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TEACHING A PARAGRAPH
ORGANIZATION STRATEGY TO
LEARNING DISABLED ADOLESCENTS

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COOPERATING AGENCIES

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in public school settings in both Kansas and Missouri. School districts in Kansas which have or currently are participating in various studies include: Unified School District USD 384, Blue Valley; USD 500, Kansas City, Kansas; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 233, Olathe; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission; USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Studies are also being conducted in several school districts in Missouri, including Center School District, Kansas City, Missouri; the New School for Human Education, Kansas City, Missouri; the Kansas City, Missouri School District; the Raytown, Missouri School District; and the School District of St. Joseph, St. Joseph, Missouri. Other participating districts include: Delta County, Colorado School District; Montrose County, Colorado School District; Elkhart Community Schools, Elkhart, Indiana; and Beaverton School District, Beaverton, Oregon. Many Child Service Demonstration Centers throughout the country have also contributed to our efforts.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project, and the Douglas, Johnson, Leavenworth, and Sedgwick County, Kansas Juvenile Courts. Other agencies which have participated in out-of-school studies are: Penn House and Achievement Place of Lawrence, Kansas; Kansas State Industrial Reformatory, Hutchinson, Kansas; the U. S. Military; and Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and support our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

ABSTRACT

Paragraph Organization, a learning strategy designed to enable a student to structure the organization of single paragraphs, was taught to eight learning disabled adolescents. The instructional procedures involved a six-step process including such procedures as describing the steps of the strategy, modelling the strategy, and student practice to criterion. Three paragraph styles were taught. In the first experiment, a multiple baseline design across the three paragraph styles was replicated twice. Results were inconclusive because the paragraph styles appeared to be interdependent (i.e., some of the students, after learning one style, also improved on other styles). In a second experiment, a multiple baseline across students design was used with three students and replicated with two more students. Again, each student learned three paragraph styles in sequence. Results indicate that LD students can learn to write organized paragraphs after receiving the strategy training. Generalization across paragraph styles is inconsistent across students.

Introduction

Although written language is one of the eight categories of achievement in which a student may be deemed deficient for purposes of receiving services under the classification of learning disabilities (Federal Register, August 23, 1977), the mandate thus far has failed to engender a great deal of published research on written language skills of learning disabled students. Poteet (1979) and McGill-Franzen (1979) reported detailed studies of writing samples of students classified by school-district criteria as learning disabled. Studies by Myklebust (1973) and Weiner (1980), employing subjects described as reading disabled, offered related information. Among these limited studies, only Myklebust and McGill-Franzen employed secondary students as subjects of investigation, and McGill-Franzen's study constituted a single-subject analysis. The available information on the written language characteristics of learning disabled students has thus provided few, if any, guidelines for the development of instructional programs to teach writing skills to secondary learning disabled students. Yet, anecdotal reports from teachers of the secondary student (Alley & Deshler, 1979; Sitko & Gillespie, 1978) strongly support a contention that written language skills constitute a major barrier to academic success for secondary learning disabled students.

Among the features of written expression which have been examined, three factors--productivity, grammatical maturity, and mastery of mechanics--have emerged as discriminating learning or reading disabled students from achieving students. Poteet, Myklebust, and Weiner all reported that their exceptional students wrote fewer total words, total sentences and words per sentence than did comparison groups of normally-achieving students. Poteet found that only one of 85 learning disabled (LD) students made errors in word order; however, 36 LD students omitted essential words while 15 substituted words. Word

endings were omitted by 26% of LD and 23% of non-LD students in Poteet's sample. Both Myklebust and Weiner reported errors in word order among their reading disabled samples. Myklebust's data revealed an early maturation of sentence-formation skills, with no improvement in mean scores after age 11. Weiner's measures of sentence construction and tense and number markers yielded significant differences in favor of achieving students over reading disabled students. Poteet and Weiner reported that the most frequent errors for their LD and reading disabled samples were in punctuation and capitalization. Poteet and Weiner also reported significant differences favoring their achieving groups on spelling. Boder (1971), whose study was limited to spelling performance, found significant differences favoring achieving students over students called "dyslexic" on a measure of spelling known sight vocabulary.

A series of studies undertaken at the University of Kansas Institute for Research in Learning Disabilities provides recent data about the performance of secondary LD students on formal features of written expression. As part of an epidemiological study, Warner, Alley, Schumaker, Deshler, and Clark (1980) found that 225 LD students in grades 7 through 12 earned grade-equivalent scores ranging from 3-7 to 4-8 and median percentile ranks of 7 for the junior high subgroup and 4 for the senior high subgroup on the Written Language Cluster of the Woodcock-Johnson Psycho-Educational Battery (Woodcock & Johnson, 1977). A contrast group of 198 low-achieving adolescents, who presented average intellectual functioning and low standardized achievement/test scores but were not classified as handicapped, earned grade equivalents ranging from 4-7 to 7-1 and median percentile ranks of 15 at junior high and 19 at senior high. On the basis of these Written Language Cluster Scores alone, Warner, Alley, Deshler, and Schumaker (1980) found that about two-thirds of the LD

students and two-thirds of the low-achieving students could be correctly classified. In work in progress, the same authors found that the same degree of classification can be achieved using only the spelling items from the Written Language subtests of the Woodcock-Johnson.

Moran (1981a) confirmed that spelling also discriminates LD students from low-achieving adolescents when the task is an elicited paragraph rather than a formal test item. Moran compared analytic scoring of paragraphs written by 26 LD, 26 low-achieving and 26 achieving students in grades 7 through 10. Spelling was the only one of four formal features which differentiated the LD group from the low-achieving group. The low achievers were better spellers. Scores significantly higher than those of the LD group were earned by the achieving group on grammatical conventions, spelling, mechanics (punctuation and capitalization) and mean morphemes per T-unit, a measure of syntactic maturity.

In a related study, Moran (1981b) found that LD, low-achieving and achieving groups of subjects did not differ significantly on measures of grammatical conventions or on mean morphemes per T-unit for oral language as measured by an audiotaped language sample. The finding that written language distinguished the groups while oral language did not differ, supports placing a high priority on instruction in written expression for learning disabled students.

Among researchers investigating written language of low achievers or learning disabled students, only McGill-Franzen (1979) extended the investigation to substantive features of written expression such as argumentation and organization. Analysis revealed that the content of a 17-year-old learning disabled student's paragraph was stronger than the formal features. Despite

run-on sentences and fragments, misspellings, and grammatical errors, the paragraph revealed enough strengths in argumentation and organization of ideas to support immediate instruction in preparation of written reports. Although the formal features of the writing were poor, this student demonstrated an incipient paragraph formulation skill which would constitute entry behavior for instruction in paragraph organization. Though this study analyzed only one writing sample of one LD student, it supports a contention that skill in organizing ideas can exist independent of skills in formal features of written expression. Therefore, instruction in organization of reports need not await mastery of sentence formulation, spelling and punctuation skills.

Indeed, direct instruction in grammatical features of the language as a means to improve written expression is not supported by the literature. A review of intervention studies reveals that neither instruction in traditional prescriptive grammar nor direct teaching of transformational grammar resulted in significant improvement in teachers' ratings of written products.

Maize (1954) compared two methods of teaching composition skills to 149 remedial college freshmen. A drill group practiced traditional grammar exercises daily and wrote a theme weekly. A laboratory group wrote a daily theme which was corrected for grammatical errors before copying the final draft, but received no formal grammar instruction. The laboratory group demonstrated significantly greater improvement on measures of mechanics and grammar.

Harris (1962) conducted a study in which two classes in each of five schools were randomly assigned to either a textbook method of studying formal grammar or to a method involving examination of errors made by students on classroom writing assignments. After two years, essay tests revealed that scores for the second group were significantly higher than for the classes engaging in direct study of grammatical construction in textbooks. Harris

concluded that the study of traditional grammar contributed very little to writing performance.

