972	9045
ΣY (sum of post test scores)	3064	3319	3172	9555
ΣX^2	277541	273588	264856	815985
ΣY^2	280840	331253	310800	913893
ΣXY	278605	300019	281574	860198
N	34	34	34	102

Looking at Table VIII the reader finds that the F test has fallen short of significance at the .05 level in both cases. The indication in F_x is that the middle achievement group students were randomly assigned to Groups 1, 2, and 3 successfully. In the case of F_y the preliminary analysis of variance of the Y means alone showed no significant difference.

TABLE VIII
MIDDLE ACHIEVEMENT GROUPS

ANALYSIS OF VARIANCE OF X AND Y SCORES, TAKEN SEPARATELY:

SV	df	SS _x	SS _y	MS _x (V _x)	MS _y (V _y)
Between	2	90.76	963.70	45.38	481.85
Within	99	13815.56	17850.62	139.55	180.31
Total	101	13906.32	18814.33		
$F_x = \frac{45.38}{139.55} = .325$				From Table F	
$F_y = \frac{481.85}{180.31} = 2.67$				df 2/99	
				F at .05 level = 3.09	

The F test applied in the covariance analysis (Table IX) yielded a highly significant figure ($F_{y.x} = 7.51$), far beyond the .01 level of significance. It is clear from this, that the three final means will differ significantly after they have been adjusted for initial differences in X.

Application of the T tests (Table X) reveals that Group 2's mean is significantly higher than Group 1's; Group 3's mean is significantly higher than Group 1's (in both of these significances, at the .01 level); and Group 2 and Group 3 means do not differ significantly.

TABLE IX

ANALYSIS OF COVARIANCE OF MIDDLE ACHIEVEMENT GROUPS

SV	df	SS _x	SS _y	SS _{xy}	SS _{y.x}	MS _{y.x} (V _{y.x})	SD _{y.x}
Between	2	90.76	963.70	-69.09	911.11	455.56	
Within	98	13815.56	17850.12	12963.41	5947.24	60.69	7.79
Total	100	13906.32	18814.32	12894.32	6858.35		

$$F_{y.x} = \frac{455.56}{60.69} = 7.51$$

From Table F

df 2/98

F at .05 level = 3.09

F at .01 level = 4.82

TABLE X

SIGNIFICANCE OF DIFFERENCES BETWEEN ADJUSTED Y MEANS

OF MIDDLE ACHIEVEMENT GROUPS

$$SD_{y.x} = 7.79$$

$$SE_D = 1.889$$

for df = 97, T.05 = 1.98, T.01 = 2.63

$$T_{1vs2} = 4.34$$

$$T_{1vs3} = 2.81$$

$$T_{2vs3} = 1.54$$

Therefore, null hypothesis B_1 is rejected and the research infirmed; null hypothesis B_2 is rejected and the research infirmed; and null hypothesis B_3 is accepted and the research confirmed. That is, there were significant differences at the .05 level between middle achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests. The gains were in favor of Group 2 students (English 3200 and journal writing). Also, there were significant differences between Group 1 and Group 3 students. Gains were in favor of Group 3 (journal writing). There were no significant differences between Group 2 and Group 3 students.

TABLE XI
DATA OF HIGH ACHIEVEMENT GROUPS
ON THE PRE AND POST STEP WRITING TESTS

	Group 1	Group 2	Group 3	Totals
ΣX (sum of pre test scores)	1856	1959	1828	5643
ΣY (sum of post test scores)	1926	2037	1965	5928
ΣX^2	204780	228461	198976	632217
ΣY^2	219668	246051	229111	694830
ΣXY	211312	236254	212750	660316
N	17	17	17	51

High Achievement Groups

Table XI represents the data from the high achievement groups. The symbols have the same meanings as Tables II and VII.

Table XII relates that the two F tests have fallen short of significance. Once again the students were randomly assigned successfully, and a preliminary analysis of variance showed no significant differences in Y means alone.

TABLE XII

HIGH ACHIEVEMENT GROUPS ANALYSIS OF VARIANCE OF X AND Y

SCORES TAKEN SEPARATELY:

SV	df	SS _x	SS _y	MS _x (V _x)	MS _y (V _y)
Between	2	559.89	373.06	279.95	186.53
Within	48	7275.76	5414.12	151.58	112.79
Total	50	7835.65	5787.18		
$F_x = 1.85$				From Table F	
$F_y = 1.65$				df 2/48	
				F at .05 level = 3.18	

After correcting for variability in initial X scores, the F test in covariance analysis (Table XIII) was still not significant. Although there was no variance between pre and post

test scores, the correlation and regression coefficients (.639 and .550), respectively) were high enough to provoke a comparison of the adjusted means.

