DOCUMENT RESUME

ED 067 935 FL 003 447

TITLE A Pilot Study of Pupils' Learning of Grammar and Usage through a Programmed Textbook.

INSTITUTION Toronto Board of Education (Ontario). Research Dept.

NOTE 14p.

EDRS PRICE MF-$0.65 HC-$3.29

DESCRIPTORS Basic Skills; Behavioral Objectives; Composition Skills (Literary); *Educational Experiments; Elementary Schools; *English; *Grade 8; *Grammar; Language Instruction; Language Research; Language Tests; Language Usage; *Programed Instruction

ABSTRACT

The purpose of the pilot reported here is to compare pupil's learning of English grammar and usage through a programed course, "English 2600: A Scientific Programme in Grammar and Usage," and a traditional method of grammar instruction used in an eighth-grade English class. Procedures used in the experiment are described. Statistical results are tabulated and demonstrate a significantly higher achievement rate for the experimental group. (RL)

#6 A Pilot Study of Pupil's Learning of Grammar and Usage Through a Programmed Textbook Out-of-Print

A PILOT STUDY OF PUPILS' LEARNING

OF GRAMMAR AND USAGE

THROUGH A PROGRAMMED TEXTBOOK

RESEARCH SERVICE

issued by the

Research Department

THE BOARD OF EDUCATION FOR THE CITY OF TORONTO

A PILOT PROJECT OF PUPILS' LEARNING OF GRAMMAR AND USAGE THROUGH A PROGRAMMED TEXTBOOK

Introduction

The purpose of the pilot study reported here was to examine pupils' learning of grammar and usage through English 2600[1]. as contrasted with traditional methods of grammar instruction.

English 2600 is described as a scientific programme in grammar and usage. The textbook incorporates the following design:

(a) material to be learned is divided into small, manageable steps;

(b) each step is interrelated with preceding and following steps;

(c) the steps are presented in so-called 'frames'; the student is obliged to give an immediate response to each frame before proceeding to the next frame;

(d) the response of the student is verified or falsified after he has given it and before he proceeds to the next question;

(e) the textbook is composed of eleven units: simple sentence, modifiers, building better sentences, understanding the sentence unit, correct use of verbs, agreement of subject and verb, choosing the right modifier, correct use of pronouns, capitalization, use of commas, and apostrophes and quotation marks.

As an example of traditional grammar curriculum, the 1960-61 Grade 8 programme of instruction listed first, a review of Grade 7 grammar, secondly, a study of sentences (as units of thought, structure, clausal analysis, detailed analysis), thirdly, a study of parts of speech (noun, pronoun, adjective, verb, adverb, preposition and conjunction), and finally, a study of corrective English, i.e. constant correction of grammatical mis-

---

1. Blumenthal, J. C., English 2600. A Scientific Programme in Grammar and Usage. Harcourt, Brace & Co., 1960.

takes. The material taught in both grammar programmes was by and large quite similar.

Procedure

Matched pupils taking part in the study were selected from two Grade 8 Toronto Senior Public Schools. Twenty subjects made up the sample in each group. There were no repeaters or under-aged pupils in the experimental or the comparison groups. The experimental subjects were also matched on sex and I.Q. (see Table 1).

TABLE 1

EXPERIMENTAL SUBJECTS MATCHED ON SEX AND I.Q.

Groups	Sample						
	N	Sex		I.Q.*			
		Boy	Girl	A	B	C	Total**
Experimental	20	10	10	5	7	6	18
Comparison	20	11	9	5	7	6	18

* A 'C' I.Q. is equivalent to the range between 90-110; 'B' is 111-120; and 'A' is 121 and up.

** The I.Q. scores of two pupils in the experimental group were somewhat questionable according to range. The pupils were matched as closely as possible with two pupils with similar I.Q. records in the comparison group.

Each class received three periods of instruction per week in grammar. Two periods were forty minutes long and one period was twenty minutes long. The instruction began immediately after the Christmas holidays and ended with the end of the academic year in June.

Before the instruction started at the beginning of the year and after the instruction was completed at the end of the year, the students

were given two achievement tests, CEAT 2 and 3.[2.]