Instruction in transformational grammar as a means to improve writing quality was studied by Mellon (1969) employing seventh-grade subjects. An experimental group which received the special grammar instruction subsequently wrote more words per unit; however, the overall quality of the compositions produced by this group after intervention was judged lower than those of a group which did not receive instruction in transformational grammar. Similarly, Elley, Barham, Lamb and Wylie (1976) found that neither a transformational grammar group nor a traditional grammar group performed significantly better on a free-writing task after intervention than did a group receiving no direct instruction in grammar.

Although research analyzing syntactic maturity, productivity, and formal features such as spelling, capitalization and punctuation is widely reported in the literature on the teaching of composition, analyses of the content or organization of the written product are rare. Among recent discussions of approaches toward analyzing the total written product, as opposed to scoring formal features, only Lloyd-Jones (1977) and Odell (1977) offer schema which consider argumentation and logical progression of ideas. To date, only McGill-Franzen (1979) has incorporated such analyses into evaluation of the writing of a learning disabled student. Other published studies appear to limit analysis to formal features, and, in the words of Howerton, Jacobsen and Selden (1977), "The essence of quality in writing is elusive; the specific elements which comprise it are not readily agreed upon by educators" (p. 6). The present study was designed upon the rationale that organization of ideas is more central to the production of quality written products than is mastery of formal features such as grammar, spelling and the mechanics of punctuation

and capitalization. Therefore, the instructional package was developed to present paragraph organization skills while formal features were modeled but not corrected.

The question of which aspects of a written report assume highest priority for teachers must also be taken into account when instructional materials are developed. Studies of teachers' reports of the criteria which they use in rating free writing indicate that teachers express a strong preference for weighting content and organization above such formal features as spelling and punctuation. Both Harris (1977) and Howerton et al. found that teachers stated in self-reported data that they attend to content over other features of the written product. Though these self-reported data may be at variance with teachers' observed grading practices, as indicated by Scannell and Marshall (1966) and Dilworth, Reising and Wolfe (1978), the perception of teachers that they are more interested in content and organization provides a rationale for such an emphasis.

Accepting the perceptions of teachers of content areas that they grade on the basis of overall impression of the organization and content of the written product rather than analyzing its constituent parts, the raters responsible for evaluating the college entrance examinations for the Educational Testing Service have used holistic ratings since the early 1970's (Howerton et al., 1977). The rationale for holistic scoring as opposed to analytic scoring is stated by Alloway (1979) as reflecting the reality that most teachers of subject matter such as social studies and the physical and biological sciences lack the training or the time to evaluate written assignments on the basis of criteria which may require multiple passes through the product.

Although teachers may not respond to all of the features of written expression when evaluating products, the task of writing is regarded universally

as complex and representing a considerable achievement. The task of writing requires integration of language formulation, organization of propositions into sequential patterns for sentences and paragraphs, and observation of formal features such as spelling, capitalization and punctuation (Myklebust, 1965). Written expression is considered to be the highest form of language and the last to be learned in the developmental sequence (Lerner, 1976; Wallace & McLoughlin, 1975).

Lundsteen (1976) expressed the increasing emphasis upon written language skills in schools as follows: "Children's ability to compose has become a major national, state and local concern, stimulated by the National Assessment of Educational Progress, by the earmarking of composing ability as a new class marker, and by increasing competition in an overcrowded job market" (p. vii). Earlier, Myklebust had stated, "Because of the importance of written language in daily life, as well as culturally, and because of the high incidence of deficiencies in this type of verbal functioning, there is a great need for establishing diagnostic and remedial educational programs" (p. 12).

The curriculum of the secondary school relies heavily upon written responses to homework assignments, reports of library research or term papers, and responses to essay tests (Wiederholt, 1978). When the learning disabled student reaches the secondary classroom, written expression is consistently subject to evaluation (Deshler, 1978) while oral discussion or response to oral questioning assumes a minor role (Moran, 1980). According to McWilliam (1969), skills in communication--especially written communication--form "the foundation upon which all educational experience rests and out of which emerges the only known evidence of academic success or failure" (p. 149).

The rationale for intervention in the paragraph-writing skills of learning disabled secondary students thus is based upon expert opinion that written

expression is a critical skill for secondary students, and upon empirical evidence that secondary learning disabled students differ significantly from achieving students in their mastery of writing skills. The selection of expository paragraphs as opposed to narrative materials is based upon self-reported data from teachers of core subjects who stated that descriptive writing is assigned more frequently than is narrative writing (Moran, 1980). Emphasis upon content and organization of ideas emerged from teachers' self-reports of preference for such criteria in grading of written work. The specific strategies for learning a new skill, which form the structure of the paragraph-organization package, were based upon the work of Alley and Deshler (1979).

EXPERIMENT I

Method

Subjects

The three participating students were enrolled in a public junior high school and were currently being served in a resource room program for learning disabled students. The students were selected after reviewing their school records and interviewing their LD teacher. Only those students who had IQ scores in the normal range (i.e., above 80), exhibited deficits in one or more achievement areas, and did not exhibit evidence of physical or sensory handicaps, emotional disturbance, or economic, environmental or cultural disadvantage were asked to participate. Their parents were advised of the study procedures, and they signed consent forms. The two males and one female student were 14, 15 and 16 years old, respectively. The youngest male was in eighth grade, and the others were in ninth grade. The students' full-scale IQ scores were 96, 97 and 87. The most recently administered achievement test batteries yielded the following grade equivalents for the three students: reading, 2.0, 6.3 and

6.4; mathematics, 2.2, 3.4 and 6.6; and written expression, 2.4, 4.9 and 6.5, respectively.

Setting

Experiment I was conducted in a junior high school building in a suburban school district. The district is located adjacent to a midwestern metropolitan area. Instruction was delivered in a room immediately adjacent to the resource room. The room was a regular classroom, furnished with student desks, a teacher's desk, an extra table which seated up to four persons, and a chalkboard. During this instruction, only the teacher and the paragraph-writing students were in the room.

Instructional Materials

The teacher was provided with a manual which contained a step-by-step description of the instructional procedures. Otherwise, the students were simply provided with the basic supplies of pencils and lined paper. The students' permanent written products (paragraphs) were kept in three-ring notebooks.

Procedures

Instructional procedures. Instruction consisted of the presentation of an experimental version of a paragraph-organization package entitled Paragraph - Organization Strategy (Vetter, Schumaker, & Moran, 1981). The instructional sequence was based upon the principles of learning strategy acquisition described by Alley and Deshler (1979). The instructional steps used to teach the students to write three paragraph styles were as follows:

Step 1: Test to Determine the Student's Current Paragraph Writing Skills

First, the teacher tested the student's paragraph writing skills in three different paragraph styles (see Testing Procedures below). After testing was completed, the teacher discussed the results with the student, affirming that the student exhibited a deficit in the way s/he wrote paragraphs.

Step 2: Describe the Paragraph Writing Strategy for One Paragraph Style

Next, the teacher described the steps involved in the paragraph-writing strategy for the first paragraph style to the students as a group and contrasted them with the students' current writing habits. The steps included the specific behaviors in which the students should engage when writing a paragraph. As each step was explained, a rationale was given for why the behavior was important and how it would help the student to express ideas in writing more clearly.

Step 3: Model the Strategy

In this step, the teacher first showed the students a paragraph. The group discussed the role of each sentence in the paragraph. Then the teacher modelled the paragraph-writing strategy on the chalkboard for the students by writing a different paragraph using the steps described. After the teacher wrote a model paragraph, the students and teacher as a group wrote at least one paragraph together with each person contributing one sentence. Before each sentence was written in any of the models, the type of sentence needed was discussed. This step involved group instruction.

Step 4: Verbal Rehearsal of the Strategy

Here, each student verbally rehearsed the steps involved in the paragraph-writing strategy to a criterion of 100% correct without prompts. This instructional step was designed to familiarize the individual student with the steps of the strategy such that s/he could instruct himself/herself in the future as to what to do next when writing a paragraph.

Step 5: Practice Writing Paragraphs

In this step, the student practiced applying the strategy to successive paragraph topics. As the student became proficient in writing paragraphs, s/he was encouraged to progress from overt self-instruction to covert self-instruction while practicing the strategy.