TABLE XIII

ANALYSIS OF COVARIANCE OF HIGH ACHIEVEMENT GROUPS

SV	df	SS _x	SS _y	SS _{xy}	SS _{y.x}	MS _{y.x} (V _{y.x})	SD _{y.x}
Between	2	559.89	373.06	387.71	114.91	57.46	
Within	47	7275.76	5414.12	4012.53	3201.24	68.11	8.25
Total	49	7835.65	5787.18	4400.24	3316.15		

$F_{y.x} = .84$
From Table F
df 2/47
F at .05 level = 3.21

Table XIV reveals no differences when T tests are made. Therefore, null hypotheses C_1 , C_2 , and C_3 are accepted and the respective research confirmed. That is, there were no significant differences at the .05 level between Group 1 and Group 2 students, between Group 1 and Group 3 students, or between Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

TABLE XIV
SIGNIFICANCE OF DIFFERENCES BETWEEN ADJUSTED Y MEANS
OF HIGH ACHIEVEMENT GROUPS

$SD_{y \cdot x}$	= 8.25
SE_D	= 2.83
for df	= 47, $T_{.05} = 2.02$
T_{1vs2}	= 1.13
T_{1vs3}	= 1.13
T_{2vs3}	= .035

Teachers' Reactions and Findings

Non-statistical findings have import in studies dealing with students. In the study under consideration, the teachers' reactions and findings were noteworthy. The following paragraphs will capture some of these:

Concerning the effectiveness of English 3200 as a grammar teaching device, teacher reactions were unanimously favorable. Several advantages were pointed out by these instructors:

1. Students could proceed at their own pace and not be bound to a class discussion of each unit.

2. The programmed units were broken down into frames that students who could fathom grammar one way or another, understood. Yet, the faster readers were not held back because others took longer to understand.

3. Of the ninety minutes a week students worked in the programmed text, most of the teacher's time was available for grading papers, and working with individuals who needed help. Because Lawrence High School implemented the five hour day and teachers had no preparation period, all four teachers in the study saw this advantage as one of much help.

4. A majority of students in the low achievement group using the programmed text expressed feelings that they were "really learning grammar for the first time." Whether they were or not, the morale building factor was quite noticeable according to Teacher A.

5. Since all students in the high achievement group using the program finished before the semester ended and were able to spend more time in journal writing and individual conferences with the teacher, Teacher D commented that probably too much time was spent in teaching grammar the traditional way.

Though the teacher reactions were unanimously favorable toward the use of English 3200, they expressed some disadvantages in the way it was used:

1. Because thirty minutes were set aside each time students worked in the programs, some were busily engaged in the middle of a unit or lesson when they were told to stop. It was felt that if students were allowed to finish a particular lesson or unit before beginning journal writing, results would have been more favorable.

2. Some discussions held on Tuesdays and Thursdays could not be carried over to the next day because English 3200 was scheduled.

3. Teachers found that administration of the unit tests for the programmed text was difficult at times. Some students would fail to finish a test during the allotted time. These students were then required to finish the test before or after school or during a study hall.

The journal writing technique employed in this study was also looked upon with favor by all four teachers.

Enumerated advantages were the following:

1. Students generally enjoyed the freedom to choose their own topics and write about their experiences and observations without the threat of being evaluated.

2. It was an outlet for the student's imagination; few outlets of this type are fostered in our schools. So much is structured so tightly that the journal activity was actually a relief for many.

3. Each student at least one time during the semester sought teacher reaction advice on a journal entry. No threat of a grade was pending as teacher and student related positively in each journal entry discussion. Teachers considered this an important factor in helping students develop a liking for written expression.

All was not advantageous during the study's journal writing endeavors:

1. The twenty minute time limit per period was not enough for some students and too much for others on given occasions. Every activity cannot foster intrinsic or goal-directed motivation each time it is entered into. However, it was felt by all four teachers that motivational devices other than vocal teacher encouragement would have helped. One such help suggested was the duplication for dissemination to students of famous writers' journal entries. These could have served as models.

2. Many students are conditioned to closely structured situations. The idea of having to pick their own topic was a threat for a period of time. These students did not seem as productive in amount written as were students who thrived on the less structured writing procedure. However, teachers and students saw this as an advantage. The

students who were at first threatened, overcame minimal writing production to a degree in which independence from structured situations was achieved.

