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ABSTRACT

The primary purpose of this experiment was to see if instructional materials created for fourth graders could enhance their normal syntactic development, and if these materials would succeed better with black or with white students. For one school year a sentence-combining curriculum was demonstrated on 180 students who had been grouped experimentally; 155 students formed a control. All students were pretested on one piece of writing, tested mid-term on writing and rewriting, and post-tested on three pieces of writing. The test results were analyzed, and the curriculum materials were found to be significantly successful in helping the experimental group (1) make more sentence-embeddings than did the control group, (2) improve their free writing, and (3) improve at least one aspect of their reading skill. A comparison of possible effects of the curriculum on black and on white students revealed that only the black experimental classes showed significant superiority over a corresponding control group on the reading instrument or in the syntactic maturity exhibited in their free writing. (Appendices contain two rewriting instruments; Lessons 1-29 of the experimental curriculum; a list of references dealing with research in syntactical and reading skills; and tabulations of findings from the study.) (DD)

Final Report

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An Elementary School Curriculum to Develop Better Writing Skills

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Background for the Study

The Problem

It is a commonplace observation that the sentences produced by children differ from those produced by adults, and that those produced by young schoolchildren differ from those produced by older ones. Within the last decade researchers have measured with more precision than before the syntactic changes which occur in the sentences written by schoolchildren as they mature. What this syntactic measure of writing maturity is will be described in the next section.

Also within the last decade, educational researchers have shown that specially designed materials can enhance syntactic development along this dimension. Such enhancement has already been shown to be possible in the seventh grade. The primary purpose of the present experiment was to see whether materials created for children as young as fourth graders could also succeed in enhancing normal syntactic development. The secondary purpose was to see whether the materials succeed better with black students or with white.

While surely no one would take so extreme a position as to say that all of schoolchildren's writing skill depends on the syntactic maturity of their sentences as that is now measured objectively, surely also the opposite extreme is an equally untenable position: that maturity of sentence structure is irrelevant to writing skill. In other words, then, this experiment was designed to see whether, as early as the fourth grade, a certain kind of sentence-building exercise could bring about a measurable improvement in one factor, the syntactic factor, contributing to writing skill as a whole. The secondary purpose of the experiment was to see whether the curriculum was more help to black students or to white.

Studies of Normal Syntactic Development

Until recently the most that could be said about the syntactic development of schoolchildren's sentences was that the sentences become longer, and that older children wrote, on the average, more subordinate clauses per main clause. Within the last ten years, the concepts of transformational grammar have been used in research and there is now substantial evidence that as children mature they use more and more sentence-embeddings per main clause.

To support this conclusion, three studies can be cited. Hunt (1964, 1966) found that the number of sentence-embeddings increased in the writing of children of average IQ from grades 4 to 8 to 12 and increased much more in the writing of skilled adults. O'Donnell and others (1967) confirmed this observation for the writing of children in grades 3, 5, 7 and discovered too

that the same could be said for speech in kindergarten and in grades 1, 2, 3, 5, and 7.

Since the time when those two studies were made, Hunt (1970) has demonstrated the same developmental characteristics in a rigidly controlled experiment in which various groups of writers were instructed to rewrite "in a better way" a passage written in sentences shorter than even kindergarten children normally produce. The passage was designed by O'Donnell and first used by him (1968). In the last-mentioned Hunt study this problem was given to 50 children normally distributed as to general academic ability in each of five grades: 4, 6, 8, 10, 12: 250 students in all. At every grade, students wrote significantly more sentence-embeddings per main clause than children two years younger had done. And across every one of the four grade intervals the difference was statistically significant.

This same study also compared the performance of students of high, middle, and low academic ability or IQ within each grade. For every one of the fifteen ability groups within the five grades the number of sentence-embeddings for the high group was greater than that for the middle group, and that in turn was greater than for the low group, and the difference between high IQ group and low was statistically significant within every grade.

This study went still further. Twenty-five skilled adults who had recently published articles in Harpers and Atlantic also rewrote the passage. Twenty-four of the 25 produced still more sentence-embeddings than the average twelfth grader had done.

As a result of such research it is possible to assert with confidence that in the normal course of events, as children grow toward maturity, they steadily increase their ability to handle a larger number of sentence-embeddings per main clause. This has been shown to be true of writing, and has been shown to be true of speaking, at least from kindergarten to the seventh grade, and appears to be true of reading as well.

Yet existing language curriculums are not, in general, designed to aid that syntactic growth. Indeed, the designers seem not to have been aware of it. Some show how one sentence, with certain parts deleted, can be embedded in another one. But one is not enough. As early as the fourth grade, students already embed as many as three with moderate frequency. So a curriculum that shows the student how to embed one sentence is not stretching him, though it may have some different value for him. Perhaps the fourth grader who already embeds three sentences should be shown how to embed four, and even five, for in the few years ahead he will be learning how to do that whether or not his curriculum makes him conscious of that process.

At the end of Hunt's Grammatical Structures Written at Three Grade Levels he offered the following proposal: "This study suggests a kind of sentence-building program that probably has never been produced, or at least not systematically and fully. The aim would be to widen the student's span of grammatical attention and concern. The method would be for him to reduce independent clauses to subordinate clauses and nonclauses, consolidating them with adjoining clauses and T-units. He would work up to structures of considerable depth and complexity comparable to those exhibited by twelfth graders and superior adults.

"He might or might not also break down complicated structures into simple clauses, though the whole process has both deductive and inductive aspects. To a certain extent writing teachers have always used this method. It would be possible of course to do a great deal more of it, using the students' own writing, other writers' sentences, and of course specially prepared exercises (p. 157)."

Curricula to Enhance Syntactic Development

John Mellon was the first researcher to undertake, on a major scale, such a sentence-building program (1967). His program was used by seventh graders for one year. The program consisted of a minimal grammar, just enough to explain certain terms, such as T-rel, T-nom, etc. Using these terms he then instructed his students to combine a certain number of kernel sentences into one complicated sentence using the transformations he specified. One important aspect of his program is that he did use problems involving a larger number of embeddings per sentence than seventh graders normally produce. His students combined as many as a dozen into a single sentence. In this way he stretched their capacities.

An illustrative problem in sentence combining is given below, followed by one acceptable solution.

Problem

The lightning revealed SOMETHING
The lightning was forking intermittently from clouds.
The clouds were observable only during its flashes.
The natives were beginning to run toward the shelter of SOMETHING.
The natives were on the path ahead. (T:fact)
The natives had been plodding along in a ragged column.
Something appeared to be a grove of trees. (T:wh)
A grove of trees is a resting place in such a storm.
The resting place is dangerous.

Solution

> The lightning forking intermittently from the clouds observable only during its flashes revealed that the natives on the path ahead, who had been plodding along in a ragged column, were beginning to run toward the shelter of what appeared to be a grove of trees, a dangerous resting place in such a storm.

Mellon's experimental seventh graders were tutored with such problems and solutions for one year. At the end they wrote themes, not knowing that the themes would be subjected to any special analysis. Comparable themes were written by two control groups, one that studied no grammar, and another that studied Warriner's grammar. Between pretest and posttest, the two control groups made about the same amount of gain in syntactic development as would have been predicted from Hunt's original study. However, the experimental group accomplished two or three times as much gain in the same time -- they made two or three years' gain in one.

Another study having the same general purpose as Mellon's, but directed toward fourth graders, was published at about the time this present study was first proposed to the U.S. Office of Education in May, 1968. The fourth grade study by Miller and Ney (1968) is similar in purpose to the present study but differs in at least four respects: that study involved about sixty students whereas this involves about five times as many; this study involves about equal numbers of black students and white, and compares the effect on the two races; that study required students to embed one sentence in another whereas this study required that several sentences -- as many as the student could handle -- be embedded in one another; that study used largely different measures of accomplishment from those used in this study.

The instructional procedure used by Miller and Ney is described in part as follows:

> The structure to be practiced, written on the blackboard, was read by the students orally following the teacher's model reading. Thus the instructor would read two cue sentences such as the following:
>
> The boy put the old man down.
> The boy was very tired.
>
> After the reading of each sentence by the teacher, the students would perform a reading in chorus from the graphic representation of these sentences in their combined form as the response sentence which is required in the exercise:

The boy, who was very tired, put the old man down.

The students also would perform choral reading of this sentence from the blackboard.

Variations of this basic procedure were used, allowing for some variety of material and providing for individual as well as group responses. Three types of sentences were emphasized: (a) sentences with who and which adjectival clauses and elements derived from these clauses; (b) sentences with adverbial clauses in initial and final position, and (c) sentences with nominalizations in the subject and predicate derived from source sentences.

By comparing pre and posttests in writing the investigators found that both the experimental group and the control group showed an increase in the use of the structures that had been taught, but only the experimental group showed a statistically significant gain.

The Mellon study in conjunction with the Miller and Ney study provide encouragement for the belief that the normal rate of syntactic development can be hastened, and that it can be hastened in both the middle grades and the early grades. And in view of the fact that skilled adults are almost as far ahead of the average twelfth grader as the average twelfth grader is ahead of the average fourth grader, it seems reasonable to expect that under an effective curriculum a twelfth grader might end up much closer to the skilled adult than he has been in the past.

In summary, then, within the last few years we have gained a new and refined insight into the path which students do in fact now follow in the development of their sentence structure. Secondly, there are at least two studies which indicate that in one year, under a special curriculum, students can make more progress than they normally would.

Methods and Procedures

The purpose of the experiment reported here was to try out a sentence-combining curriculum in the fourth grade for black and white students and then to test its effect on the syntactic maturity of those experimental students as contrasted with comparable control students who did not study the curriculum. The experiment was conducted in Tallahassee, Florida, from September 1969 to June 1970.

The methods and procedures will be discussed under these headings: (1) choice of schools, (2) training the experimental teachers, (3) classroom activities, (4) pretests and posttests, (5) the mid-year tests, (6) scoring the tests. The last section will discuss the findings.

Choice of schools

In 1969-70 each elementary school in Tallahassee, Florida, was attended very largely by students of one race or the other. There were no elementary schools with approximately equal numbers of black and white students. So to get approximately equal numbers of experimental and control students, each group also with approximately equal numbers of blacks and whites, four different schools were chosen, two predominantly black and two white, one pair of black and white to be experimental, one pair to be control. All fourth grade classes in all four of the schools were involved, giving a total of 335 students. The names of the schools, the number of fourth graders enrolled in each, and the number of blacks and whites in each is presented in Table 1.

Table 1

Number of Control and Experimental Students, Black and White

		Total students	Black students	White students
Experimental schools				
John G. Riley		86	85	1
Caroline Brevard		94	8	86
	Sub-total	180	93	87
Control schools				
Leonard Wesson		80	26	54
Lincoln		75	75	0
	Sub-total	155	101	54
	Total	335	194	141

Training the Experimental Teachers

Previous to the beginning of classes in the fall of 1969, the teachers of the experimental classes met for one week with the Director and Co-Director of the experiment. In that week they were shown the research data indicating that as schoolchildren mature they do in fact normally learn to combine more and more sentences. The teachers also were given an introduction to some of the commoner transformations.

Once school had begun, these same teachers met with the Director and Co-Director once every three weeks to receive the next exercise materials and to report on their experiences with previous materials.

Classroom Activities

In this curriculum no grammatical terms were ever used between teachers and students, but in fact the students did practice the oral production of about a dozen sentence-embedding transformations. The children described the activity simply as "combining two or more sentences into one."