Step 6: Feedback

The teacher gave each student positive and corrective feedback after each paragraph was written. When the student reached criterion for completing a paragraph correctly, Steps 2-6 were repeated to teach a different paragraph style. The students went through Steps 2-6 three times, once for each of three paragraph styles.

The instructional sequence began for all three students on the same day. Instruction was scheduled for a 50-minute class period in the afternoon twice weekly over six weeks. On two occasions, a third weekly session was added. Instruction was delivered to the three students as a group with individual instruction programmed as indicated above. The instructor was a certified learning disabilities specialist with ten years of teaching experience.

The three paragraph styles. The three paragraph styles chosen for instruction were the enumerative, the sequential, and the compare and contrast paragraph styles, and they were taught in this order. Enumerative paragraphs were designated as those in which the author merely wishes to list or enumerate a number of items. A paragraph presenting a student's favorite record albums is an example of an enumerative paragraph. A paragraph in which a specified order was given was designated a sequential paragraph. An example of this paragraph style is a description of the steps to be used in building a snowman. The compare and contrast paragraph style is used when one needs to describe the similarities and differences between two items. For example, a student could use this style to compare and contrast football with soccer or classical music with rock music (See Appendix A for examples of each of these paragraphs).

The general steps in writing a paragraph adapted to each of the three paragraph styles were as follows:

1. Write a topic sentence.
2. Write at least three detail sentences.
3. Write a clincher sentence.

Each of these three types of sentences was defined carefully for the students before they practiced each paragraph style.

Testing procedures. For the initial test (Step 1), the Diagnostic Evaluation of Expository Paragraphs (Moran, 1981b) was administered individually to each of the students. The task consisted of selecting one topic from among three which were simultaneously read aloud and presented in typed form. Each topic corresponded to one of the three paragraph styles. The student was instructed to write a rough draft of a paragraph using "at least five sentences" and to copy the paragraph in final form onto another sheet of paper. The task was not timed. When the student indicated that the final version of the paragraph was completed, the student was asked to look over the paragraph and to make any changes which would "make the paragraph better."

In subsequent sessions, the task was repeated, but the student was not given a choice of topics. Instead, topics which had not been selected in the first session were presented so that one enumerative, one sequential and one compare and contrast paragraph eventually were written by each student.

Additional topics were listed for later testing of each of the three paragraph styles. When a test topic was needed, the teacher randomly selected one from the available topics on the appropriate list and followed the testing procedures described above.

Measurement systems. The revised version of each paragraph was scored using the Paragraph Checklist (See Appendix B) devised for this experiment. Basically, points were awarded to the students for fulfilling each of the paragraph writing steps. Partial point values were awarded for approximations. For example, a student could earn up to 3 points for writing a topic sentence, up to 1 point for each detail sentence (total possible will equal the numbers of detail sentences that are not repetitious), and up to 3 points for each clincher sentence which fulfilled the requirements for the given paragraph style.

Interscorer reliability was established by having both the teacher who delivered the instruction and a second independent scorer subject a sample of the paragraphs to evaluation using the Paragraph Checklist. The sample of paragraphs included at least one pre-training and one post-training paragraph for each student. The scorers' checklists were compared item-by-item. Both scorers had to award the same point value to an item for it to count as an agreement. The percentage of agreement was calculated by dividing the number of agreements by the number of items scored. Agreement ranged from 63% to 100%. Overall agreement was 82%.

Experimental Design

An adapted multiple baseline across paragraph styles design was employed

to evaluate the effectiveness of the instruction. Since little time was available and since there was an obligation to fill school time with more instruction than testing, baselines were abbreviated. Baseline data points were collected at the beginning of the study and immediately before a given paragraph style was taught. Thus, after the first pretests over all three paragraph styles, the following testing sequence was employed.

As the instruction covering the enumerative paragraph style was completed, the posttest for that paragraph style followed. Next, each subject wrote on a second sequential topic as another pretest for the sequential paragraph. The second sequential paragraph was scored to determine whether any generalization to that paragraph type had occurred as a result of instruction over enumerative paragraphs. Similarly, after the sequential paragraph style had been presented, the immediate posttest over the sequential paragraph style was followed by a second administration of the compare and contrast paragraph pretest, which was used to measure generalization to that paragraph type following instruction in both the enumerative and sequential paragraph types. Following instruction covering the compare and contrast paragraph type, the immediate posttest for that paragraph style was administered. A final posttest, over all three paragraph types, was administered to each subject individually in a subsequent session.

A criterion of 85% was set for each of the paragraph types. That is, all three students were required to earn a score of at least 85% on the immediate posttest before the next paragraph type was presented.

To test whether the students generalized their paragraph writing skills to their regular class assignments, a paragraph written by each student in response to a classroom assignment was obtained from a teacher of a core course such as English, social studies, or science before and after instruction. These paragraphs were scored according to the Paragraph Checklist as described above.

Results

Figure 1 shows the percentage of total points Student 1 earned on the Paragraph Checklist each time a test paragraph was written. The top graph shows the results for enumerative paragraphs, the middle graph shows the results for sequential paragraphs, and the bottom graph shows the results for compare and contrast paragraphs. The tests given by the paragraph writing instructor are depicted with dots and the regular class assignments are depicted with circles. Original baseline data collected from Student 1 for the three paragraph types showed checklist scores of 67% for the enumerative paragraph, 60% for the sequential paragraph, and 65% for the compare and contrast paragraph. A measure of a classroom assignment resulted in a score of 73% prior to intervention.

Insert Figure 1 about here

Posttest scores immediately following instruction were 93% for the enumerative paragraph, 92% for the sequential paragraph, and 100% for the compare and contrast paragraph. On final posttests, after all three paragraphs had been presented, the final scores were 93% for enumerative, 95% for sequential, and 88% for compare and contrast paragraphs. Pretest and final posttest scores appear in Table 1.

Insert Table 1 about here

As can be seen in Table 1 and in Figure 1, Student 1 following the training of the enumerative paragraph demonstrated a gain on the sequential pretest to 82% over the earlier pretest score of 60% before the enumerative

paragraph was trained. Following the enumerative and sequential paragraph training, the pretest score on the compare and contrast paragraph increased from 65% to 75%. Scores on an in-class assignment increased from the pretest score of 73% to a final score of 82% following training in all three paragraph types. Figures 2 and 3 show the results for Students 2 and 3, respectively.

Insert Figures 2 and 3 about here

Results for Subject 2 are shown in Figure 2. In baseline, this subject earned scores of 63% on the enumerative paragraph, 71% on the sequential paragraph, and 35% on the compare and contrast paragraph as measured by the Paragraph Checklist. Following training on each individual paragraph type, the posttest scores were 100% on the enumerative paragraph, 93% on the sequential paragraph, and 87% on the compare and contrast paragraph. Final posttests, administered after all three paragraph types had been presented, resulted in scores of 100% on the enumerative paragraph, 88% on the sequential, and 87% on the compare and contrast type.

After the enumerative paragraph was trained, the sequential paragraph pretest showed a score of 76% over the earlier score of 71%. An increase from 35% to 87% was demonstrated on the compare and contrast paragraph after two paragraph types had been presented.

The in-class assignment increased to 87% over the pretest score of 72%. As had Student 1, Student 2 moved to criterion on the classroom assignment following training.

Student 3 performed as shown in Figure 3. Baseline scores of 47% on the enumerative paragraph, 19% on the sequential paragraph, and 33% on the compare and contrast paragraph changed after training in each individual paragraph type to 100% on the enumerative type, 95% on the sequential type, and 87% on

the compare and contrast type. After all paragraph types had been presented, scores were 93% on the enumerative type, 89% on the sequential type, and 87% on the compare and contrast type.

A measure of generalization to the second paragraph type after the first one had been presented showed a gain from 19% to 60%. However, on the compare and contrast type, the pretest score after training in the enumerative and sequential paragraphs remained the same as before any training occurred. The in-class assignment demonstrated a gain from 20% before intervention to 83% after all three paragraphs had been presented.