Summary

Two of the three analyses of covariance and subsequent T tests resulted in significant differences between at least two of the groups. Teacher A's low achievement Group 2, using English 3200 and journal writing, scored significantly higher on the post test than Group 1. Group 1 (control) and Group 3 (journal writing) did not differ significantly; neither did Groups 2 and 3 differ.

The middle achievement Group 2 of Teachers B and C scored significantly higher on the post test than did Group 1. In the same category Group 3 scored significantly higher than Group 1. Though significance was approached in favor of Group 2 over Group 3, there was no significance at the .05 level.

Teacher D's high achievement Groups 1, 2, and 3 did not differ significantly, comparing any two at one time.

In two of the three analyses, Group 2 (English 3200 and journal writing) students outshone Group 1 (control)

students. These were Group 2 low achievement and Group 2 middle achievement students. In one analysis, Group 3 students (journal writers) excelled Group 1 students. Not one of the comparisons showed differences between Groups 2 and 3. Not one showed Group 1 higher than either Group 2 or Group 3.

Non-statistically, the findings of participating teachers were unanimously in favor of the two experimental inclusions - English 3200 and journal writing. While teachers did recommend changes in the use of both, they agreed that programed grammar and free writing in journals aided the instructional program and enhanced student learning opportunities.

Both statistical results and teachers' reactions indicate the need to expand the study and investigate the feasibility of using programed materials and journal writing in grades lower and higher than tenth.

CHAPTER V

INTERPRETATION OF RESULTS

Summary

This study was primarily an attempt to determine whether the use of a programmed grammar (English 3200) and/or a specially designed journal writing technique would increase student writing ability as measured by an objective, standardized test (STEP Writing Tests). It was a controlled experiment that took place in Lawrence, Kansas High School, using sophomore English students during the first semester of the school year 1963-64.

Four teachers took part. Each had a control group and two experimental groups. One teacher taught only low achievement students. Two teachers instructed only middle achievement students. The fourth teacher had only high achievement students. The low, middle, and high classifications were determined from students' previous year's English course grades. All students in the study had been ninth graders the previous year.

The students taking part (240 began and 222 finished) were randomly selected by classification of English course grades for the previous year and randomly assigned by the same classification to the various sections in the study.

Seventeen was the minimum number of students in one section at the end of the semester. Thus, to gain an equal number of seventeen in each section for a total of 204, eighteen students were cast out randomly.

Students in all groups had the same number of required, teacher-evaluated paragraphs and themes to write during the semester. Students in the experimental groups using the journals wrote each week one hour more than control group students. The weekly hour was broken into three daily twenty minute sessions. The first semester included nineteen weeks, seventeen of which were unencumbered by pre and post testing. Therefore, journal writing students had seventeen more hours of writing experiences than control group students had.

Group 2 students who finished English 3200 before the semester closed used the extra time to write in their journals and to have individual sessions with their teachers. These individual sessions were concerned with student writing progress (said negatively -- writing problems).

Of the three null hypotheses developed for the low achievement students, one was rejected -- that favoring English 3200 - journal writing students (Group 2) over control group students. Two of the three null hypotheses were rejected with middle achievement students. One favored English 3200 - journal writing students over control group and the other favored the journal writing group over the control group. With the high achievement students none of the null hypotheses were rejected.

In no instance did the control group students show a gain over one or both of the experimental groups.

There should be a place in each thesis for hypotheses results to be listed in order. That place follows:

Group 1 = control; Group 2 = English 3200 - journal writing; Group 3 = journal writing

A_1 : There were significant differences at the .05 level between low achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests. The gain favored Group 2 students.

A_2 : There were no significant differences at the .05 level between low achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

A₃: There were no significant differences at the .05 level between low achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

B₁: There were significant differences at the .05 level between middle achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests. The gain favored Group 2 students.

B₂: There were significant differences at the .05 level between middle achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests. The gain favored Group 3 students.

B₃: There were no significant differences at the .05 level between middle achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

C₁: There were no significant differences at the .05 level between high achievement Group 1 and Group 2 students in pre-post test gain as measured by the STEP Writing Tests.

C₂: There were no significant differences at the .05 level between high achievement Group 1 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

C₃: There were no significant differences at the .05 level between high achievement Group 2 and Group 3 students in pre-post test gain as measured by the STEP Writing Tests.

Conclusions

It can be concluded that in this particular study low achievement sophomore English students teaching themselves grammar and writing in journals scored significantly higher on a post test as measured by an objective, standardized instrument (the STEP Writing Tests) than did conventionally taught students in the control group. It can be concluded that there were no significant differences between the middle achievement control and journal writing groups, nor were there differences between Groups 2 and 3, that is, English 3200 - journal writing and journal writing groups.