Each lesson dealt with a new transformation, or a new aspect of a transformation. A lesson lasted fifteen or twenty minutes. There were three or four such lessons a week, totaling one hour.

The format for each early lesson was simple. As a model, two sentences were presented either on the board or with an overhead projector, and a third sentence combining the two was also presented. Then, as a new problem, the teacher read aloud a similar pair of stimulus sentences, and called on the children to combine them "like the model." The children called out the answer to each new problem. Of course the children possessed the competence to combine. They had been producing such transformations for years in their ordinary talk. They simply had not seen the combinations presented in a systematic fashion before. They seldom produced sentences that were ungrammatical, but sometimes their solutions were not like the model. When they made a mistake they did so because the instructions were arbitrary or ambiguous -- or because the students were not attentive to the model, but never because they lacked the competence.

The first lesson worked like this. The teacher showed the transparency and then read it, perhaps twice.

I rode in a boat.
The boat leaked a little.

I rode in a boat that leaked a little.

Then the teacher read the first two problem sentences, "I caught a fish. The fish weighed five pounds." All problems in this first lesson called for a relative clause modifying the object in the first sentence.

The next lesson called for a relative clause modifying the subject in the first sentence, thus interrupting the original simple subject-verb relation and providing a presumably more difficult problem. The lessons were all programmed in what was thought to be a logical sequence from easy to more difficult.

The early lessons also required that the students break sentences back down into what might be called (somewhat inaccurately) the underlying deep structures. That is, once the students had built up a dozen sentences following the model just given, they then disassembled them. In response to "I rode in a boat that leaked a little," they replied, "I rode in a boat. The boat leaked a little." The notion behind such disassembly exercises was that the receptive activity of reading and listening requires that complicated sentences be broken down into their component deep structures, and that explicitly practicing that skill might facilitate skill in receiving complicated sentences through the ear and the eye.

An attempt was made to choose those transformations that are widely used by children in the early and middle grades. Those that are used chiefly by mature writers were not included. For instance, non-restrictive modifiers of noun phrases are used with great frequency by skilled adults but are seldom used by younger children, so they were not included. Furthermore, an attempt was made to work from simple to more complicated transformations. That is, since many noun modifiers such as adjectives, present participles, past participles, phrases of time and place, etc. can all be treated as reduced relative clauses, the full relative clause exercises came first. And since it is presumably easier to add a relative clause at the end of a sentence than to insert it between subject and verb, the first relative clauses modified the last noun in the matrix sentence. Only afterward did the students insert relative clauses between subject and predicate. In this way the sequence was given order and progression.

By mid-year these fourth graders were working on another kind of problem too. They were freely combining sets of three and four and five sentences into one. That many were presented to them in writing, not orally, of course. It is too hard to remember more than two if the child cannot see them while he is working. This multiple embedding was not done by following a model. The children were not told which transformations to use. They were not told whether to use a relative clause or reduced relative clause. They used any applicable transformations that they knew. Consequently, there were usually several fully grammatical solutions to such problems. The teachers encouraged a variety of solutions, not expressing preference among the various acceptable ones, but letting the children point out any solutions that were clearly ungrammatical. Here is a sample problem used

just before Christmas.

I made a present.
The present was for my mother.
I wrapped the present.
I wrapped it in gold paper.
The paper had stars on it.

One obvious solution would be "I made a present for my mother and wrapped it in gold paper with stars on it." Here one coordination and three embeddings reduce five sentences to one clause.

For the rest of the year the program continued with both kinds of problems. New transformations were introduced using the two-sentence format with the specified solution. Also sets of five and six related sentences were introduced, allowing a variety of solutions. Even whole stories of twenty and thirty very simple sentences were used, though of course those could not be rewritten into one sentence.

The outline for the exercises was written by the Director of the project. The sentences used in the exercises were written by him and by graduate students who understand the pertinent linguistic theory and who also possess creativity. A copy of each lesson is included in the Appendix.

On the whole the teachers reported that the students enjoyed the exercises, but the teachers also reminded the Director that some exercises were dull whereas others were amusing or were rewarding in some other intrinsic way.

Pretests and Posttests

In order to provide a basis for assessing the effect of the curriculum on the student's performance, all classes, both the experimental and control, were pretested in September 1969 and posttested in May 1970. The pretests were in the general area of writing and a special kind of rewriting and reading. Intelligence test scores from the California Test of Mental Maturity (short form) were available on all classes.

With the intention of providing a pretest of the students' general writing achievement, all classes were shown a short silent cartoon movie and were then asked to tell what the movie was about. The writings were then analyzed for certain syntactic characteristics which will be described in a later section.

For reasons to be explained later, the comparable posttest consisted not of just one but of three pieces of writing. Students wrote three papers in response to three such silent cartoon movies.

To test more directly the students' proficiency in sentence-embedding, all classes were instructed to rewrite "in a better way" a passage written in extremely short sentences. For the pretest the passage used was one entitled "The Old Man and the Hen." The first eight sentences of the entire 28 are as follows:

> Once there was a man. He was old. He lived alone. He became lonely. Someone gave a hen to him. She became his companion. Each morning the hen laid an egg. The man fried the egg.

For the posttest, a similar passage which had been extensively validated as an index of maturity was used. The first eight sentences of that 32-sentence passage called "Aluminum" are as follows:

> Aluminum is a metal. It is abundant. It has many uses. It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances.

Both passages appear in their entirety in the Appendix.

This kind of test will be referred to hereafter simply as "rewriting," and the other kind of writing will be called "free writing." In rewriting, what is being said is controlled by the experimenters, though how it is said is determined by the student; in free writing what is being said and how it is said are both controlled by the student in response to the film.

In addition to these writing tests, reading tests were also administered to measure the effect of the curriculum. It has already been noted that the curriculum required students to break complicated sentences down into simpler sentences, as well as the reverse. It has also been noted that this part of the curriculum was included to see whether such activity would benefit the experimental students' reading skill by helping them to unravel the syntax of complicated sentences. Sentences are not just words. They are words organized into a structure.

The pretest used was the conventional Nelson Reading Test, Revised Edition, Grades 3-9. The test consists of 175 items, 100 items to measure vocabulary and 75 items to measure reading comprehension. The vocabulary items were not scored, but the reading comprehension items were. So when Nelson Reading test scores are given hereafter it is to be understood that these scores are for reading comprehension alone.

What the designers of the test mean by reading comprehension is described in the Examiner's Manual:

> "Each reading comprehension paragraph is followed by three questions, one pertaining to its general significance, one pertaining to knowledge of detailed information contained therein, and one planned to assess the ability to predict probable outcomes from the situation depicted in the paragraph (p. 3)."

Such a test would measure many skills other than the skill which this curriculum could hope to effect. So while this test was used as a pretest, a different instrument was used as a posttest, the pretest scores being used as the covariate in appraising the effect of the curriculum as measured by the posttest.

As the posttest of reading, an instrument especially designed by Mr. Alex Stedman was used. In general terms, the instrument could be said to test a student's ability to assign an intelligible structure to a passage when certain structure words were omitted but the nouns, verbs, adjectives were all given in proper order.

Superficially the test looked somewhat like a cloze test. It consisted of a passage of connected prose with certain words replaced by blanks. The reader's task was to fill each blank with the right word from an accompanying list. But whereas a cloze test is ordinarily used to measure the relative difficulty of different pieces of prose, holding the ability of the readers constant, the purpose of this test was the opposite: to measure the ability of the various readers, holding the difficulty of the prose passage constant.

This test differed from an ordinary cloze test in essential respects. Only certain kinds of words were omitted and those were not picked at random. They were what structural linguists used to call structure words, in contrast to form class or content words. That is, the words omitted were not nouns, main verbs, or adjectives, which carry much of the semantic load of a sentence. Those words were all given in normal order. Instead, the words omitted were modals, personal pronouns, relative pronouns, conjunctions, prepositions, particles, expletives, etc.: words needed to flesh out the other words into full sentences.

Just what skill the test measures is not well understood. It does measure something connected with chronological maturity: in various pilot runs sixth graders scored consistently higher than fourth graders. It does not measure what is ordinarily measured by vocabulary tests: the words used were all familiar to normal children long before fourth grade. It does not measure a child's knowledge of a particular subject matter or his knowledge of the socio-physical universe in general: the words which describe any particular subject matter were all intact before the eyes of the reader. The test measures some purely linguistic ability: it tests a student's

ability to use certain syntactic clues to produce an intelligible syntactic whole. The student must discover the clues and complete a whole, but our present knowledge of psycholinguistics is not sufficient to tell us how that is done. The best way for a reader of this report to get some notion of the psycholinguistic process involved is to take the test, noting consciously what clues he used to get the right answers. The two forms of the test appear in the Appendix.

The Mid-year Tests

Though at the outset of the experiment there was no intention to do any mid-year testing, an event arose which made it advisable to test all students at mid-term. In January 1970 there was reason to believe that all students in the public schools would be reassigned on February 1 so as to increase the amount of racial integration. Had they been reassigned, the experiment might have ended after half a year's duration instead of a full year's. And unless the students were tested immediately there might be no objective evidence on the effect of the program. In any event, as a precaution, all students were given a mid-term writing test and also a rewriting test, both being duplicates of the pretests.

As it turned out, the students were not reassigned, so there was no need to score all the mid-year tests. However, tests for 42 of the control students chosen at random were scored, and certain conclusions were drawn on the basis of those results.

For one thing, a correlation of those control students' scores on the pretests and mid-term tests was made as an indication of the reliability of the instruments (Table B in the Appendix). On T-unit length for the single sample of free writing the correlation between the 42 control students' scores on the two testings was only .38, a score so low that little of significance could be expected from the posttesting unless some change to increase the reliability were made. So a further check was made to see how large a free writing sample was needed to give more reliable results. Thousand word samples from ten fourth graders of average IQ were studied to see how much a fourth grader had to write before his T-unit length score stabilized at a figure "very close" to what it would be when he had written a full thousand words.

Taking one tenth of a word as being "very close" to the ultimate average, it was found that the average length which came that close for these ten students was 476 words. On the basis of that result, the pretest sample of a single piece of writing averaging about 75 words was considered too small to be reliable, and it was decided to use three pieces of free writing on the posttest. It would have been still better to get more than three pieces of free writing, but to do so was not practicable. Three pieces of writing gave an average of only about 300 words on the posttest.

On the rewriting instrument the correlation of pretest and mid-year scores was much higher. It was .67, indicating that the reliability of the rewriting instrument could be considered adequate for research purposes.

Scoring the Tests

In order to explain the procedure for scoring both the free writing and rewriting instruments, it is necessary to review in more detail some of the published research on syntactic maturity already referred to.

In 1964 Hunt showed that as schoolchildren mature, they steadily increase, on the average, the number of words in the clauses and phrases related to each main clause they write. He called the string of words related to one main clause a "Terminable Unit" or "T-unit," choosing the word "terminable" because it is grammatically allowable for each such string of words to be punctuated with "terminating" marks: a capital letter at the beginning and a period at the end. Of course, some strings of words properly punctuated as sentences by both good writers and bad contain more than one main clause. And such strings, by definition, contain more than one "terminable unit." So-called "compound sentences" do so.[1]

Since some young children tend to string their "terminable units" together at great length by using and's they produce extremely long sentences. It is for that reason that sentence length is no better measure of maturity than it is. But, in contrast to sentences, terminable units are not, in fact, lengthened even by young children in any such immature way. T-units from young children are not so long as those from older children. And those from older children are not so long as those from skilled adults. Hunt found a linear progression from grade 4 to 8 to 12. In other words, this syntactic measure is related to chronological age. He also found a further progression to the performance of skilled adults.