In summary, three students in Experiment I improved scores on three paragraph types after approximately 14 hours of instruction over a six-week period. Average gains demonstrated by each subject are shown in Table 1, ranging from 28% to 57%. Scores from which inferences might be drawn about generalization across paragraph types are presented in Table 2. Table 3 summarizes the gains by each subject for each of the paragraph types, indicating that the greatest gains occurred over the compare and contrast paragraph type. Subjects wrote a mean of 2.0 enumerative, 1.7 sequential, and 3.7 compare and contrast practice paragraphs during training sessions to yield these gains.

Insert Tables 2 and 3 about here

Discussion

Analyzing the results from Experiment I, two alternative conclusions can be drawn. On the one hand, one could conclude that the instructional steps produced improved paragraph writing which was generalized across paragraph styles. On the other hand, one could conclude that some other factor in the environment produced the change in the students. That is, because the students

improved in other paragraph styles after being taught the first style, the multiple baseline design became useless. The multiple baseline design across different behaviors (in this case, paragraph styles) is useful only when those behaviors are independent of each other. It was possible, since all three paragraph styles involved the same behavioral steps (i.e., write a topic sentence, write at least three detail sentences, and write a clincher sentence), that these three styles were not independent of each other.

EXPERIMENT II

In order to determine whether the "generalization" results in Experiment I were the result of generalization across the paragraph styles or the result of some other outside influence, Experiment II was conducted using a different design, a multiple baseline across students design.

Method

Subjects

The five students who participated in this experiment were drawn from four schools. They were selected as described in Experiment I. Two of the students had just completed the seventh grade, one had completed eighth, one had completed ninth, and one had completed tenth grade. Four were males and one a female. Their full-scale IQ's ranged from 80 to 101 ($\bar{x} = 93$). The most recently administered achievement tests yielded grade equivalent scores in reading ranging from 3.8 to 9.4 ($\bar{x} = 6.1$). Other scores were not available for all of the students. The students' ages ranged from 13 years 7 months to 16 years 5 months ($\bar{x} = 14$ years 10 months).

Settings and Arrangements

Experiment II was conducted in another suburb of the same city, in a building which had been an elementary school until it was converted to a community center. Instruction was delivered in a ground-floor room which was

the size of a typical elementary classroom. The room was furnished with large library tables, chairs, and a chalkboard. During the time in which the paragraph instruction was delivered, two other teachers and as many as four other students were in the same room engaged in skills other than paragraph writing. In contrast to Experiment I, subjects for Experiment II did not live in the attendance area of the school but were transported by parents for distances up to ten miles one way. Experiment II was conducted during the summer, and each student was paid \$5.00 for attending each daily session.

Procedures

The instructional procedures, testing procedures, and reliability procedures were essentially the same as for Experiment I. However, because the experiment took place in the summer, a few changes were necessary. First, classroom assignments were not available from other classes to serve as a measure of generalization. Second, students were scheduled for three days per week, for approximately two hours each day, for a four-week period. All five students began the program on the same day in early June. Instruction was delivered in the morning. The teacher who had presented the lessons for Experiment I also delivered instruction for Experiment II. However, because of time constraints during the summer session, two other certified learning disabilities specialists assisted with individual final posttesting which occurred during the sixth week.

Interscorer reliability was established by having both the teacher who delivered the instruction and a second independent scorer subject the paragraphs to evaluation using the Paragraph Checklist. Two experienced learning disabilities teachers who were teaching in the same building during the summer session served as independent scorers. A second scorer evaluated thirty-six paragraphs. The percentage of agreement ranged from 63% to 100% with a total percentage of agreement of 95%.

Experimental Design

As explained above, the major difference between Experiments I and II was the experimental design. A multiple baseline across students design was used with three students (Students 4, 5, and 6) and then was replicated with two other students (Students 7 and 8). This design was superimposed on the multiple baseline design used in Experiment I. Thus, all of the students received training in the three paragraph styles in the same sequence as in Experiment I. They simply completed varying numbers of pretests in all paragraph styles before receiving any instruction. Students 4 and 7 completed one pretest in each style, Students 5 and 8 produced two pretests in each style and Student 6 completed three pretests in each style. No more than three paragraphs were written by any student on the same day.

Results

The performances of Students 4, 5, and 6 are shown in Figure 4 and those of Students 7 and 8 are shown in Figure 5. Their performances on enumerative paragraphs are depicted by the dots, on sequential paragraphs by the circles, and on compare and contrast paragraphs by the squares. The figures show baseline scores (those achieved before training), scores achieved after training on each paragraph type, and final test scores achieved after all three types had been trained. They also show scores on paragraph styles which had not been specifically trained after another style(s) had been trained. These will be called generalization probes.

Insert Figures 4 and 5 about here

Student 4's pretest scores were 59% for enumerative, 53% for sequential and 25% for compare and contrast paragraphs (Figure 4). Following training in each respective paragraph type, the scores were 87% for the enumerative, 89% for the sequential and 87% for the compare and contrast paragraphs.

Student 4 scored lower on the sequential paragraph generalization probe test after the enumerative type had been taught than he had on the original sequential pretest. After the sequential paragraph style had been taught, however, the generalization probe score on the compare and contrast paragraph showed a gain from 25% to 53%.

Student 5 wrote two sets of baseline paragraphs. Prior to intervention, her scores on the first set of pretests were 72% for enumerative, 58% for sequential, and 65% for compare and contrast paragraphs. On the second set of pretests, scores were 47% on enumerative, 26% on sequential, and 44% on compare and contrast paragraphs. Following training in each respective paragraph type, scores had increased to 87% on enumerative, 90% on sequential, and 88% on compare and contrast paragraphs. After all paragraph types had been taught, final scores were 88% for enumerative, 93% for sequential, and 88% for compare and contrast types.

Student 5 scored better on the sequential paragraph type (the generalization probe) after the enumerative type had been presented than during either pretest. Also, after both the enumerative and sequential types had been presented, the generalization probe score on the compare and contrast type had increased to 89%.

Student 6 wrote three sets of baseline paragraphs. In the first set, scores for enumerative, sequential and compare and contrast paragraphs were 59%, 50% and 42% respectively. In the second set, scores were 63%, 42% and 55% respectively. In the third set, Student 6 earned 59%, 47% and 47% on the three types of paragraphs, respectively. On tests administered immediately following training in each paragraph type, Student 6 earned 100% on enumerative, 94% on sequential, and 88% on compare and contrast paragraphs. Final testing yielded scores of 88% on enumerative, 94% on sequential, and 93% on compare and contrast paragraph types.

Student 6 demonstrated an increase on the sequential paragraph probe after training in the enumerative paragraph to 82% over an average baseline score of 46%. The score on the compare and contrast probe after training in enumerative and sequential types increased to 81% as contrasted with an average baseline score of 48%.

Results for Student 7 are shown in Figure 5. Pretest scores were 47% for enumerative, 59% for sequential, and 39% for compare and contrast paragraph types. Following training in the respective paragraph types, the posttests yielded 93% on the enumerative paragraph, 96% on the sequential paragraph, and 88% on the compare and contrast paragraph. Final posttest scores, after all paragraph types had been presented, were 100% for both enumerative and sequential and 93% for the compare and contrast paragraph.

The score on the sequential paragraph probe after the enumerative paragraph had been taught increased to 65%. Furthermore, after both the enumerative and the sequential paragraphs had been taught, the generalization probe score of 65% on the compare and contrast paragraph represented an increase over the 39% pretest score.

Student 8 wrote two sets of baseline paragraphs. The first set of tests yielded scores of 47%, 52%, and 20% for enumerative, sequential and compare and contrast paragraphs respectively. Scores for these three paragraph types were 20%, 40%, and 27% respectively in the second set of baseline paragraphs. Following training in each individual paragraph type, posttest scores were 93% for enumerative, 89% for sequential, and 87% for compare and contrast types. Final posttests yielded scores of 93% for enumerative, 94% for sequential, and 87% for compare and contrast paragraphs.

On the sequential paragraph probe after training in the enumerative type, Student 8 demonstrated an increase to 63% over an average baseline score of

46%. On the compare and contrast paragraph probe after the enumerative and sequential types had been taught, the value increased from an average baseline score of 24% to a final posttest score of 47%.