The conclusion is drawn that middle achievement sophomore English students in the presently discussed study, teaching themselves grammar and writing in journals, scored significantly higher on the post test than did the control group. Likewise, the students using journals scored significantly higher on the post test than did the control group. There were no significant differences between the middle

achievement journal writing and English 3200 - journal writing groups.

It is concluded from the comparisons of the high achievement groups that no significant differences existed between the pre and the post test results.

Implications

Because of the local rather than regional or national nature of the sample, statistical inference on the basis of the results is unsound. However, this does not preclude logical inference, although such inference should be made cautiously and with some degree of uncertainty.

Because there were no significant differences between methods when dealing with the high achievement students, it is not implied necessarily that it makes little difference how bright students are taught. The 5 per cent level of confidence was not met, but the high achievement experimental groups scored higher on the post test at the 20 per cent level of confidence than did the control group. While it is true these post test results could have occurred by chance alone, a rather high percentage (one out of five) of the time, there is the possibility that method had something

to do with the outcome. This is reinforced even more in light of the post test results of the middle and low achievement groups.

Something was operating to cause significant differences in favor of at least one of the experimental groups in the case of low and middle achievement students. If the controls were sophisticated enough, English 3200 and/or journal writing could have been the cause. However, as mentioned in the first paragraph of this section, the local nature of the sample precludes generalizing the results to all high school English classes. There are logical recommendations to be made.

Recommendations

Before generalizing results using the methods employed in this study, there is a need for replication on a larger scale. It is recommended that these methods be used in a study involving more than one school, preferably a number of schools from different regions of the country. Since each teacher must teach at least three sections of low, middle, or high achievement students, fairly large schools would have to take part.

The experimental groups' high achievement students showed a gain over similarly classified control group students in the post test, but not a significant one. It is recommended that a study of high achievement ninth grade students be made using the same methods implemented in the present study. All high achievement sophomores using English 3200 finished before the semester closed. Possibly ninth grade students so classified could finish the grammar in one semester and devote more time to its application the second part of the year.

A follow up administration of the STEP Writing Tests was not made at the conclusion of the second semester during this study. Results may have proved interesting. Those students who had not completed English 3200 by the close of the first semester continued its use until finished. Even low achievement students finished to a person before the school year was over. All sections using journal writing experiences elected to continue that activity through second semester. Low, middle, and high achievement journal writers kept their journals. When asked to present journals to the teacher if no longer wanted, only one student among the 136 journal writers elected to do so. Therefore, it is

recommended that some type of follow up be made if the study is limited to one semester.

It is recommended that a similar study be carried on using heterogeneous groups rather than homogeneous ones in this experiment. There should be even more of a need for means to take care of individual differences in heterogeneous groups. English 3200 allows students to proceed at their own rate of speed. Journal writing facilitates allowance for different tastes in writing topics.

One further recommendation will be introduced here. Flexibility in use of materials seems desirable. To control the use of programmed texts by students so designated, the researcher limited use of the books to the classroom. Possibly conditions would not be confounded to a significant degree if, in another controlled study, English 3200 could be taken home by the students. Less class time could then be spent on grammar and more on writing -- teacher-evaluated and otherwise. Assuming students can adequately teach themselves the necessary grammar through the use of a programmed text, only periodic unit tests would need to take place during class time. Grammar is a tool to be used in applying expressional media. Yet, universally it occupies a

great portion of class time. It is recommended then that students be allowed to work both in class and at home on English 3200. This recommendation, by the way, will be implemented in Lawrence High School during the 1964-65 school year.

Continuing with the theme -- flexibility in the classroom -- it is recommended that no time limit be specified for journal writing for the class as a whole. This is another activity that can take place in the home as well as at school. Journals submitted to teachers periodically for checking but not grading would still engender conscientious work on the students' part. At the same time, it could be a more regular assignment and simulate actual journal writing by professionals. That is, students could be asked to make a journal entry each night. Topics could range from "Today's Highlights" to "My Secret Depression."

The flexibility recommendation should not be misconstrued. One of the chief advantages of the English 3200 and journal writing usages, according to teachers, was the extra time afforded them to grade papers and counsel with students. The design of the present study

purposely included use of these instruments in class for facilitating independence of the learner and allowing teachers more time for other tasks. However, fermentation of methods breeds student and teacher apathy. Flexibility through group and/or individual adjustments can lead the way to better methods and possibly ultimate solution of the student writing problem.

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