---

[1]The following theme was written as one sentence by a fourth grader. It contains six main clauses or T-units, here marked with double slant lines. It contains 11 clauses, the beginning of each marked with a single or double slant line. It contains 68 words. From these figures it is possible to compute the words per sentence, T-units per sentence, words per T-unit, clauses per T-unit, words per clause.

// I like the movie / we saw about Moby Dick the white whale // the captain said / if you can kill the white whale Moby Dick / I will g_ve this gold to the one / that can do it // and it is worth sixteen dollars // they tried and tried // but while they were trying / they killed a whale and used the oil for lamps // they almost caught the white whale.

In a later study (Hunt, 1966) it was shown that this same syntactic measure will differentiate between students of average and of superior IQ in grades 4 and also in grade 12: T-unit length increases with mental maturity when chronological maturity is held constant.

Certain arithmetical relationships make it possible for analysis of T-unit length to be refined still further. A terminable unit always contains a whole number of clauses: one at least, the main, and perhaps one or more subordinated clauses. The number of words per T-unit (w/T) is always the product of the mean number of words per clause (w/c) multiplied by number of clauses per T-unit (c/T). Empirical evidence indicates that in the early and even middle grades children's syntactic growth is most conspicuous in the number of clauses per T-unit, or, said another way, in the number of subordinate clauses per main clause. For instance (Hunt, 1966), fourth graders of superior IQ differ from those of average IQ not in mean words per clause but rather in number of clauses per T-unit. That fact will be pertinent to the findings of the present study. Late growth, on the other hand, appears to be most conspicuous in the opposite factor, in mean words per clause, rather than clauses per T-unit. At least, skilled adults (Hunt, 1966) differ most conspicuously from average twelfth graders in words per clause, not clauses per T-unit, and twelfth graders of superior IQ exceed those of average IQ in the same respect (Table 2).

So the free writing on both pretest and posttest was scored for words per T-unit, clauses per T-unit, and words per clause. On the basis of the data already discussed and presented in Table 2 it could be reasonably expected that the curriculum would produce a superiority of experimental students in words per T-unit, and in clauses per T-unit, but probably not in words per clause.

The empirical fact that as schoolchildren mature they tend to write more words per T-unit can be translated into a hypothesis using the terms of Chomsky's theory of the deep base structure and of transformations. Chomsky and others envision the deep structure of actual sentences as a hierarchy of branching structures with one S, or sentence constituent, at the top and other S constituents embedded below. Transformations then convert such deep structures, expressing the meaning, into surface structures by transforming each S constituent, beginning with the lowermost. In terms of such a model one might naturally ask whether as schoolchildren mature, they tend to use more embedded S constituents under each uppermost S. One might also ask whether the horizontal length of the string of words in a T-unit is related to the vertical height of its deep structure measured in number of embedded S constituents.

These questions have been approached directly by use of the rewriting problem (Hunt, 1970) in which 275 subjects were presented with a set of

Table 2

Synopsis of Clause to T-unit Length Factors
In Free Writing at Six Levels of Proficiency

	Mean Words per clause	Mean clauses per T-unit	Mean words per T-unit
Fourth graders			
Average IQ	6.8	1.26	8.5
% of Average G12	43%	73%	43%
Fourth graders			
Superior IQ	6.8	1.35	9.3
% of Average G12	43%	90%	47%
Eighth graders			
Average IQ	8.1	1.42	11.5
% of Average G12	94%	85%	80%
Twelfth graders			
Average IQ	8.6	1.68	14.5
% of Average G12	100%	100%	100%
Twelfth graders			
Superior IQ	10.4	1.54	16.2
% of Average G12	121%	91%	112%
Skilled Adults	11.8	1.74	20.3
% of Average G12	137%	104%	140%

The data for average G4, average G8, average G12 came from Hunt, 1964.

The data for superior G4, superior G12, skilled adults came from Hunt, 1966.

about 30 extremely short sentences with instructions to say the same thing "in a better way." The output from each of these subjects was then analyzed in several ways. One way was to calculate average words per T-unit. Another way was to count the number of original short sentences which were combined into each output T-unit. The means for each writer and the means for each group of writers were then computed. The number of S constituents embedded under each uppermost S was found to show a steady increase from least mature writers to most mature. The number of words per T-unit increased also. When those two scores for each of the 275 writers were correlated, the result was found to be very high: the two correlated .85. The two sets of scores appear in Table 3.

Table 3

Mean Number S Embeddings and Mean Number of Words Per T-unit for Six Groups of Rewriters[1]

	G4	G6	G8	G10	G12	Skilled Adults
Mean number of S's embedded under an uppermost S	.13	.6	1.4	1.8	2.2	4.1
Mean number of words per T-unit	5.42	6.84	9.84	10.44	11.30	14.78

[1]Hunt, 1970

So the rewriting passage can be scored in either of the two ways. By treating the rewritten sentences as horizontal strings of words, they can be scored for mean length per T-unit, etc. Or the rewritten sentences can be treated as possessing a deep structure represented by vertically branching trees. Treated thus, they can be scored for the number of S constituents embedded under each uppermost S per T-unit. Scores achieved by one method are highly correlated with those achieved by the other.

The former scoring method, counting words per T-unit, takes less time. That method was used in scoring the pretest. The second method of scoring is extremely time-consuming, for it requires that the analyst study what changes are made in each of the thirty or so input sentences by each writer.

For the number of students involved in this experiment about 10,000 such changes would need to be tabulated. However, this second method of scoring was felt to be more precise in measuring changes for fourth graders, particularly since many of them would make only one change, or two or three, and that number might affect the T-unit length on the thirty sentences very slightly. Furthermore, it was felt that the results obtained in this way would be more convincing to readers of the report. A curriculum which aimed to teach students to make more sentence-embeddings could naturally be expected to report the number actually made in a test situation by experimental and control students. So this was the method used in scoring the posttest.

For the pretest the rewriting passage used was The Old Man and the Hen. For the rewriting posttest the passage used was Aluminum. That passage was saved for the posttest because of the extensive analysis that had already been done on it.

The Stedman reading structure test was scored simply by counting the number of correct responses for each student. The problem of whether or not to count acceptable synonyms was almost eliminated by providing a list of words from which all answers were supposed to be taken.

Statistical Procedures

In assessing the effectiveness of a curriculum, two methods of statistical appraisal are in common use. One method, the more widely used, is to compute the pretest-posttest gain scores for the experimental and control groups and to compute a *t* between the two gain scores. But Campbell and Stanley (1963) recommend a second method as being more precise, that is, to use an analysis of covariance on posttest scores using related pretest scores as the covariate. In assessing the effectiveness of this curriculum the tests of covariance were used. However, in the Appendix a variety of other statistical procedures and results will be reported.

Findings

In discussing the findings, a two-way comparison will be made first between experimental students and control students, both black and white taken together. Then a comparison will be made between black controls and black experimentals and between white controls and white experimentals.

Effects Measured by Rewriting Instrument

Insofar as the success of a curriculum can be measured by performance on a comprehensive examination which explicitly tests the skills taught, then this curriculum can be said to have been unmistakably successful. It did teach the experimental students to make very substantially more sentence-embeddings on the rewriting instrument than the control students made.

Table 4 shows the adjusted means covaried by IQ scores. As is shown there, the mean total number of sentence-embeddings was, for control students, about two and a half; for experimental students it was three times as many, almost nine. The difference between the two groups gives an F-ratio of 102, whereas to be significant at the .001 level this F-ratio would need be no higher than about 11.

The superiority of the experimental group can be expressed more meaningfully by saying that they performed on this test the way sixth graders did in an earlier study, whereas the control group performed as fourth graders did in that study. As shown in the table, the mean number of embeddings in the earlier study of 50 sixth grade whites so selected as to give a normal distribution of IQ scores was 9.92, and for a similar group of fourth graders the number was 4.10. The difference between those two groups is 5.8, almost exactly the difference between these control and experimental groups, 5.75.

Breaking down the total number of embeddings into certain components, we again find a difference like that previously found to exist normally between fourth graders and sixth graders. That is, the experimental students exceeded the control students in all sub-categories: in number of relative clauses, in number of movable adverb clauses, in number of coordinated predicates, in number of sentences reduced to less than predicates, just as sixth graders in the earlier study exceeded fourth graders.

But most important is the fact that the experimental group's major superiority lies in number of sentences reduced to less than a predicate. This category covers those instances where a whole sentence is reduced to a single word or a single phrase embedded in some other full predication. Thus "Aluminum is a metal. It (aluminum or the metal) is abundant" becomes "Aluminum is an abundant metal," where the second input sentence is

Table 4

Rewriting Scores for Both Races and for Each Race

Mean Number of Occurrences per Student
as Adjusted after Covarying by IQ Scores

	Experimental group	Control group	F	Sig	G4*	C6*
All students						
Relative clauses	2.01	.47	52.	.001	.5	2.56
Movable adverb clauses	.19	.01	11.	.001	.08	.16
Coordinated predicates	1.83	.86	19.	.001	1.86	2.22
Sentences reduced to less than a predicate	4.32	1.25	67.	.001	1.66	5.98
	8.33	2.58	102.	.001	4.10	9.92
Difference	5.75				5.80	
Black students						
Relative clauses	1.20	.43	8.78	.005		
Movable adverb clauses	.05	.0017	2.30	N.S.		
Coordinated predicates	1.35	.66	6.93	.01		
Sentences reduced to less than a predicate	1.78	.58	13.9	.001		
	4.32	1.66	20.2	.001		
White students						
Relative clauses	2.90	.41	56.	.001		
Movable adverb clauses	.34	.01	9.3	.005		
Coordinated predicates	2.37	1.03	12.4	.001		
Sentences reduced to less than a predicate	7.02	1.91	61.	.001		
	12.63	3.36	108	.001		

*Scores for 50 white students in each grade selected to provide a normal distribution of IQ scores. Reprinted from Hunt 1970.

reduced to a single word by deletion of the subject and the copula, etc. This kind of reduction is most important because of the evidence in studies already cited that, while growth in number of subordinate clauses, and in conjoining, accounts for early syntactic growth, nonetheless late syntactic growth -- what distinguishes superior twelfth graders and skilled adults from average twelfth graders -- is characterized by a larger number of reductions to single words and phrases, thus increasing the length of the average clause. Number of reductions to less than a predicate is directly related to clause length: Hunt (1970, p. 27) records the correlation to be .87.

This superiority is most important, then, because it shows the early emergence of what will eventually be needed for late maturity. Furthermore free writing does not ordinarily show such slight differences -- at least Hunt in 1966, studying free writing, found no difference in clause length between fourth graders of average IQ and those of superior IQ, but, studying rewriting in 1970, he did find a difference in reductions to less than a predicate, and a corresponding difference in clause length, between fourth graders of average IQ and those of superior IQ -- and, incidentally, those of low IQ. Rewriting showed a difference finer than free writing had shown, and a difference that is important for full maturity.

In summary, then, this evidence that the experimental group was clearly superior in reductions to less than a predicate is important because (1) this skill is what seems to characterize late and full maturity, (2) free writing is not ordinarily sensitive enough to detect this slight difference, (3) many of the exercises were designed to enhance this skill.

When the black students are considered separately from the white students in both the experimental and control groups, we find that for either race the experimental group is ahead of the control group. In total number of embeddings used, the difference is significant at the .001 level for each race. The scores appear in Table 4. Though black experimental students were below white experimental students, they were superior to the white control students at the end of the year.