In summary, results of Experiment II indicated that following instruction all students improved as measured by an evaluation of their paragraphs using the Paragraph Checklist. Following instruction over the three paragraph types, gains by the five subjects ranged from 38% to 56.7%. Gains are summarized in Table 4.

Insert Table 4 about here

When scores on the original pretest for the sequential paragraph are compared with the scores earned on the generalization probe following instruction in the enumerative paragraph, three students increased their scores by 15% or more. When the pretest and probe scores of the compare and contrast paragraphs are examined, all students improved scores by 20% or more. These data are summarized in Table 5.

Insert Table 5 about here

When gain scores are compared across paragraph types, as summarized in Table 6, the compare and contrast paragraph type is shown to demonstrate the greatest gains.

Insert Table 6 about here

Practice paragraphs over about 24 hours of instruction averaged 3.2 for enumerative, 2.0 for sequential, and 1.8 for compare and contrast paragraph style.

DISCUSSION

Results of these experiments support a conclusion that secondary students who have been diagnosed as learning disabled can improve paragraph organization skills with short-term intensive instruction using the instructional approach described by Alley and Deshler (1979) as incorporated into the Paragraph-Organization Strategy. The results of Experiment II indicate that improvements in paragraph writing occurred only in conjunction with the presentation of the first paragraph style and were not the result of other uncontrolled factors. The two experiments demonstrated that the learning strategies package is equally effective when delivered in one-hour units of instruction within a resource room during the academic year and when delivered in two-hour blocks during a summer session. The training resulted in similar gains with a group size of three or five; therefore, improvement can be demonstrated without expensive one-to-one instruction.

When gains are compared across experiments, results are similar. Slightly higher mean gains in the summer session could be attributable to greater opportunity for gain in the summer group or to effects of ten additional hours of group instruction in the summer session.

The superior increases on compare and contrast paragraphs when gains are compared across paragraph types may have several explanations. Since this paragraph type was presented last in both experiments, the finding could represent the cumulative effect of training or a recency effect (i.e., it was the style trained closest to the final posttest). Another factor which might contribute to superior gains for the compare and contrast paragraph is the relatively low pretest scores. With the exception of Student 6, all students earned their lowest pretest scores on the compare and contrast paragraph; therefore, there was greater opportunity for gain in this category.

The second-highest gains on sequential paragraphs are subject to the same explanations. This paragraph type was taught second in both experiments and mean pretest scores were midway between those of the enumerative and compare and contrast paragraphs. Therefore, the order in which paragraph types were taught and the opportunity for gain combined to compound the findings across paragraph types. The fact that all students gained on the enumerative paragraph, however, indicates that the training of a single paragraph type resulted in measurable differences on the Paragraph Checklist.

When results are compared across subjects, the greatest mean gain was made by Student 3, whose highest mean pretest score was 47%. Following closely behind was Student 8, who also gained over 50 points. As would be expected, the greatest gains were made by the students who scored lowest on the pretest measures. However, results also indicate that students whose pretest measures were relatively high, such as Students 1 and 5, also gained in that the training allowed them to reach a mastery criterion of 85% or better on each of the three paragraph types. Two students, Students 2 and 7, demonstrated that training could result in mastery at 100% on at least one paragraph type.

Mean gains of at least 28 percentage points across eight students argue that the instructional package is effective with a variety of students. Pretest scores which covered a range from 19% to 71% indicate that the students in these experiments began the program with varying entry behaviors, yet all reached criterion on each of the three paragraph types.

If a gain of at least 15 percentage points is used as an arbitrary criterion to infer generalization across paragraph types, all students in both experiments generalized to at least one untrained paragraph. Three of the eight students generalized to both untrained paragraph styles (all three of these students took part in Experiment II). The pattern of generalization differed across

the eight students. Two students (1 and 3) generalized to the sequential paragraph style after training in the enumerative style, but both of those students subsequently demonstrated that their ability to generalize did not extend to the compare and contrast paragraph style. Two students (2 and 7) who had not generalized to the sequential paragraph subsequently generalized to the compare and contrast type after both the enumerative and the sequential paragraph styles had been taught. Only Student 5 generalized to criterion and this was on the compare and contrast style. These findings support a conclusion that the likelihood of generalization across paragraphs is strong, but the pattern of generalization is individual.

The results of these experiments have several implications for instructional programming with secondary learning disabled students. Results suggest that an intervention program to teach paragraph writing skills fits effectively into a resource room schedule. Furthermore, the time invested in instruction is well within the limits of a short-term instructional objective on an individualized educational program. A typical resource room or learning center curriculum could absorb the Paragraph-Organization Strategy and still permit adequate attention to three or four other short-term objectives over the nine-week or twelve-week period for which short-term objectives are usually planned.

One direction for further research suggested by these findings is an investigation of order effects in the presentation of the three paragraph types. The question of whether the three parts of the package are equally effective cannot be answered unless order of presentation of enumerative, sequential and compare and contrast paragraphs is randomized.

Another question which could be addressed by further studies is whether paragraph-organization training has any effect upon performance in mechanics

of written expression such as spelling, capitalization or punctuation, or upon grammatical conventions such as sentence structure. Measurement of these features was not an objective of the present study, but inspection of paragraphs to yield frequencies of errors on pretest and posttest paragraphs could determine whether training in one formal aspect of written expression is associated with changes in other formal features. Do students who are taught one means to improve paragraph form incidentally improve other formal aspects of their papers as they gain control over their writing? Or does the focus upon organizational skills lead to an increase in errors in other formal categories while the student struggles to master a new skill?

Related questions are dependent upon the availability and selection of appropriate means of evaluating the content of written products. Is training in paragraph organization skills accompanied by gains in content scores on measures of reasoning or argumentation? Or does the focus upon formal aspects of the communication result in a constricted content? Does the teaching of formula writing lead to control over the content or to loss of spontaneity and expression of creative thinking? Evaluation schemes suggested by Lloyd-Jones (1977) or Odell (1977) may answer such questions. However, empirical answers to these questions may have to await considerable research experience with the application of refined measures of content to the written products of learning disabled secondary students.

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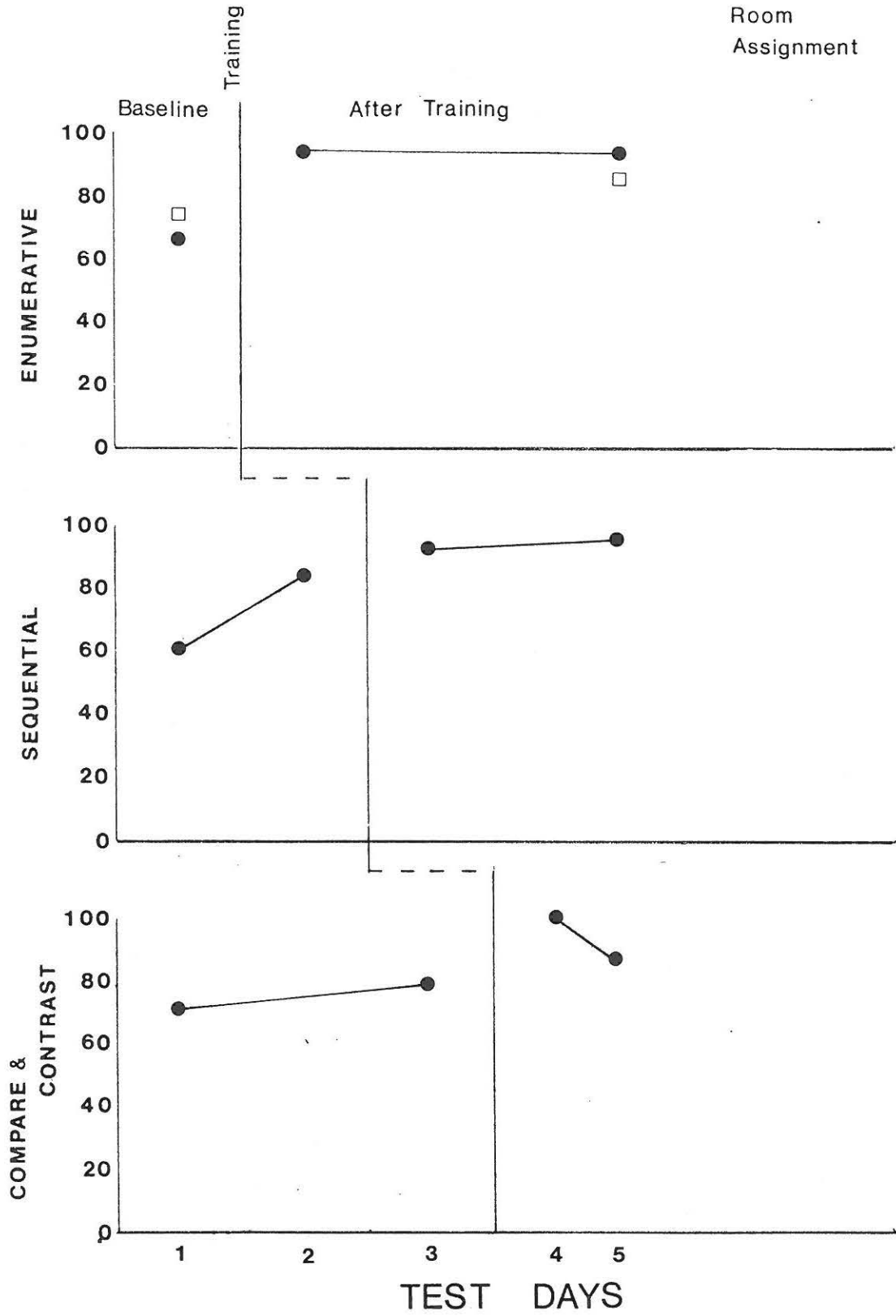
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Figure 1