The students in both the experimental and in the comparison group were asked to write test compositions which served as integral parts of the pilot projects. Both groups wrote the compositions before the programme started, and at its end. The title of the compositions in both groups was 'A Close Shave'. The criteria used for scoring the compositions are given in the following two tables:

TABLE 2

CRITERION 1 EMPLOYED FOR SCORING MECHANICS OF EXPRESSION, WITH EXAMPLES OF SCORING

Criteria	Scoring	Example	Actual Score
Punctuation	number of mistakes made	"I thought I knew my history well enough, so I went out."	1
Capitalization	number of mistakes made	".... voices coming out from the Living room."	1
Agreement of Noun and Verb	number of mistakes made	".... there was only 58 seconds left to play."	1
Tense	number of mistakes made	"I grabed on to a root that hold, ..."	2
Spelling	number of mistakes made	".... I was climing a steep clift."	2

2. Canadian English Achievement Test, Part II, Mechanics of Expression (CEAT 2). Canadian English Achievement Test, Part III, Effectiveness of Expression (CEAT 3). These tests were part of a battery developed by the Department of Educational Research, Ontario College of Education and used in the Carnegie Study of Identification and Utilization of Talent in High School and College.

TABLE 3

CRITERION 2 EMPLOYED FOR SCORING EFFECTIVENESS OF EXPRESSION, WITH EXAMPLES OF SCORING

Criteria	Scoring	Example	Actual Score
Clarity	1 - 5*	"James Mistletoe entered a rugged down, mysterious mansion. He has come here to get his basebell which was previous hit into the house."	1
Variety	1 - 5	"Should I do it or, more to the point, can I do it? This is the quandry in which I find myself at the moment. Now I ask you from one red blooded Canadian to one blue blooded Canadian."	5
Choice of Words	1 - 5	"I had a hard time keeping my agony, or is that too strong a word, to myself. About the fifth try I got the hang of it and the rest of the shave was fine. I felt happy. And so my first shave was a very close shave in more than one way."	5
Paragraphing and Sentence Division	1 - 5	scored according to the appropriateness of paragraphs and according to the length of sentences.	
Order of Sentences	1 - 5	scored according to whether the sentential sequence does or does not follow a logical sequence.	
Order of Words	1 - 5	"I started up again, but this time I made it. I climbed up and just then the grown under me gave way."	1

* 1 - minimum score; 5 - maximum score.

Results

1. Comparisons of Achievement on Standardized Tests of the Experimental and Comparison Groups.

TABLE 4

t-TEST SCORES OF EXPERIMENTAL AND COMPARISON GROUPS

AT INITIAL TESTING ON CEAT 2 AND 3

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Experimental	20	65.50	7.15	.346	N.S.D.	20	19.55	2.95	.482	N.S.D.
Comparison	20	58.35				20	16.60			

On the two tests no significant differences were found between the two groups.

TABLE 5

t-TEST SCORES OF EXPERIMENTAL AND COMPARISON GROUPS

AT FINAL TESTING ON CEAT 2 AND 3

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Experimental	20	99.25	15.55	2.19	$<.05$	20	28.05	7.15	3.88	$<.01$
Comparison	20	83.70				20	20.90			

On the two tests in both cases there were significant differences in favour of the experimental group.

TABLE 6

t-TEST SCORES OF EXPERIMENTAL AND COMPARISON GROUPS ON NET INCREASE IN PERFORMANCE FROM THE INITIAL TO THE FINAL TESTING ON CEAT 2 AND 3

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Experimental	20	33.75	8.40	1.75	$<.05$	20	8.50	4.20	2.41	$<.01$
Comparison	20	25.35				20	4.30			

On the two tests in both cases there were significant differences in favour of the experimental group.

2. Analysis of the Performance of the Experimental Group.

Experimental pupils completed an average of 2561 frames during the experimental period. Pupils worked on the average of thirty minutes a period and completed an average of twenty-nine frames during this time.