Effects measured by free writing

The data just presented indicates that the experimental curriculum did succeed in teaching the experimental students to produce more sentence-embeddings when confronted with a comprehensive test designed to give them maximal opportunity to do so and designed also to focus their attention on precisely that aspect of writing skill.

But did the curriculum affect the experimental students' writing skill when they were confronted by an ordinary problem, when, for instance,

they were concentrating on what to write more than how to write it? The answer is not a resounding Yes, but still an affirmative, even if somewhat hesitant.

The experimental students were significantly superior (Table 5). This is true whether T-unit length scores for the two groups are covaried by initial IQ scores or whether they are covaried by the corresponding pretest scores on free writing. Figured either way the difference is significant. Covaried by IQ, the difference in T-unit length is significant at the .05 level. Covaried by each student's pretest score on the free writing, the difference is significant at the .1 level. The skill taught did affect free writing.

It seems likely that if the pretest had called for a larger sample of free writing from each student, then the significance of the difference on the posttest covaried by pretest would have been greater -- at least as great as when covaried by a less closely related score, IQ, but the mean number of words elicited by the pretest was only about 75.

When T-unit length is broken down into its two components we find the superiority of the experiment group to lie in the component we would pick on the basis of an earlier study. It has already been remarked, as shown in Table 2, that in grades as early as the fourth the increasing number of clauses per T-unit affects T-unit length more conspicuously than does the other component, words per clause. Similarly, here, the experimental group is superior in that one component, not the other, and the superiority is significant at the .001 level.

In addition to the superiority of the experimental group in T-unit length, the experimental program apparently produced a beneficial side effect -- an increase in fluency as measured by total number of words produced in free writing. While one is scarcely inclined to think of a loquacious adult as being verbally superior to one who is parsimonious of words, the same is not true of fourth grade writers. Inasmuch as some fourth graders are virtually non-writers it would seem desirable for the curriculum to help them learn to write, and write freely and fluently. The experimental curriculum seems to have accomplished that result, whether the final scores for total words are covaried by IQ scores or by pretest scores. When we covary by IQ, the experimental group wrote about a fourth more than the control group, giving an F-ratio of 13, indicating significance above the .001 level. When we covary by pretest score, the experimental group wrote about a fifth more than the control group, giving an F-ratio or 8.3 indicating significance above the .005 level. Figured either way the experimental group was substantially ahead.

This is not the first time that sentence-embedding exercises have seemed to produce greater fluency in fourth graders. Miller and Ney in the

Table 5

Free Writing Scores for Both Races and For Each Race

	Adjusted mean Experimental students	Adjusted mean Control students	F-ratio	Significance
All Students				
Total words				
Covaried by IQ	352	280	13.37	.001
Covaried by pretest	347	294	8.32	.005
Words per clause				
Covaried by IQ	7.39	7.39	.002	N.S.
Covaried by pretest	7.39	7.38	.022	N.S.
Clauses per T-unit				
Covaried by IQ	1.15	1.11	9.31	.001
Covaried by pretest	1.15	1.10	11.1	.001
Words per T-unit				
Covaried by IQ	8.50	8.19	4.21	.05
Covaried by pretest	8.47	8.19	3.10	.1
Black Students				
Total words				
Covaried by IQ	292	234	5.26	.025
Covaried by pretest	288	237	5.52	.025
Words per clause				
Covaried by IQ	7.32	7.14	1.17	N.S.
Covaried by pretest	7.30	7.15	.73	N.S.
Clauses per T-unit				
Covaried by IQ	1.13	1.08	9.0	.005
Covaried by pretest	1.13	1.08	8.98	.005
Words per T-unit				
Covaried by IQ	8.24	7.72	6.69	.01
Covaried by pretest	8.19	7.75	5.16	.025
White Students				
Total words				
Covaried by IQ	424	337	9.10	.005
Covaried by pretest	418	354	4.75	.05
Words per clause				
Covaried by IQ	7.48	7.69	1.98	N.S.
Covaried by pretest	7.47	7.72	2.46	N.S.
Clauses per T-unit				
Covaried by IQ	1.18	1.14	2.2	N.S.
Covaried by pretest	1.18	1.14	2.45	N.S.
Words per T-unit				
Covaried by IQ	8.79	8.75	.03	N.S.
Covaried by pretest	8.77	8.79	.007	N.S.

study previously cited report a similar effect on their experimental fourth graders.

When the effect of the experimental curriculum is broken down into its effect on blacks alone and whites alone, we find that apparently both races were helped to write more fluently as measured by total words produced. For each race the superiority of experimental over control group was significant at the .025 level or more, as shown in Table 5.

When the T-unit length in free writing for the two races is considered separately, the data indicate that the experimental curriculum had no significant effect on white students but a clearly significant effect on blacks. This is true whether posttest scores are covaried by pretest scores or by IQ scores.

This finding is somewhat puzzling in view of the fact that the rewriting test showed rather the opposite: a greater superiority of experimental over control group for whites than blacks.

It would be interesting to re-run the experiment, getting a larger sample of free writing for the pretest and even for the posttest, in order to check the effect on T-unit length for the two races.

On the basis of the data here, one must conclude that the curriculum has particular promise for black students.

Effects Measured by the Reading Structure Test

Posttest scores on the Stedman reading structure test were covaried by pretest scores on the Nelson Reading Test and also by IQ scores. Covaried either way, taking black and white together, the experimental students scored significantly higher than the control students (Table 6). When covaried by IQ score the F ratio was 3.21, indicating significance at the .1 level; covaried by Nelson Reading scores the F ratio was 6.45, indicating significance at the .01 level.

When the two races are considered separately, then the black experimental group is very substantially above the black control group. The difference is significant at the .001 level.

But the white experimental is not significantly different from the white control.

Table 6

Reading Structure Test Scores
For Both Races and for Each Race

	Adjusted mean Experimental students	Adjusted mean Control students	F-ratio	Significance
All Students				
Covaried by IQ	12.8	11.3	3.21	.1
Covaried by NR pretest	12.7	10.5	6.45	.01
Black Students				
Covaried by IQ	9.21	6.51	9.73	.005
Covaried by NR pretest	9.79	6.30	15.31	.001
White Students				
Covaried by IQ	17.0	17.7	.235	N.S.
Covaried by NR pretest	16.02	15.68	.048	N.S.

Summary of the Findings

1. The experimental curriculum was clearly successful in teaching fourth grade classes to perform more sentence-embeddings on the rewriting instrument. At the end of the year the control classes performed in a way typical of fourth graders, whereas the experimental group performed in a way typical of sixth graders.

2. The experimental curriculum had a significant effect on the free writing of these classes.

   (a) The experimental students were clearly superior in fluency -- in the number of words they wrote in three class periods in response to three silent cartoon movies.

   (b) The experimental students were also superior in what has been described as a measure of maturity in the syntactic structure of their sentences.

3. The experimental curriculum was apparently successful in improving one aspect of reading skill. To understand a sentence, a reader must do more than recognize the words and know their meanings as in a list. In addition he must assign a meaning to the sentence structure.

   The experimental students were significantly more adept at assigning such a syntactic structure -- or at least at demonstrating, in the way required by the test instrument, that they could do so.

4. When the effect of the curriculum on black students is measured separately from the effect on whites, then the following observations can be made.

   (a) On the rewriting instrument the experimental classes of each race showed decided superiority over the control classes of the corresponding race.

   (b) In free writing the experimental classes of both races showed superiority over their corresponding control classes in fluency, but only the black classes showed significant superiority in syntactic maturity.

   (c) On the reading instrument only the black classes showed significant superiority over the corresponding control classes.

Application to the School Curriculum

Curricular research of the sort reported here is commonly subject to two obvious weaknesses. For one thing, the teacher variable is not controlled. The teachers of the experimental classes may have been better in some unknown way than the teachers of the control classes, and that factor rather than the curriculum may have accounted for the superiority of their classes at the end of the year. But of course the opposite is just as likely: the control teachers may have been the ones that were better in some unknown way, and if that is the case, then the experimental curriculum had to overcome that disadvantage just to break even. Another obvious weakness is that the experimental curriculum took only about one hour a week out of about 35. What happened during the remaining 34 may have had more effect than what happened during the one, and that unknown effect may have accounted for the superiority of the experimental students. All that is really known for sure about what are called the control classes is that they did not use this curriculum, whatever else they may have done.

But when one looks at the reasons for doing most things that are done in the schools and realizes the abysmal absence of experimental data to support those procedures, and when one reads the empty pretense that envelopes some textbooks, then the weakness of such curricular research as

this slips back into perspective. Studies such as this are at least more convincing than no studies, and their data should carry more weight than mere conjecture.

After that much of a demurral, it seems safe to recommend that exercises which help children combine little sentences into big ones and which help them also to break big ones down into little ones should become an established part of the school curriculum from at least the upper elementary grades on through the middle grades and perhaps beyond. Apparently such exercises help children both with their reading and their writing.

Furthermore, such a curriculum seems especially likely to help black students, at least if they are like the black students in this study.

Recommendations for Further Research

1. There is no reason to suppose that the curriculum used here is by any means the best that could be designed for its purpose. The fact that it served a useful purpose at all should encourage other teachers and textbook makers to devise and test still better materials.

   Such a curriculum might occupy more than one hour a week and perhaps the sentences in the children's own writing and the children's own reading should be analyzed as these sentences were.

2. For decades reading researchers have believed that the difficulty of a passage is somehow related to sentence length, and have included in their readability formulae some such measure of what must be regarded as syntactic difficulty. They have also, of course, considered vocabulary difficulty to be another factor contributing to the total difficulty.

   Curricula have been devised to overcome vocabulary difficulty through what are called "word attack" exercises. But little attention has been paid to syntactic difficulty, and to compensating "sentence attack" exercises. Yet one of the tenets of transformational linguistic theory is that complicated sentences are made by transforming and embedding the base structures that underlie simpler sentences. Empirical evidence has already shown that there is a relatively high correlation between number of embeddings (number of S constituents) and sentence length (Hunt, 1966a).

   That theory and that empirical evidence should encourage curriculum designers to undertake new "sentence attack" exercises. The fact that this curriculum seems to have improved such skills for at least black students ought to encourage further activity of this sort. It should

encourage psycholinguists and test designers to undertake new measures for testing the syntactic factor in reading difficulty.

Extreme cases of syntactic difficulty are obvious. But they are unnatural too, and in that sense irrelevant to the practical problem of learning to read difficult sentences by good writers. Students simply do not encounter such center embeddings as "The book that the salesmen that the publisher sent gave me got lost." Less extreme cases are what good writers produce and ordinary students read. Research into the sources of difficulty in ordinary adult sentences might point the way for teaching the skills to attack them.

3. A major longitudinal study lasting for several years ought to be undertaken to see whether the superiority achievable in one year is about as much as can be maintained even by continuing such a curriculum, or whether instead the superiority can be added to year after year in cumulative fashion.

APPENDIX

Rewriting Instrument, "Old Man and the Hen"

Rewriting Instrument, "Aluminum"

Table A: Comparison of Experimental and Control, Pretest Means and Standard Deviations

Table B: Correlation of Pretest and Mid-year Scores for 42 Control Students

Table C: Means, Standard Deviations, and Correlations for Pretest Scores, All Students

Table D: Means, Standard Deviations, and Correlations for Pretest Scores, White Students

Table E: Means, Standard Deviations, and Correlations for Pretest Scores, Black Students

Table F: Correlation of Certain Pretest and Posttest Scores, Experimental and Control, Black and White

Curriculum, Lessons 1 - 29

References

The Old Man and the Hen

DIRECTIONS: Read the passage all the way through. You will notice that the sentences are short and choppy. Study the passage, and then re-write it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any of the information.