PERCENTAGE OF PARAGRAPH CORRECT

S₁

- - In Class Assignment
- - Resource Room Assignment

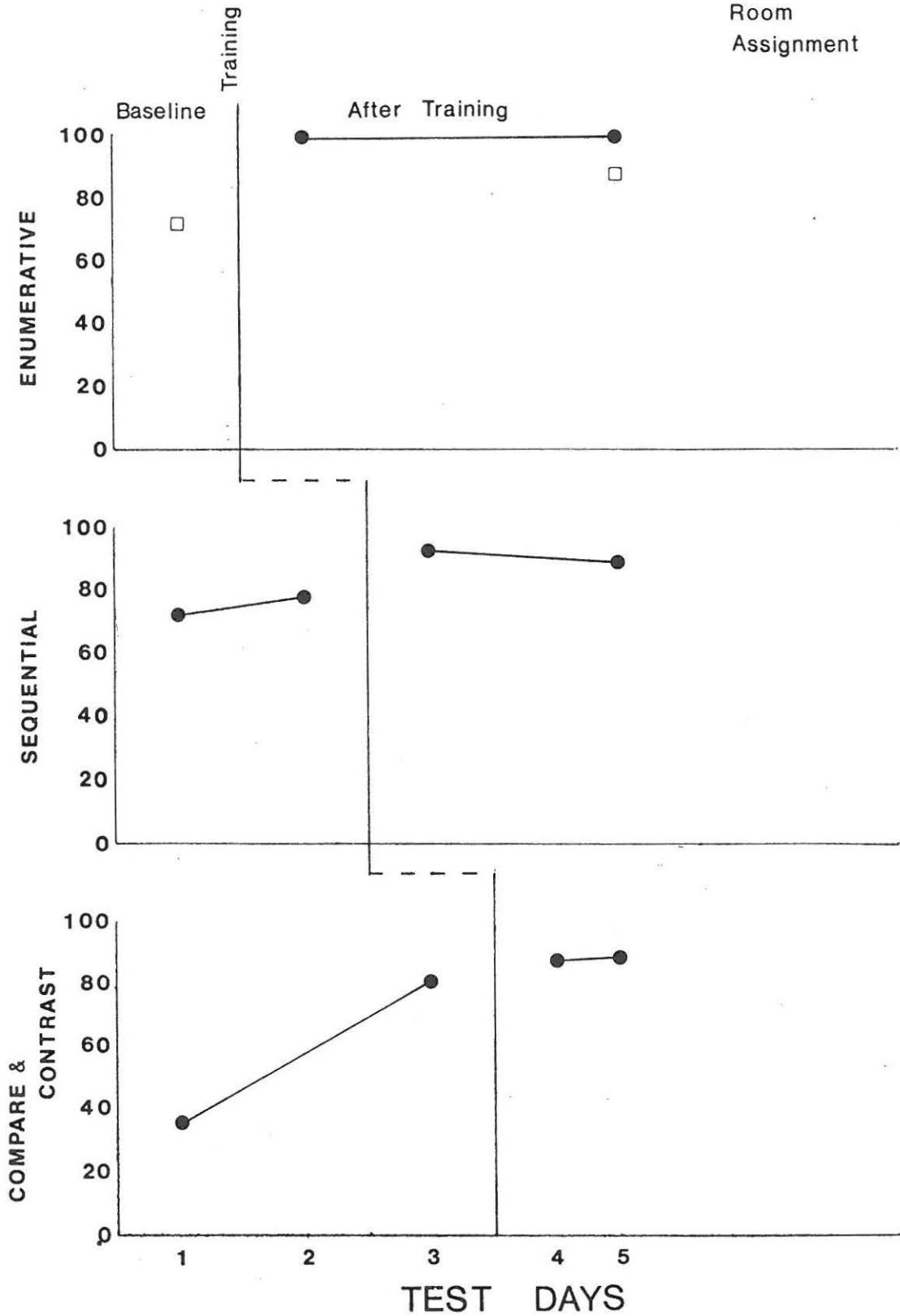


S₂

Figure 2

- - In Class Assignment
- - Resource Room Assignment

PERCENTAGE OF PARAGRAPH CORRECT