TABLE 7

AVERAGE NUMBER OF FRAMES COMPLETED BY THREE INTELLIGENCE GROUPS DURING ONE PERIOD AND DURING ONE MINUTE

	Mean number of frames completed per minute	Mean number of frames completed per period
1. I.Q. Group 'A'	3.56	101.36
2. I.Q. Group 'B'	2.68	80.41
3. I.Q. Group 'C'	2.86	85.74

This indicates that the highest overall performance was given by intelligence group #1 whose members had 'A' I.Q.'s. The following group was intelligence group #3 whose members had 'C' I.Q.'s. The

lowest performance was given by intelligence group #2 whose members had 'B' I.Q.'s.

Periods required for the experimental group to complete the programme were divided into three sections. The first section ranged from the first to the tenth period, the second section from the eleventh to the twentieth period and the third section from the twenty-first period to the end of the academic year.

TABLE 8

AVERAGE NUMBER OF FRAMES COMPLETED IN ONE MINUTE BY INTELLIGENCE GROUPS ON DIFFERENT SECTIONS OF THE STUDYING PERIODS

	Section 1	Section 2	Section 3
1. I.Q. Group 'A'	3.57	3.51	3.71
2. I.Q. Group 'B'	2.51	2.63	2.83
3. I.Q. Group 'C'	2.65	2.71	2.92

This indicates that the student's performance increased slightly from the first section to the last in the majority of cases with one slight reversal in the cases of I.Q. Group 'A'.

TABLE 9

t-TEST SCORES ON ACHIEVEMENT TESTS OF THE I.Q. GROUPS BEFORE THE PROGRAMME

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Group A	5	65.20	4.66	.391	N.S.D.	5	21.40	1.16	.414	N.S.D.
Group B	7	69.86				7	20.14			
Group A	5	65.20	6.87	.615	N.S.D.	5	21.40	5.57	1.47	N.S.D.
Group C	6	58.33				6	15.83			
Group B	7	69.86	11.53	1.32	N.S.D.	7	20.14	4.31	1.74	N.S.D.
Group C	6	58.33				6	15.83			

On the basis of the two achievement tests, there was no significant difference between the performances of the intelligence groups.

TABLE 10

t-TEST SCORES OF ACHIEVEMENT TESTS OF THE I.Q. GROUPS AFTER THE PROGRAMME

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Group A	5	106.00	6.00	1.90	N.S.D.	5	31.20	2.20	.846	N.S.D.
Group B	7	100.00				7	29.00			
Group A	5	106.00	11.67	5.35	$<.01$	5	31.20	6.53	3.02	$<.02$
Group C	6	94.33				6	24.67			
Group B	7	100.00	5.67	1.97	N.S.D.	7	29.00	4.33	.746	N.S.D.
Group C	6	94.33				6	24.67			

On the basis of the two achievement tests, there was a significant difference found between I.Q. groups 'A' and 'C' and no significant difference between the other groups.

TABLE 11

t-TEST SCORES OF ACHIEVEMENT TESTS OF THE NET INCREASE IN THE PERFORMANCES OF I. Q. GROUPS FROM THE INITIAL TO THE FINAL TESTING

Groups	CEAT 2					CEAT 3				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
Group A	5	38.60	8.46	.693	N.S.D.	5	9.00	.14	.043	N.S.D.
Group B	7	30.14				7	8.86			
Group A	5	38.60	3.50	.328	N.S.D.	5	9.00	.17	.063	N.S.D.
Group C	6	35.00				6	8.83			
Group B	7	30.14	4.86	.639	N.S.D.	7	8.86	.03	.04	N.S.D.
Group C	6	35.00				6	8.83			

On the basis of the two achievement tests, there was no significant difference between the net increase in the performance of the I.Q. groups.

3. Comparison of the Compositions Written by Experimental and Comparison Groups.

TABLE 12

t-TEST SCORES OF COMPOSITIONS WRITTEN BY EXPERIMENTAL AND COMPARISON GROUPS BEFORE AND AFTER THE STUDY (CRITERION 1)

Composition	EXPERIMENTAL GROUP					COMPARISON GROUP				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
1st Composition	12	7.59	1.26	1.51	N.S.D.	12	6.33	0	0	N.S.D.
2nd Composition	12	6.33				12	6.33			

On Criterion 1, there was no significant difference between the compositions written before and after the programme.