Once there was a man. He was old. He lived alone. He became lonely. Someone gave a hen to him. She became his companion. Each morning the hen laid an egg. The man fried the egg. He ate it for breakfast. He liked eggs. He wanted more eggs. He decided something. He would try an experiment. Perhaps he could get more eggs. He would feed the hen more grain. Perhaps she would lay more eggs. He would feed the hen more grain. Perhaps she would lay more eggs. He could eat two eggs each day. He doubled the feed. The hen became fat. She became lazy. She laid no eggs at all. The man was disappointed. He became angry. He killed the hen. He was lonely again. He was also hungry. He had no companion. He had no eggs.

Aluminum

DIRECTIONS: Read the passage all the way through. You will notice that the sentences are short and choppy. Study the passage, and then re-write it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any of the information.

Aluminum is a metal. It is abundant. It has many uses. It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances. Workmen extract these other substances from the bauxite. They grind the bauxite. They put it in tanks. Pressure is in the tanks. The other substances form a mass. They remove the mass. They use filters. A liquid remains. They put it through several other processes. It finally yields a chemical. The chemical is powdery. It is white. The chemical is alumina. It is a mixture. It contains aluminum. It contains oxygen. Workmen separate the aluminum from the oxygen. They use electricity. They finally produce a metal. The metal is light. It has a luster. The luster is bright. The luster is silvery. This metal comes in many forms.

Table A

Comparison of experimental and control pretest means and standard deviations

	IQ	Nelson Reading	Free Writing			Rewriting		
			w/c	c/T	w/T	w/c	c/T	w/T
All students								
Experimental	97.1	36.6	7.26	1.09	7.9	5.16	1.04	5.38
Control	93.9	33.5	6.87	1.06	7.3	5.03	1.04	5.23
Significance of difference	.05	N.S.	.05	N.S.	.01	N.S.	N.S.	N.S.
Black only								
Experimental	89.7	24.3	6.97	1.08	7.49	4.89	1.03	5.02
Control	88.6	25.3	6.68	1.06	7.06	4.98	1.03	5.14
Significance of difference	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
White only								
Experimental	103.8	47.6	7.52	1.10	8.24	5.41	1.05	5.71
Control	101.3	44.9	7.14	1.07	7.61	5.09	1.04	5.36
Significance of difference	N.S.	N.S.	N.S.	N.S.	.05	.05	N.S.	N.S.

Table B

Correlation of pretest and mid-year scores
for 42 control students

	Pretest						Mid-year					
	Free writing			Rewriting			Free writing			Rewriting		
	w/c	c/T	w/T	w/c	c/T	w/T	w/c	c/T	w/T	w/c	c/T	w/T
	1	2	3	4	5	6	7	8	9	10	11	12
1	1.00											
2	-.00	1.00										
3	.90	.42	1.00									
4	.33	.32	.45	1.00								
5	.25	-.03	.22	.51	1.00							
6	.35	.21	.42	.93	.79	1.00						
7	.29	.20	.35	-.01	-.09	-.05	1.00					
8	.05	.06	.08	.28	.26	.31	-.24	1.00				
9	.32	.21	.38	.16	.08	.14	.82	.35	1.00			
10	.27	.30	.39	.67	.57	.72	.11	.28	.27	1.00		
11	.00	.03	-.00	.24	.21	.26	-.05	.08	.00	.33	1.00	
12	.27	.25	.36	.62	.53	.67	.07	.23	.20	.92	.64	1.00

Table C

Means, standard deviations, and correlations for pretest scores, all students

	IQ	Language IQ	Nelson Reading	Free writing			Rewriting		
				w/c	c/T	w/T	w/c	c/T	w/T
	1	2	3	4	5	6	7	8	9
Mean	88.96	77.43	34.44	7.08	1.08	7.63	5.06	1.03	5.27
S.D.	28.00	41.07	19.45	1.48	.19	1.99	.82	.09	1.08
Correlation									
1	1.00								
2	.57	1.00							
3	.47	.30	1.00						
4	.11	.08	.21	1.00					
5	.01	.04	.06	.05	1.00				
6	.10	.09	.22	.78	.63	1.00			
7	.28	.19	.31	.25	.19	.25	1.00		
8	.16	.13	.12	.23	.18	.17	.50	1.00	
9	.29	.21	.31	.23	.14	.22	.93	.69	1.00

Table D

Means, standard deviations, and correlations for pretest scores, white students

	IQ	Language IQ	Nelson Reading	Free writing			Rewriting		
				w/c	c/T	w/T	w/c	c/T	w/T
	1	2	3	4	5	6	7	8	9
Mean	101.46	91.23	46.80	7.40	1.09	8.03	5.29	1.05	5.59
S.D.	18.38	35.11	18.37	1.38	.17	1.88	.80	.08	1.14
Correlation									
1	1.00								
2	.47	1.00							
3	.42	.23	1.00						
4	-.04	.06	.04	1.00					
5	.13	.08	.04	-.05	1.00				
6	.05	.09	.06	.74	.62	1.00			
7	.20	.19	.27	.17	.01	.13	1.00		
8	.07	.13	.10	.08	-.01	.05	.44	1.00	
9	.19	.20	.24	.16	.01	.12	.92	.74	1.00

Table E

Means, standard deviations, and correlations for pretest scores, black students

	IQ	Language IQ	Nelson Reading	Free writing			Rewriting		
				w/c	c/T	w/T	w/c	c/T	w/T
	1	2	3	4	5	6	7	8	9
Mean	78.69	66.09	24.29	6.81	1.07	7.30	4.87	1.02	5.01
S.D.	30.31	42.22	13.58	1.51	.22	2.02	.79	.10	.96
Correlation									
1	1.00								
2	.53	1.00							
3	.29	.09	1.00						
4	.06	-.01	.20	1.00					
5	-.06	.00	.05	.10	1.00				
6	.01	.00	.23	.78	.65	1.00			
7	.20	.07	.12	.24	.30	.27	1.00		
8	.12	.06	-.02	.27	.27	.20	.51	1.00	
9	.23	.09	.15	.21	.24	.23	.94	.67	1.00

Table F

Correlation of Certain Pretest and Posttest Scores, Experimental and Control, Black and White

		IQ	Language IQ	Nelson Reading	Free writing Pretest w/T	Free writing Pretest Total words	Free writing Posttest w/T	Free writing Posttest Total words	Total Transformations, rewriting	Post, Rdg. Struct.
		1	2	3	4	5	6	7	8	9
1		1.00								
2	BE	.22								
	BC	-.08	1.00							
	WE	.37								
	WC	.47								
3	BE	.59	.19							
	BC	.56	.00	1.00						
	WE	.62	.25							
	WC	.65	.33							
4	BE	.24	.05	.37						
	BC	.16	.00	.24	1.00					
	WE	.11	.16	-.02						
	WC	.29	.24	.21						
5	BE	.40	-.00	.59	.39					
	BC	.37	-.05	.57	.20	1.00				
	WE	.48	.17	.53	.09					
	WC	.35	.31	.37	.23					
6	BE	.20	.17	.26	.31	.24				
	BC	.17	-.02	.28	.28	.20	1.00			
	WE	.25	.18	.26	.19	.17				
	WC	.34	.18	.17	.06	.00				
7	BE	.26	-.06	.38	.42	.58	.19			
	BC	.46	-.02	.51	.07	.54	.33	1.00		
	WE	.28	.19	.19	.05	.34	.24			
	WC	.15	.13	.08	-.07	.25	.15			
8	BE	.57	.03	.65	.35	.62	.33	.53		
	BC	.55	-.04	.58	.25	.49	.30	.51	1.00	
	WE	.52	.22	.50	.13	.55	.30	.23		
	WC	.62	.39	.58	.25	.20	.11	.24		
9	BE	.54	.01	.74	.45	.50	.31	.52	.64	
	BC	.49	.03	.49	.28	.29	.35	.42	.71	1.00
	WE	.49	.30	.57	-.05	.44	.35	.27	.42	
	WC	.49	.35	.47	.07	.24	.08	.18	.50	

B = Black
W = White
E = Experimental
C = Control

LESSON 1

Relative clauses not reduced

First the object is modified, then the subject.

NOTE: Make the second sentence into the relative clause.

Model: 1. I rode in a boat.
2. The boat leaked a little.

I rode in a boat that leaked a little.

Examples: I caught a fish.
The fish weighed five pounds.

I have a lizard.
He eats bugs.

Sidney gave a speech.
The speech was too long.

Thieves have stolen the cattle.
The cattle were in the pasture.

Harry borrowed a car.
The car had just been washed.

We saw the horse.
The horse won the race yesterday.

The boy is John.
The boy swims.

That boy is my brother.
That boy is walking down the stairs.

The boy is a star athlete.
The boy threw a forward pass.

The house was in the meadow.
The house burned down.

Mr. Smith is a doctor.
Mr. Smith lives next door.

The lady gave us a puppy.
The lady is our neighbor.

Breakdown of relative clauses

Model: I rode in a boat that leaked a little.

1. I rode in a boat.
2. The boat leaked a little.

Examples: I caught a fish that weighed five pounds.

I have a lizard that eats bugs.

Sidney gave a speech that was too long.

Thieves have stolen the cattle that were in the pasture.

Harry borrowed a car which had just been washed.

We saw the horse that won the race yesterday.

The boy who swims is John

That boy who is walking down the stairs is my brother.

The boy wh threw a forward pass is a star athlete.

The house that burned down was in the meadow.

Mr. Smith who lives next door is a doctor.

The lady who is our neighbor gave us a puppy.

LESSON 2

Relative clause reduced to prenominal adjective

(a) Clause modifies object of S1

Model: 1. Judy lost a book.
2. The book was red.

Judy lost a book that (which) was red.
Judy lost a red book.

Examples: I have a horse.
He is black.

John owns a car.
The car is shiny.

We saw a motorcycle.
The motorcycle was fast.

We saw a sunset.
It was beautiful.

The woman lit the candle.
The candle was blue.

Bill saw the river.
The river was dry.

The teacher called the dog.
The dog was tiny.

The rabbit ran down a path.
The path was crooked.

The bird jumped on the window.
The window was dirty.

The girl lived in an apartment.
The apartment was big.

Breakdown prenominal adjective.

Model: Judy lost a book that was red.
Judy lost a red book.

1. Judy lost a book.
2. The book was red.

Examples: I have a horse that is black.
I have a black horse.

John owns a car that is shiny.
John owns a shiny car.

We saw a motorcycle that was fast.
We saw a fast motorcycle.

We saw a sunset that was beautiful.
We saw a beautiful sunset.

The woman lit the candle that was blue.
The woman lit the blue candle.

Bill saw the river which was dry.
Bill saw the dry river.

The teacher called the dog which was tiny.
The teacher called the tiny dog.

The rabbit ran down a path that was crooked.
The rabbit ran down a crooked path.

The bird jumped on the window that was dirty.
The bird jumped on the dirty window.

The girl lived in an apartment that was big.
The girl lived in a big apartment.

LESSON 3

Relative clause reduced to prenominal adjective.

(b) Clause modifies subject of S1

Model: 1. The girl is selling cookies.
2. The girl is tall.

The girl who is tall is selling cookies.
The tall girl is selling cookies.

Examples:

The rains drowned the crop.
The rains were heavy.