PERCENTAGE OF PARAGRAPH CORRECT

53

Figure 3

- - In Class Assignment
- - Resource Room Assignment

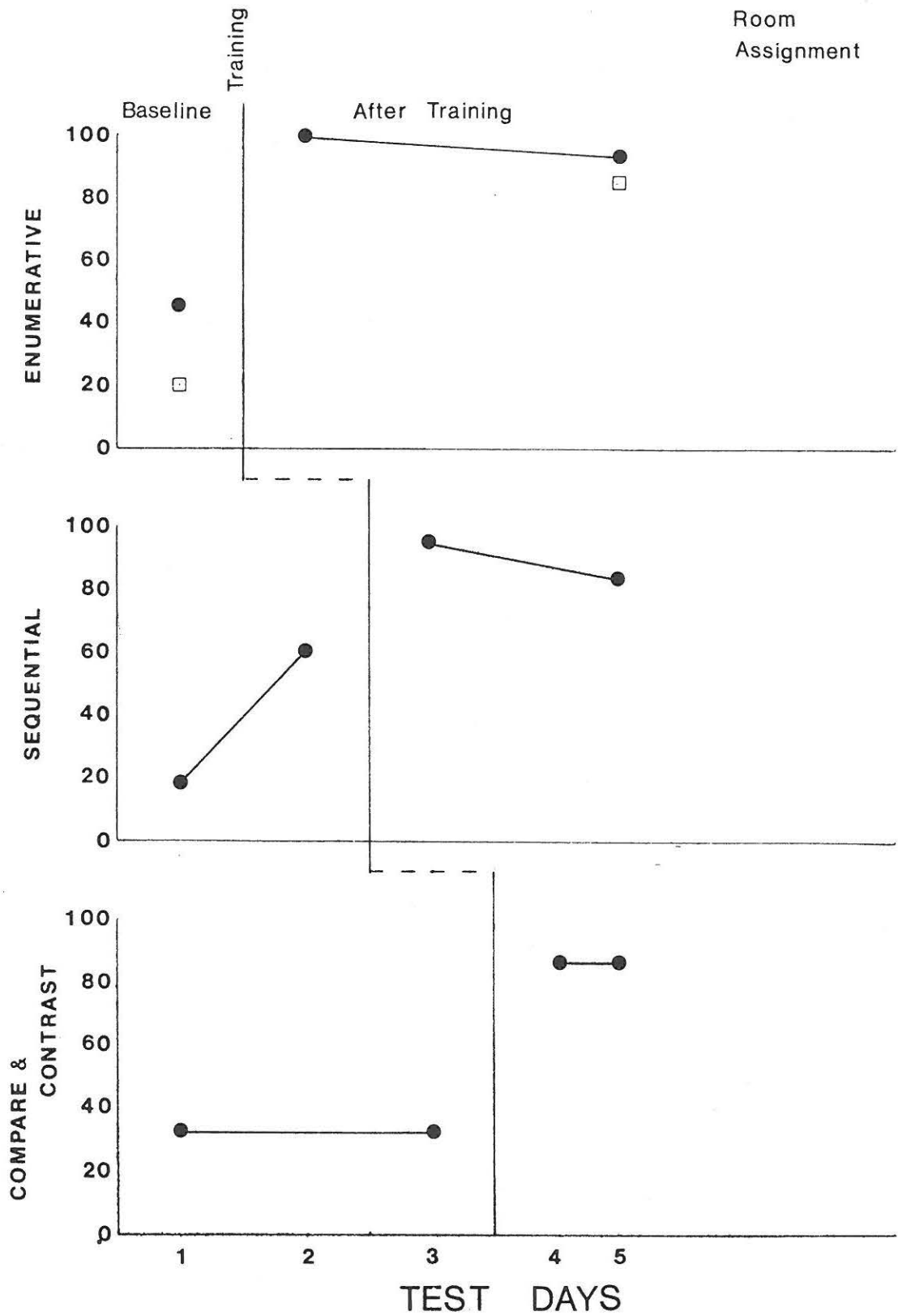


Figure 4

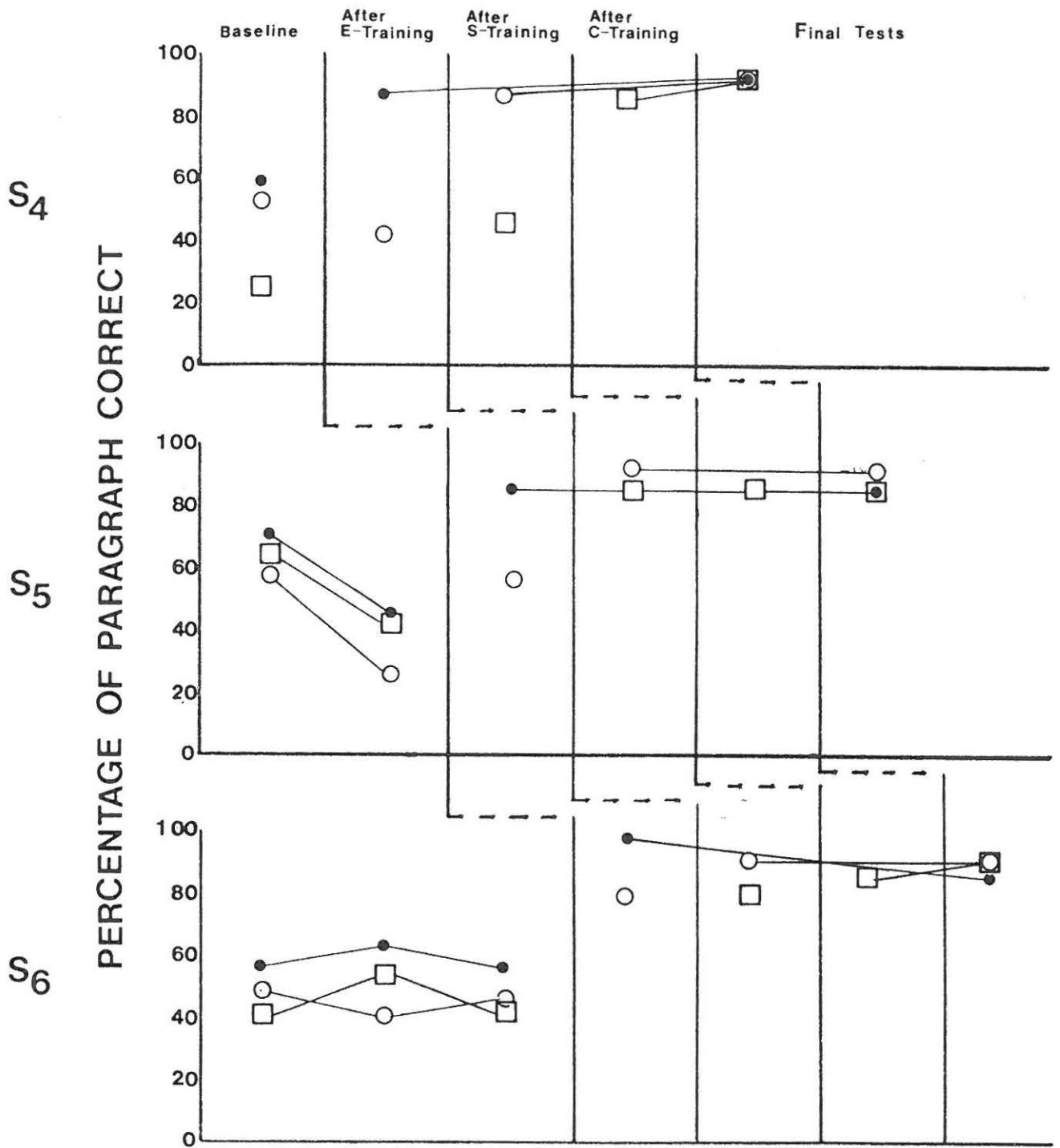
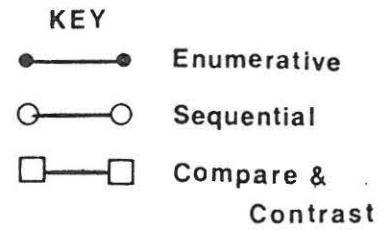