TABLE 13

t-TEST SCORES COMPARING THE COMPOSITIONS OF EXPERIMENTAL AND COMPARISON GROUPS BEFORE AND AFTER THE STUDY AND THE NET INCREASE (CRITERION 1)

Groups	BEFORE INSTRUCTION					AFTER INSTRUCTION					NET INCREASE				
	N	M	MD	t	level of signi-ficance	N	M	MD	t	level of signi-ficance	N	M	MD	t	level of signi-ficance
Experimental	12	7.59	1.26	.715	N.S.D.	12	5.33	1.00	.578	N.S.D.	12	2.25	2.25	.950	N.S.D.
Comparison	12	6.33				12	6.33				12	0			

On Criterion 1, there was no significant difference between the compositions of the two groups, nor was there a significant difference between the net increase in the performance of the two groups.

TABLE 14

t-TEST SCORES OF COMPOSITIONS WRITTEN BY EXPERIMENTAL AND COMPARISON GROUPS BEFORE AND AFTER THE STUDY (CRITERION 2)

Composition	EXPERIMENTAL GROUP					COMPARISON GROUP				
	N	M	MD	t	level of significance	N	M	MD	t	level of significance
1st Composition	12	18.25	3.25	2.01	< .05	12	18.75	.33	2.10	N.S.D.
2nd Composition	12	21.50				12	19.08			

On Criterion 2, there was a significant difference found between the first and second compositions of the experimental group and no difference between the compositions of the comparison group.

TABLE 15

t-TEST SCORES COMPARING THE COMPOSITIONS OF EXPERIMENTAL AND COMPARISON GROUPS BEFORE AND AFTER THE PROGRAMME AND THE NET INCREASE (CRITERION 2)

Groups	BEFORE INSTRUCTION					AFTER INSTRUCTION					NET INCREASE				
	N	M	MD	t	level of signi-ficance	N	M	MD	t	level of signi-ficance	N	M	MD	t	level of signi-ficance
Experimental	12	18.25	.50	.318	N.S.D.	12	21.50	2.42	1.49	N.S.D.	12	.33	2.92	1.59	N.S.D.
Comparison	12	18.75				12	19.08				12	3.25			

On Criterion 2, there was no significant difference between the compositions of the two groups, nor was there a significant difference between the net increase in the performance of the two groups.

Discussion

Any interpretation of the results must take into consideration two general factors, affecting the measured performance. These are the effects of practice and novelty on the students. By the effect of practice we mean that the improvement in the performances of the experimental and comparison groups on objective tests may have been due to the fact that the same tests were administered twice, i.e. at the beginning and at the end of the programme. This, of course, would not account for the significant difference in the net increase of the performance in favour of the experimental group; on the other hand we have no information available concerning performances on objective tests in the absence of the practice effect.

By the effect of novelty we mean the possibility that the performance of the experimental group was superior to that of the comparison group not because English 2600 possesses any inherently superior instruction techniques, but because it is a new way of learning grammar. In addition to this, the improved performance of the experimental group may be attributed to the realization of students that they were receiving special attention.

Bearing these qualifications in mind, the following conclusions can be presented:

(a) grammar instruction with English 2600 appeared to be responsible for the improved performance of the experimental group on the achievement tests;

(b) there were no significant differences found among the performances of different I.Q. groups. Thus, English 2600 is apparently neither more nor less beneficial for students with widely differing I.Q.'s;

(c) on the basis of rating of compositions, no significant decrease was found in the number of grammatical mistakes per words from the beginning of the programme to the end.

It seems certain that performance on standardized tests improved through the use of English 2600 from the beginning of the programme to its end. Yet, no comparable improvement was found in compositions written before and after the programme, i.e. the number of grammatical mistakes and errors of expression remained unchanged.

If we consider that teaching grammar is not an end in itself but a means to more effective expression, then the above deficiency of English 2600 is a serious one, indeed.

The most promising aspect of English 2600 at present is the fact that it applies the findings of experimental psychology in a setting which is devoid of laboratory conditions and of related artificiality. The outcomes of the present study are in accord with findings on other programmed material. But the important question which is raised about the improvement of scores arising from programmed instruction is: for what purpose? The pilot project on English 2600 again raises the question of why grammar and usage should be taught in the first place since there is so little effect on pupils' writing.