The baby laughed.
The baby was fat.

The farmer won the prize.
The farmer was lucky.

The child played with the dog.
The child was careful

The king broke his crown.
The king was careless.

The boy ate the apple.
The boy was happy.

The woman cut the grass.
The woman was angry.

The balloon rolled along the grass.
The balloon was soft.

The cook cleaned the corn.
The cook was cheerful.

The candle was long.
The candle was yellow

Breakdown prenominal adjective

Model: The girl who is tall is selling cookies.
The tall girl is selling cookies.

1. The girl is selling cookies.
2. The girl is tall.

Examples: The rains which were heavy drowned the crop.
The heavy rains drowned the crop.

The baby who was fat laughed.
The fat baby laughed.

The farmer who was lucky won the prize.
The lucky farmer won the prize.

The child who was careful played with the dog.
The careful child played with the dog.

The king who was careless broke his crown.
The careless king brok his crown.

The boy who was happy ate the apple.
The happy boy ate the apple.

The woman who was angry cut the grass.
The angry woman cut the grass.

The balloon which was soft rolled along the grass.
The soft balloon rolled along the grass.

The cook who was cheerful cleaned the corn.
The cheerful cook cleaned the corn.

The candle which was yellow was long.
The yellow candle was long.

LESSON 4

Relative clause reduced to adverb of Place

Model: 1. The monkey eats bananas.
2. The monkey is in the tree.

The monkey that is in the tree eats bananas.
The monkey in the tree eats bananas

Examples: The old woman cried.
The old woman is in the shoe.

The clown is funny
The clown is in the circus ring.

The girl is afraid of a mouse
The girl is on the desk.

The jet zoomed away
The jet was on the runway.

The cat is hiding.
The cat is under the bed.

The flowers are beautiful.
The flowers are across the street.

The bird is singing.
The bird is in the tree.

The book is good.
The book is on the desk.

The bus stops at my corner.
The bus is near the school.

The boy fell off the ladder.
The boy is on the ground.

The dog goes home.
The dog is in front of my house.

The girl plays the piano.
The girl is at the desk beside John.

LESSON 5

Relative clause reduced to past participle

Model: 1. The boy won the race.
2. The boy is named Joe.

The boy who is named Joe won the race.
The boy named Joe won the race.

Examples: The bus stops.
The bus is painted yellow

The girl plays the flute.
The girl is called Dolly.

The blackberries taste better.
The blackberries are picked over there.

The present was mine
The present was opened first.

The bird is a crow.
The bird is perched on the fence.

The boy fell off the ladder.
The boy was elected to be captain.

The woman is Mrs. Jones.
The Woman was introduced to you.

The rocket is on the launch pad.
The rocket was filled with fuel.

The man was hurt.
The car hit the man.

The book is good.
The book is colored blue.

LESSON 6

Relative clause reduced to present participle

Model: 1. The lion is scary
2. Teh lion is sitting on the log.

The lion that is sitting on the log is scary.

Examples: The lion is scary.
The lion is walking in the jungle.

The lion is scary.
The lion is roaring at me.

The lion is scary.
The lion is chasing me.

The team won a trophy.
The team was playing against the fifth graders.

The boy fell off.
The boy was riding the horse.

The plane is leaving.
The plane is going to Tampa

The girl plays the piano.
The girl is coming over here.

The cat has five kittens.
The cat is climbing the tree.

The book is good.
The book is lying on the table.

The boy fell off the ladder.
The boy was painting signs for the carnival.

The cat likes fish.
The cat is sneaking to the pond.

Breakdown

Model: The lion that is sitting on the log is scary.
The lion sitting on the log is scary.

Examples: The lion that is walking in the jungle is scary.
The lion walking in the jungle is scary.

The lion that is roaring at me is scary.
The lion roaring at me is scary.

The lion that is chasing me is scary.
The lion chasing me is scary.

The team that was playing against the fifth graders won a trophy.
The team playing against the fifth graders won a trophy.

The boy who was riding the horse fell off.
The boy riding the horse fell off.

The plane which is going to Tampa is leaving.
The plane going to Tampa is leaving.

The girl who is coming over here plays the piano.
The girl coming over here plays the piano.

The cat which is climbing the tree has five kittens.
The cat climbing the tree has five kittens.

The book that is lying on the table is good.
The book lying on the table is good.

The boy who was painting signs for the carnival fell off the ladder.
The [illegible] fell off the ladder.

The cat which is sneaking to the pond likes fish.
The cat sneaking to the pond likes fish.

LESSON 7

Relative clause reduced to non-restrictive appositive

Model: 1. Mr. Jones directs traffic
2. Mr. Jones is a policeman.

Mr. Jones, a policeman, directs traffic.

Examples: Ronny won the race.
Ronny is the fastest runner.

Pro football is on TV today.
Pro football is a popular sport.

Jack lives next door.
Jack is my friend.

Tiger climbed a tree.
Tiger is my cat.

The girl plays the harp.
The girl is Jane's cousin.

The team won a trophy.
The team is the pride of the fourth grade.

The cat likes fish.
The cat is a Siamese.

My friend John tackled me.
My friend John is a football player.

That boy fell off the ladder.
That boy is our best speller.

The airplane is noisy.
The airplane is a jet.

The dog goes home.
The dog is a collie.

Breakdown

Model: Mr. Jones, a policeman, directs traffic.

1. Mr. Jones directs traffic.
2. Mr. Jones is a policeman.

Examples: Ronny, the fastest runner, won the race.

Pro football, a popular sport, is on TV today.

Jack, my friend, lives next door.

Tiger, my cat, climbed a tree.

The girl, Jane's cousin, plays the harp.

The team, the pride of the fourth grade, won a trophy.

The cat, a Siamese, likes fish.

My friend John, a football player, tackled me.

That boy, our best speller, fell off the ladder.

The airplane, a jet, is noisy.

The dog, a collie, goes home.

LESSON 8

Relative clause with non-subject relativized

Model: 1. The sunset was beautiful
2. We saw the sunset.

The sunset that we saw was beautiful.
The sunset we saw was beautiful.

Examples:

The sunset was beautiful.
We saw the sunset.

The fish were delicious.
We caught the fish.

Games are fun.
People play games.

The boy ran away.
You called the boy.

The book is good.
You read the book.

The cat likes fish.
John spies on the cat.

The girl plays the piano.
Henry likes the girl.

The team won a trophy.
I cheered for the team.

The cat has five kittens.
Mr. Jones feeds the cat.

The game was fun.
We played the game.

The problem was hard.
I worked the problem.

The ball went over the fence.
John batted the ball.

The astronauts were brave.
We watched the astronauts on TV.

The movie was funny.
We saw the movie yesterday.

I dreamed about some ghosts.
We read about some ghosts yesterday.

The books fell on the floor.
I put the books in the desk.

The bus stops.
You wait for the bus.

The boy fell off the ladder.
You helped the boy paint.

The car was speeding.
I saw the car.

The ball belongs to Bill.
I hit the ball.

The bike is mine.
He rode on the bike.

Breakdown

Model: The sunset we saw was beautiful.

1. The sunset was beautiful.
2. We saw the sunset.

Examples:

The sunset we saw was beautiful

The fish we caught were delicious.

Games that people play are fun.

The boy you called ran away.

The book you read is good.

The cat John spies on likes fish.

The girl Henry likes plays the piano.

The team I cheered for won a trophy.

The cat Mr. Jones feeds has five kittens.

The game we played was fun.

The problem I worked was hard.

The ball John batted went over the fence.

The astronauts we watched on TV were brave.

The movie we saw yesterday was funny.

I dreamed about someghosts that we read about yesterday.

The books I put in the desk fell on the floor.

The bus you wait for stops.

The boy you helped paint fell off the ladder.

The car which I saw was speeding.

The ball I hit belongs to Bill.

The bike he rode on is mine.

LESSONS 9, 10, 11

1. Children have Christmas stockings.
2. The stockings are red.
   The stockings hang by the fireplace.
3. Santa fills the stockings.
4. Nuts and candy are in the stockings.

1. Red paper wraps the toy.
2. The toy is under the Christmas tree.
3. The toy is new.
4. The toy is a train.
5. The toy is for a boy.

1. Mother bakes cookies
2. Cookies are for Christmas.
3. Cookies have red icing.
4. Cookies are good to eat.
5. Children like cookies.

1. Santa Claus brings presents.
2. Santa Claus rides in a sleigh.
3. Reindeer pull the sleigh.
4. Rudolph is Chief Reindeer.
5. Rudolph has a red nose.

1. The Christmas party is fun.
2. The party is at school
3. We have cookies and punch.
4. Our mothers bring cookies and punch.
5. The teacher brings presents.
6. The presents are for us.

1. I heard a reindeer.
2. The reindeer was walking on the roof
3. The reindeer made noise.
4. The noise was a click-clack sound.

1. I saw Santa Claus.
2. Santa Claus was in the store.
3. The store was big.
4. Children sat in his lap.
5. Children were asking for presents.

1. I made a present.
2. The present was for my mother.
3. I wrapped the present.
4. I wrapped it in gold paper.
5. The gold paper had stars on it.

1. I found popcorn and cranberries.
2. The popcorn and cranberries were on the table.
3. I had fun stringing them.
4. I put them on the Christmas tree.

1. I know a man.
2. The man is round and fat.
3. The man has a sleigh and reindeer.
4. The man comes to our house.
5. Do you know who the man is?

1. We went to the woods.
2. We saw a pine tree.
3. The pine tree was all alone.
4. We took the tree home.
5. The tree was our Christmas tree.

1. Christmas is a holiday.
2. It is my favorite holiday.
3. We have a vacation from school.
4. We have good things to eat.
5. We go to Grandmother's house.

1. I see the tree ornaments.
2. They are bright.
3. They are shiny.
4. They are on the tree.
5. The tree is in the corner of the room.

1. I found my stocking.
2. It was near the fireplace.
3. It had fruit in it.
4. It had a toy in it.

1. Santa Claus drives a sled.
2. It is pulled by reindeer.
3. There are eight of them.
4. Santa calls to them.
5. They all have names.
6. They obey him.

1. The turkey is fat.
2. It is stuffed with dressing.
3. I will not eat too much.
4. I do not want to be sick.
5. That would spoil my holiday.

1. I wish we had some snow.
2. I could build a snowman.
3. I could put buttons for his eyes.
4. I could put a carrot for his nose.
5. I could use a piece of coal for his mouth.
6. I could put a hat on his head.
7. The hat will be old.

1. They saw presents under the tree.
2. There were many presents.
3. Some of the presents were toys.
4. Tim saw a wagon.
5. It was red.
6. It had black wheels.
7. The wheels had white stripes.
8. On the wagon was a tag.
9. The tag was printed in big letters.
10. The letters said "for Tim."

1. Tim's sister saw a dollhouse.
2. It was painted white.
3. It had shutters on the windows.
4. They were green.
5. It had a chimney.
6. The chimney was red.
7. She opened the front door.
8. The front door was tiny.
9. She looked inside the house.
10. She saw furniture.
11. The furniture was little.
12. It was for the dolls.

1. The tree was in the living room.
2. The tree was in the corner.
3. Ornaments were on the tree.
4. The ornaments were shiny.
5. Some ornaments were blue.
6. Some ornaments were red.

1. John received a present.
2. The present was from his aunt.
3. The ant lived in Bug Scuffle.
4. The present was a toy.
5. The toy was a train.
6. The train was blue.
7. The train ran on a track.