Figure 5

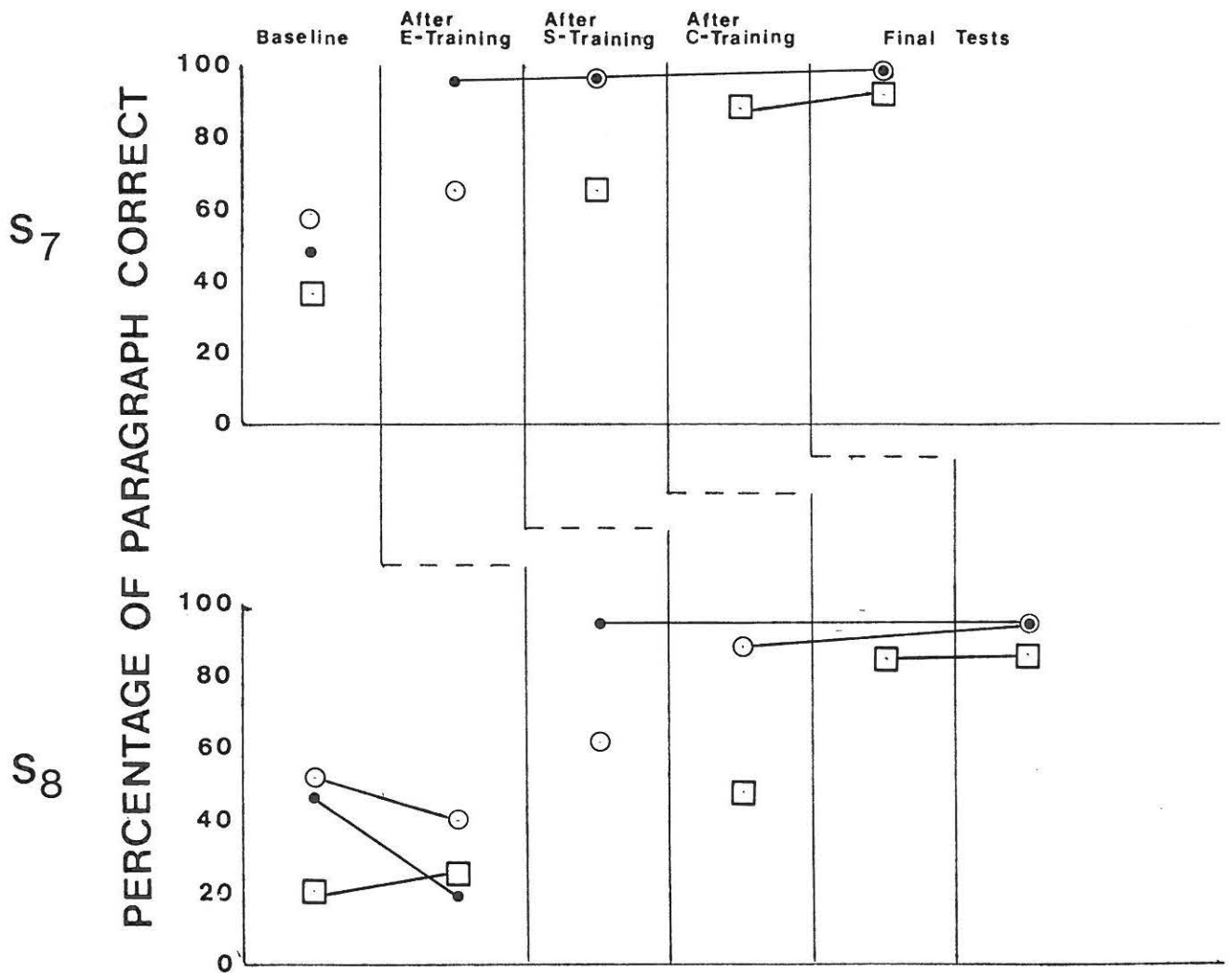
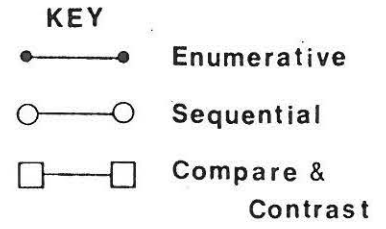


Table 1
 Pretest Scores, Posttest Scores and Mean Gain
 Per Student in Experiment I

	Enumerative		Sequential		Compare/Contrast		Mean Gain
	Pretest	Posttest*	Pretest	Posttest	Pretest	Posttest	
Student 1	67%	93%	60%	95%	65%	88%	28%
Student 2	63%	100%	71%	88%	35%	87%	31%
Student 3	47%	93%	19%	89%	33%	87%	57%

*Individually administered final posttest

Table 2
 Repeated Pretest Measures of Two Paragraph Types
 for Experiment I

	Sequential			Compare and Contrast		
	Pretest ₁	Pretest ₂ *	Gain	Pretest ₁	Pretest ₂ **	Gain
Student 1	60%	82%	22%	65%	75%	10%
Student 2	71%	76%	5%	35%	81%	46%
Student 3	19%	60%	41%	33%	33%	0%

*Following enumerative instruction

**Following enumerative and sequential instruction

Table 3
Points Gained Across Three Paragraph Types
for Experiment I

	Enumerative	Sequential	Compare and Contrast
Subject 1	26	35	23
Subject 2	37	17	52
Subject 3	46	70	54
Total	109	122	129

Table 4
 Pretest Scores, Posttest Scores and Mean Gain
 Per Subject in Experiment II

	Enumerative		Sequential		Compare/Contrast		Mean Gain
	Pretest	Posttest*	Pretest	Posttest	Pretest	Posttest	
Subject 4	59%	93%	53%	94%	25%	93%	47.7%
Subject 5	59%**	88%	42%**	93%	54%**	88%	38. %
Subject 6	60%**	88%	46%**	94%	48%**	93%	40.3%
Subject 7	47%	100%	59%	100%	39%	93%	49.3%
Subject 8	34%**	93%	46%**	94%	24%**	87%	56.7%

*Individually administered final posttest
 **Mean of pretest measures

Table 5
 Repeated Pretest Measures of Two Paragraph Types
 for Experiment II

	Sequential			Compare and Contrast		
	Pretest ₁	Pretest _{2*}	Gains	Pretest ₁	Pretest _{2**}	Gain
Subject 4	53%	42%		25%	53%	28%
Subject 5	42%***	58%	16%	54%***	89%	35%
Subject 6	46%***	82%	36%	48%***	81%	33%
Subject 7	59%	65%	6%	39%	65%	26%
Subject 8	46%***	63%	17%	24%***	47%	23%

*Following enumerative instruction

**Following sequential instruction

***Mean of pretest measures

Table 6
Points Gained Across Three Paragraph Types
for Experiment II

	Enumerative	Sequential	Compare and Contrast
Subject 4	34	41	68
Subject 5	29	51	34
Subject 6	28	48	45
Subject 7	53	41	54
Subject 8	59	48	63
Total	203	229	264

EXAMPLE COMPARE AND CONTRAST PARAGRAPH

BUILDING STONES

THERE ARE A NUMBER OF DIFFERENT KINDS OF BUILDING STONES. LIMESTONE IS POPULAR BECAUSE IT IS HARD, LASTS A LONG TIME, AND IS EASY TO CUT AND SHAPE. IT IS OFTEN PLACED OVER ROUGH SURFACES TO MAKE THEM MORE ATTRACTIVE. MARBLE IS THE MOST BEAUTIFUL BUILDING STONE. UNLIKE LIMESTONE, IT IS VERY COLORFUL. IT IS NOT USUALLY USED IN BUILDINGS BECAUSE OF ITS EXPENSE. GRANITE IS EVEN STRONGER AND HARDER THAN LIMESTONE AND IS USED MOST OFTEN FOR PUBLIC BUILDINGS. HOWEVER, IT IS HARD TO CUT AND HANDLE. LIKE MARBLE, GRANITE CAN BE POLISHED TO A SHINY FINISH. GRANITE, LIMESTONE, AND MARBLE ARE JUST THREE OF THE MANY DIFFERENT STONES USED TODAY.

EXAMPLE ENUMERATIVE PARAGRAPH

SCIENTISTS HAVE DISCOVERED THREE MAIN TYPES OF GLACIERS. SOMETIMES A GLACIER GROWS OUTWARD IN ALL DIRECTIONS FROM THE SPOT IN WHICH IT STARTED. SUCH A GLACIER IS CALLED AN "ICECAP." WHEN A GLACIER BEGINS AT THE TOP OF A MOUNTAIN AND GROWS BY MOVING SLOWLY DOWN THE VALLEY IT IS KNOWN AS A "VALLEY GLACIER." SOMETIMES A VALLEY GLACIER REACHES A WIDE FLAT AREA AND SPREADS OUT OVER IT WITHOUT MELTING. THIS KIND OF GLACIER IS KNOWN AS A "PIEDMONT GLACIER." ALL GLACIERS CAN BE DIVIDED INTO THREE MAJOR TYPES.

EXAMPLE SEQUENTIAL PARAGRAPH

THERE ARE A NUMBER OF STEPS THAT SHOULD BE TAKEN IN PREPARING TO WRITE A REPORT. FIRST, YOU SHOULD DECIDE ON A TOPIC OR A SUBJECT FOR THE REPORT. THEN MAKE A LIST OF QUESTIONS ON THIS TOPIC, FOR WHICH YOU NEED TO FIND ANSWERS. THE QUESTIONS SHOULD THEN BE TURNED INTO STATEMENTS. THE NEXT STEP IS TO READ BOOKS AND MAGAZINES AND TAKE NOTES ON THE SUBJECT, TRYING TO FIND INFORMATION ON THE STATEMENTS YOU HAVE LISTED. WHEN ALL THE NECESSARY INFORMATION HAS BEEN WRITTEN DOWN, YOU SHOULD MAKE AN OUTLINE. AFTER ALL THESE STEPS HAVE BEEN COMPLETED, IT IS TIME TO WRITE THE REPORT.