1. Tim's father carried in the Christmas tree.
2. He set the tree up on a stand.
3. He put the tree in the front room.
4. The tree was tall.
5. The tree was green.
6. The tree smelled like pine.
7. Tim liked the smell.
8. He liked it because the tree smelled like Christmas.

1. Tim was decorating the Christmas tree.
2. His sister was helping him decorate the tree.
3. They used strings of lights.
4. The lights were tiny.
5. Some of the lights were red.
6. Some of the lights were blue.

1. It was Christmas morning.
2. It was early.
3. Timmy woke up.
4. His brother woke up too.
5. They jumped out of bed.
6. They ran downstairs.

1. Mother baked a cake.
2. I helped her make it.
3. The cake was for Christmas.
4. The cake was chocolate.

1. I bought a gift.
2. The gift is for my friend.
3. His name is Pat.
4. The gift is a train.
5. The train is electric.
6. It has five cars.
7. It has a caboose.

1. I saw a parade
2. The parade was downtown.
3. It was a Christmas parade.
4. We were dismissed from school
5. The parade lasted a long time.

1. The snowman was large
2. The snowman was on the front lawn.
3. A hat was on his head.
4. The hat was black.
5. The hat was silk.

1. His eyes were lumps.
2. The lumps were coal.
3. The coal was black.
4. His nose was a carrot.
5. The carrot was long.
6. The carrot was orange.

1. His mouth was made of lumps.
2. The lumps were coal.
3. The lumps were in a row.

1. The snowman wore a scarf.
2. The scarf was red.
3. The scarf was around his neck.
4. The snowman had a broom.
5. The broom was in his hand.

1. I have a friend.
2. Her name is Betty.
3. She was in a play.
4. She was Mary.
5. Mary is the Mother of Jesus.
6. Jesus was born in a stable.
7. There was no room in the inn.
8. Jesus had a bed.
9. His bed was called a manger.

1. People came to see the baby.
2. There was a bright star.
3. The star led the people to the stable.
4. Three men came.
5. They were wise.
6. They came from the East.
7. They came at night.
8. They came to worship the baby.
9. They brought gifts.
10. One gift was gold.

Lesson 12

Coordination of NP, VP, etc.

Model: Mortimer plays football.
Henry plays football

Mortimer and Henry play football.

Examples:

Mary went to school.
Sally went to school

The book fell out of the window.
The flower pot fell out of the window.

Paul drove Mary to school.
Paul drove Sam to school.

Sue handed Tom some green apples.
She handed Paul some green apples.

Tom won a trophy in the race.
Tom won five dollars in the race.

The hunter wore a hat.
The hunter wore big boots.

The monkey ate the oranges.
The monkey ate the bananas.

Tom hit the ball.
Tom threw down the bat.

Ed washed the car.
Ed mowed the grass.

Mike took a shower.
Mike brushed his teeth.

Roger swept the floor.
Roger dusted the furniture.

John went to town.
John saw a movie.

He spoke slowly.
He spoke clearly.

The girl was pretty.
The girl was smart.

The car was old.
The car was dented.

Jack went to the movie Monday.
Jack went to the movie Wednesday.

Ann mopped the floor.
Ann waxed the floor.

Tommy jumped over the desk.
Tommy jumped out the window.

Lessons 13 and 14

Review of coordination and modifiers of nouns
Multiple solutions combining 3 sentences

John is a football player.
Jim is a football player too.
They are both on the varsity team.

Mary washed the dishes.
She dried the dishes.
She cleaned the house.

The water is clear.
The water is cool.
The water is inviting.

The girl is walking down the street.
The girl is small.
The girl is pretty.

The girl is sitting by the road.
The girl is selling clothes.
They are old.

The dog looks mean.
He is angry.
He is chasing a cat.

The city is big.
Four million people live in the city.
They work in the city.

The boy was small.
The boy was lonely looking.
The man gave the boy a dog.

I like bicycles.
The bicycles are modern.
They have high handlebars.

The tree was gnarled.
The tree grew near the house.
Moss hung on the tree.

Mary has a dog.
The dog is brown and white.
The dog's name is Buttons.

I saw a play.
The play was very funny.
It was in New York.

John lost his cat.
It is white.
The cat's name is Snowpuff.

Mr. Goldsmith bought a necklace.
It was very expensive.
It is for his wife.

Pete found a puppy.
The puppy was cold and wet.
The puppy was very hungry.

The boy caught the ball.
The boy was short.
The boy was fat.

The dragon ran by the window.
The dragon breathed fire.
A mouse chased the dragon.

The castle is dark.
The castle is scary.
The castle is my home.

Tom has a cat.
The cat is mean.
The cat is white.

The man wrote a book.
The book became a best-seller.
The movies bought the book.

The little girl is cute.
She has on a new dress.
The dress is pink.

Mrs. Jones is president of the PTA.
She gave a party Saturday evening.
The party was for the teachers.

The bookstore is large.
It is on Monroe Street.
It is a fine store.

The boy lost his money.
The boy was running.
His father gave him the money.

The principal is very strict.
His name is Mr. Jones.
He often paddles someone.

The boy is mowing the yard.
The boy is tall.
The boy is my brother.

Marcie painted a landscape.
The landscape won a prize.
The prize was a blue ribbon.

The car is rolling down the street.
The car is blue.
It is mine.

Mrs. Malley baked a ham.
She took it to Mrs. Gregor.
Mrs. Gregor has been very ill.

Karky is a blind student.
He is from St. Augustine
He is a music major.

LESSON 15

that + S as object

Model: He said something
His name is John

He said that his name is John.
He said his name is John.

Examples:

He said something
He was ready.

The dog saw something.
There was food in his dish.

Phoebe told me something
Jim likes me.

I believe something
It may rain tomorrow.

I believe something.
I am honest.

He thought something.
He would run.

Jack's father knows something.
Jack can swim.

Judy had learned something.
Her bicycle was missing.

The book stated something.
The cross symbolizes Christianity.

Combining 3 sentences

The plant needs light.
The plant needs water.
The plant grows.

Dandelions are yellow
Dandelions grow like weeds.
Dandelions are a nuisance to gardners.

Motorcycles can be dangerous.
Motorcycles are economical.
Motorcycles are a popular form of transportation.

The lawyer presented evidence.
The evidence proves something.
John is innocent.

It was a dark night.
The spy moved cautiously.
He moved along the wall.

Mary went to the store.
She bought bread.
Her children were hungry.

This work is interesting.
This work is hard.
This work makes me think.

LESSON 16

Extraposition with it

Model: We lost
This disappointed me.

It disappointed me that we lost.

Examples:

John is happy.
This is strange.

He is unkind.
This bothers me.

He is ready.
That surprises me.

The air was hissing out of the tire.
This worried me.

I found two four-leaf clovers in the yard.
This seemed strange.

My father had been sick for a week.
This worried John's mother.

Henry got hit by a car.
This is too bad.

Mary won a prize.
This pleased Mary

He likes to play football.
This is good.

Combining 3 sentences

The bookstore is large.
It is on Monroe Street.
It is a fine store.

The boy lost his money.
The boy was running.
His father gave him the money.

The boy is mowing the yard.
The boy is tall.
The boy is my brother.

Marcie painted a landscape.
The landscape won a prize.
The prize was a blue ribbon.

The car is rolling down the street.
The car is blue.
It is mine.

Mrs. Malley baked a ham.
She took it to Mrs. Gregor.
Mrs. Gregor has been very ill.

Karky is a blind student.
He is from St. Augustine.
He is a music major.

I can't write with this pen.
This pen is old.
It is broken.

The student took a test.
The test was difficult.
The test made him think.

LESSON 17

Multiple solutions combining 4 sentences

John is little.
John is bad.
John lives in town.
John goes to my school.

We took a trip.
The trip was short.
The trip was educational.
The day was hot.

Horses are fat.
Horses are sleek.
Horses eat grass.
Grass has nitrogen in it.

The cat is fat.
The mouse is grey.
The cat was hungry.
The mouse was frightened.

The stranger stood by the car.
The car was yellow and black.
He had a large dog.
It is a German shepherd.

The automobile industry has a spokesman.
The spokesman emphasized something.
Accidents kill people.
Accidents destroy property.
Accidents must stop.

Mary is a third grader.
Jane is a third grader.
Ann is too.
They are all eight years old.

Bill had a bike.
The bike was green.
The bike had a basket.
His friends liked the bike.

Sam ran into class.
He tripped over the books.
The books belonged to a student.
The student was careless.

Carl built a wall.
The wall was around his yard.
The wall kept children out.
The children are noisy.

Jean has a friend.
Her friend is Julie.
Julie is pretty.
She is a model.

We went for a walk.
We found many flowers.
They were many colors.
They were many shapes.

We were on a ship.
We met a student.
He was a native of England,
He was going to Greece.

The lady was old.
She could not write.
She wanted to learn.
She wanted to write a letter.

The boat skimmed the sea.
The sea was still.
The boat was sleek.
The boat was shiny.

The tree fell on the car.
The car was very old.
The car was parked in the driveway.
It was completely destroyed.

I found a seashell.
I was at the beach.
The shell is large.
The shell is pretty.

I write letters.
The letters are to my friend.
I write them twice a week.
They are long letters.

The bridge is old.
The bridge crosses the river.
The bridge is made of wood.
The river is muddy.

Our house is near the baseball park.
It has three bay windows.
They face the baseball park.
Our house looks like a Cape Cod cottage.

The girl read a book
The book was The Scarlet Letter.
The author is Nathanial Hawthorne.
The girl enjoyed the book.

The flower blooms.
The rose is a flower.
The rose has thorns.
The rose smells nice.

LESSON 18

Below are some statements. These can be used for several exercises on different kinds of questions.

1. Non-embedded Yes-No questions.
   (a) Put the modal before the subject.
   (b) Put the BE before the subject.
   (c) Put the HAVE before the subject.
   (d) When there is no modal, BE, or HAVE, put a DO before the subject.

Model: Stimulus: The cat will play the flute.
Response: Will the cat play the flute?

2. Yes-No questions embedded as direct questions in He asked, " . . . ?" Notice that we embed unchanged the (a), (b), (c), (d) above.

Model: Stimulus: The cat will play the flute.
Response: He asked, "Will the cat play the flute?"

3. Yes-No questions embedded as indirect questions in He asked whether . . . , He asked if . . . Embed the statement, not the Yes-No question. Since asked is past tense, the modal or BE or HAVE will be past tense unless the verb is continuous.

Model: Stimulus: The cat will play the flute.
Response: He asked (if, whether) the cat would play the flute.

Modals	BE
The lion will eat the trainer.	John is wearing mittens on his feet.
The car will win the race.	The bug is hairy.
John can have the book now.	The bug is crawling down my back.
The bee should stop stinging me.	The kite is caught in the tree.
That motorcycle can beat a car.	Mary is your best friend.

HAVE

Jerry has fallen in the puddle.

They have seen a whale.

The giraffe has licked your hand.

Jack has finished the work.

Terry has come home.

Supply DO

John likes to skate.

Snoopy skates on the bird bath.

Charlie Brown plays outfielder.

Luch acts crabby.

The tree eats kites.

The giant grows vegetables.

Men fly to the moon.

Men walk on the moon.

Rockets fly to Mars.

Dogs chase cats.

Cats chase rats.

Jane jumps rope.

Jane plays hopscotch.

Joe hit the basket.

Joe scored two points.

Joe saved the game.

The boys built a treehouse.

The boys built a fort.

LESSON 19 and 20

The statements below contain a word with SOME.

1. Change the statements to questions, replacing the SOME word with a WH-word like who, what, which, where, when.

   Model: Stimulus: Someone will eat the trainer.
   Response: Who will eat the trainer?

2. Embed the questions as direct questions in He asked . . .

   Model: Stimulus: Someone will eat the trainer.
   Response: He asked, "Who will eat the trainer?"

3. Embed the questions as indirect questions in He asked . . . (Notice that the tense of the modal or verb may need to be changed, since asked is past.)

   Model: Stimulus: Someone will eat the trainer.
   Response: He asked who would eat the trainer.

Examples:

Someone will eat the trainer.

Someone can have the book now.

Someone is wearing mittens on his feet.

Something is crawling down my back.

Something is in the tree.

Someone is your best friend.

Someone has finished the work

Someone skates on the bird bath.

Someone acts crabby.

Something eats kites.

He saw something behind the tree.

He heard something in the closet.

The monkey threw something to Mary.

The monkey threw a banana to someone.

Someone threw a banana to Mary.

The teacher saw someone stick gum under the desk.

John plays football with someone after school.

The painter painted someone red.

The painter painted the tree some color.

The teacher kept somebody after school.

The team chose someone to be their captain.

The witch rode someone on her broom.

The lion will eat someone.

John is wearing something on his feet.

The tree eats something.

The giant grows something.

Dogs chase something.

Cats chase something.

Jane plays something.

The boys built something.

John likes someone.

John likes something.

The pet snake hid somewhere.

The firetruck rushed to some place.

The bug is crawling some place.

The kite is caught some place.

Snoopy skates somewhere.

Rockets fly somewhere.

John goes some place.

He saw a man from Mars some place.

LESSON 21

Adverb clauses

Put on the board these words: as, before, after, until, if, unless, because. (Notice that when is not listed.) Read the following pairs of sentences asking the students to use one of those seven words in combining the sentences. I see no reason why the order of the two sentences should not be reversed. In fact you might like the students to see that the order of the sentences can be reversed.

Models: The game started.
My friend came in.

As the game started my friend came in.
Before the game started my friend came in.
After the game started my friend came in.

We played hard.
It got dark.

We played hard until it got dark.

You study hard.
You may get an A.

If you study hard you may get an A.

You study hard.
You won't get an A.

You won't get an A unless you study hard.

Examples:

I wash the dishes.
I will call you.

I went to the store.
I saw Jack

We went to the cafeteria.
We were hungry.

I would like her better.
She didn't giggle so much.

You must dress warmly.
You don't want to take cold.

Debbie reached for the berries.
She saw a mother bear.

Johnny swallowed a frog.
Johnny turned green.

We left the room.
The bell rang.

We all read.
The bell rang.

The sun comes out.
The clothes will dry.

We had a party.
It was the last day of school.

The day was ruined.
It rained.

He went home.
He felt sick.

We were walking home.
We saw a snake.

I watched TV.
It was bedtime.

He chews gum.
He thinks it cleans his teeth.

We won't win.
We are very lucky.

She walked slowly.
She wanted the new boy to see her.

I practice good manners.
It makes people feel good.

I played hard.
I got tired.

The elephant snores.
Put a clothespin on his trunk.

LESSON 22

Multiple solutions combining 3 and more sentences.

The elephant trips on the skip rope.
The elephant falls.
Debbie will catch him.

The elephant slides into second base.
We will need a new second base.
We will need a new second baseman.

The elephant climbed the flagpole.
The elephant had a green straw hat.
A hamster was chasing the elephant.

He wears boots.
It is raining.
The sidewalks are wet.

The rat bites the cheese.
The cat bites the rat.
The dog bites the cat.

He wondered about something.
The gorilla uses hair spray.
The gorilla takes a shower.

I went home.
School wasn't out.
I had a reason.
My mother was ill.

The water is low.
The tide is out.
We find shells.
It is easy.

It is dark.
It is stormy.
John likes to listen.
The rain patters on the roof.

It is summer.
The giant grows vegetables.
The giant is jolly.
The giant is green.
The vegetables are green.

LESSON 23

A 26 sentence story

This exercise may take more than fifteen or twenty minutes.

I'd suggest that the teacher put the 26 sentences on the board and then have the students combine sentences as best they can. The teacher can accept combinations and write them to the right of the original sentences. Perhaps, then, the students can combine those new sentences still further.

Yesterday Frank took a walk.
Jack went with him.
They went down the road.
They climbed under a fence.
They followed a path.
The path went into the woods.
The path ended at a pond.
The boys went to the edge of the water.
They saw an elf.
He was sitting on a leaf.
He was small.
He was dressed in green.
He had big ears.
His ears waved in the breeze.
He wore tiny shoes.
The shoes were red.
They had bells on them.
Jack wanted to pick the elf up.
He stretched out his hand.
He moved very slowly.
He almost touched the elf.
The elf jumped.
He jumped through the air.
He wiggled his big ears.
He laughed at the boys.
He shouted, "Hee, hee, hee. You'll never catch me!"

LESSONS 24, 25, 26

The elephant sat on the apple pie.
The elephant wore a red necktie.

The cat chased the dog.
The dog was candy.
The cat was marshmallow.

The elephant rode a motorcycle.
The elephant wore pink tights.
The elephant wore a cowboy hat.

Jennifer has a whale.
The whale is in her bathtub.

The railroad runs through the bedroom.
The railroad wakes up grandma.

The lion chased the clowns.
The clowns went through the police station.
The lion roared.

I have a dress.
The dress is white.
The dress is satin.
It has lace.
I got it for Easter.

Chicago is cold in the wintertime.
You want to live there.
You need something.
You must have plenty of clothes.
The clothes must be heavy.

I saw a man.
He was blind.
He was crossing the street.
He had a white cane.
He did not wear shades.

New Orleans has streetcars.
The streetcars are old.
The streetcars cost a dime to ride.

We rode a train.
The train was for children.
The train used coal for fuel.
The train used wood for fuel.
It made lots of smoke.

We visited a tower.
The tower was at the top of a building.
The building was tall.

My brother has a pet.
The pet is a mina bird.
My brother is teaching him.
He will talk.

The plant needs light.
The plant needs water.
The plant grows.

Dandelions are a nuisance to gardeners.
Dandelions are yellow.
Dandelions grow like weeds.

Motorcycles are cheap to run.
Motorcycles are popular.
Motorcycles are dangerous to ride.
Motorcycles don't protect the rider.

Annie worked all morning.
She mopped the floor.
She waxed the floor.

The astronauts are circling the moon.
The astronauts are excited.
The astronauts are in a spaceship.
The spaceship is silver.
The moon is far away.

The valley was broad.
The mountain was across the valley.
The mountain was covered with haze.
The haze was purple.

The man is standing in the shadow.
He is little.
He wears a space helmet.
He is from Mars.
He came in a spaceship.
He landed in a field.
The field is hidden.
He landed at night.

The American flag has 50 stars.
The stars are white.
The stars are in a blue field.
The flag has thirteen stripes.
Some stripes are red.
Some are white.
The stripes represent the thirteen colonies.

I was waiting for Dad.
I saw Mr. Johnson.
He is our neighbor.
He looked angry.
He looked ashamed.
He was going in to traffic court.

I sat up in bed one night.
It was raining.
I thought something.
I heard strange noises outside.
I wondered something.
What could be making that noise?
I ran to the window.
I looked out.
Two eyes looked back at me.
The two eyes were yellow.
The two eyes were glowing.
Now it was clear.
A monster stood outside my window.
My knees were shaking.
Then I heard a meow.
The meow was pitiful.
The monster was my cat.
My cat's name is Tiger.
My cat was poor.
My cat was wet.
I opened the door.
Tiger ran inside.
Tiger jumped in my bed.

LESSONS 27, 28, 29

Something nice happens.
It is after fourth grade.
It is before fifth grade.
It is summer vacation.

Our neighbor has a dog.
The dog is big.
The dog is playful.
Sometimes he takes my shoes.
Then I get a new pair.

I have a friend.
She likes to go to parties.
She doesn't like to study.
I have decided something.
We will play a little trick on her.
We will invite her to a party.
The party will be at my house.
We will do our homework instead.

The weather is wet.
It is raining.
The bird puts on his raincoat.
The bird puts on his boots.
The bird puts up his umbrella.
The rain stops.

I met an old woman.
She was walking on the heath.
Her clothes were shabby.
She was not rich.
She hobbled on a stick.
I knew something.
She had to be a witch.

My brother has some fish.
He keeps them in his room.
They live in an aquarium.
He feeds them every day.
He feeds them when he gets home from school.

I like the "Lucy Show."
Lucy is funny.
Lucy has a boy and a girl.
They play on her show too.
We see the show on Monday night.

Boys play football.
Boys need to be strong.
They have to exercise every day.
They must be alert.
They practice long hours.
Other children go home early.

Alice was listening to a story.
She was not having a good time.
There were no pictures in the book.
She fell asleep.
She dreamed a dream.
She saw a rabbit.
The rabbit was white.
He was in a hurry.
She followed him.

Today is Jay's birthday.
He got some presents for his birthday.
One of the presents was a bicycle.
It is blue.
It is shiny.
It has silver spokes.
Jay rode his bicycle all day.
He went very fast.
He thought he went as fast as the wind.
He thought he went faster than the birds.

I have a puppy.
He is brown.
He has white feet.
He follows me every morning.
Every morning I go to school.
My puppy likes to run fast.
He likes to play.
Sometimes he plays in the fishpond.
Today he jumped in the water.
He barked.
He splashed.
He swam in circles.
Then he got out.
He was wet all over.
He ran to me.
He shook very hard.
He shook the water off.
The water got on my clothes.
It got me soaking wet.
My brother laughed.

Tommy wanted to go fishing.
First he got his fishing pole.
It was cane.
It was long.
He tied a line on the pole.
He tied a hook on the line.
He put a cork on the line.
Then he got a shovel.
He began to dig.
He was digging for worms.
The worms were for bait.
Tommy fished all day long.
He didn't catch a single fish.
But he did catch something.
He caught two tin cans.
He also caught an old hat.

I planted some seeds.
The seeds were watermelon.
The seeds began to sprout.
Soon the vines spread.
The vines spread all overy my garden.
I looked out of my window.
I looked out one morning.
The vines were everywhere.
The vines were green.
The vines were leafy.
I picked all the watermelons.
The watermelons were on the vine.
I was rich.
I bought a new house.
The new house wasn't covered with vines.

I had a friend.
My friend's name was Tomboy.
Tomboy built a kite.
The kite was wonderful.
The kite looked like a bird.
The bird was huge.
The bird was golden.
Tomboy ran with his kite.
He ran across a field.
The kite followed him.
The kite danced in the wind.
Then it began to fly.
Tomboy began to fly too.
Above the trees went the kite.
Above the trees went Tomboy.
They sailed through a cloud.
The cloud was white.
The cloud was soft.
They swooped down.
They swooped through the trees.
They landed in the field.
Tomboy was happy.
Tomboy was tired.

We like to go to the zoo.
We go to the zoo every Saturday.
We always go first to the monkey house.
The monkey house is our favorite place.
The monkeys are tiny.
They have brown fur.
Their fur is soft.
They have little hands.
The monkeys have long tails.
Monkeys like to play.
They play in trees.
They run up the trunk.
They climb on the limbs.
Sometimes they hang by their tails.
Once we took the monkeys a present.
We took them a banana.
One monkey grabbed the banana.
He ran up the tree.
He ate the banana.
He ate it very fast.
Then he gave us a present.
He gave us the banana peel.
It was empty.

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