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### An Experimental Study Utilizing the Treanor Method with the Left – Over Child

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## AN EXPERIMENTAL STUDY UTILIZING THE TREANOR METHOD WITH THE LEFT - OVER CHILD



A Thesis

Presented to

the Graduate Faculty

Central Washington State College

In Partial Fulfillment
of the Requirements for the Degree
Masters of Science

in

Speech Pathology

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Sister Mary Michele MacMillan, O. P. June, 1968

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# APPROVED FOR THE GRADUATE FACULTY Walter L. LaDue, COMMITTEE CHAIRMAN Durward A. Porter Hazel B. Dunnington

### TABLE OF CONTENTS

| CHAPTER                              | PAGE |
|--------------------------------------|------|
| I INTRODUCTION                       | 1    |
| Statement of the problem             | 2    |
| Importance of the study              | 2    |
| Definitions of terms                 | 4    |
| Left - over child                    | 4    |
| The Treanor Method                   | 5    |
| II REVIEW OF THE LITERATURE          | 7    |
| III PROCEDURE                        | 14   |
| Selection of groups                  | 14   |
| Teaching by the Treanor Method       | 16   |
| IV SUMMARY AND RESULTS               | 21   |
| Summary                              | 21   |
| Results                              | 22   |
| APPENDIX A SELECTION OF THE JUDGES   | 24   |
| APPENDIX B STATISTICS                |      |
| Creative Writing Scores              | 26   |
| National Diocesan Tests              | 27   |
| Scientific Research Associates Tests | 28   |
| Weekly Reader Scores                 | 29   |
| BIBLIOGRAPHY                         | 30   |

### CHAPTER I

### INTRODUCTION

When the gifted and the mentally retarded children have been accepted into their special schools and the "normal" student is completing his work in a regular classroom, we still have, in that classroom what Dr. Bateman (1963) so appropriately refers to as "the left - over child."

The classroom teacher is faced daily with the left - over child, the child whose I.Q. is between 90 and 110 but whose achievement in language is below what the I.Q. predicts what he can do and what the teacher realizes is poor in contrast to his capabilities in other areas. She sees the peaks and valleys of what he can and cannot achieve. She teaches at times to his weaknesses to remedy them, and she teaches to his strengths in order to let him know success. She does, however, see the futility of his struggles as he attempts to conquer each subject when his language of expression is preventing him from doing so.

The study was not concerned with the etiology of the problem, but simply recognized that the problem does exist and attempted to alleviate it, at least in part, through the use of the Treanor Method.

### Statement of the Problem

It was the purpose of the study (1) to compare the ability in expressive language of a group of Fifth, Sixth and Seventh grade Students before introducing the Treanor Method and after their working with it for a nine week period, and (2) to measure reading vocabulary in an effort to determine the amount of gain, if any, through the use of this method. The main question the study attempted to answer was: Will there be a change in creative writing ability after an intensive training program using the Treanor techniques with a group of children with language difficulties?

### Importance of the Study

"If there were no language, neither right nor wrong would be known; neither true nor false, neither the pleasant nor the unpleasant.

Language makes us understand all this." (Hinduism)

Man's awareness of the importance of language in communication can be traced to Biblical times and times prior.

Interest in language disorders were discussed by Aristotle, Hippocrates, Demosthenes and other famous philosophers (Luchsinger, 1965). Study after study has been realized in an effort to facilitate the child's ability to communicate. When a child cannot participate profitably in classroom learning, surely a means must be sought to bring him up to

able of producing (Kottmeyer, 1959). The study intended to offer the child help to reach his goals in his ability to express himself coherently and logically.

### DEFINITION OF TERMS

LEFT - OVER CHILD. Dr. Bateman (1963) referred to the left - over child as the child who does not fit the category of mentally retarded but who, nonetheless is not producing, in a regular classroom situation, that which he, the "normal child is capable of producing.

Goodfellow (1963) spoke of the "marginal" student as that segment of our school population that does not fall into any of the categories of exceptional children either in mental retardation or behavioral areas"...but who nonetheless, have language problems so severe as to be detrimental in the actual promotion from grade to grade. We could refer to these as "marginally handicapped" (p.3).

Lewis, Strauss and Lehtinen (1960) wrote that no other period in history has produced so much literature about the child as the middle of the twentieth century. His growth and behavior have been charted in minute detail. He has been measured physically, emotionally and intellectually. Insofar as he follows the chartered pattern of development, his growth and much of his behavior are predictable. Within certain age limits he will walk, talk and ride a bicycle and go to school. Beyond this, however, is another child who deviates from this normal profile, whose development

appears to be erratic and whose total behavior tends to be nonconforming and unpredictable. He is introduced as "the other child."

For the purpose of this study, the left - over child is recognized as that student whose I.Q. is in the "average" range, whose behavioral actions and attitudes are such that he remains in the regular classroom, but whose output in language ability keeps him behind his actual grade level.

### THE TREANOR METHOD

The Treanor method is a series of English composition books for Grades Three through Eight by John H. Treanor (1964).

The series contains these features:

- 1. a presentation of English composition, both oral and written, as a basic subject,
- 2. a logical development and a complete integration of all factors of the subject,
- 3. a precise study, according to grade level, of all details within the various factors,
- 4. a formal and complete study of grammar, with all items made immediately functional,
- 5. an emphasis on oral and written expression rather than on the mechanics of language,
- 6. at all levels, a challenging vocabulary.

- 7. an abundance of exercises for drill and review, and
- 8. a provision for individual differences.

This method is comprised of two areas:

In the <u>study</u> of composition the method includes ideas, words, phrases, sentences, paragraphs, grammar, mechanics and usage. In the <u>practice</u> of composition the method includes the kinds, i.e. narrative, descriptive and expository.

The above points were adapted to the whole of the reading program in dealing with the left - over child.

### CHAPTER II

### REVIEW OF THE LITERATURE

Reading has become increasingly important in our culture and we are deeply concerned that each child develop his expressive language skills to the point that it affords him the greatest possible satisfaction and service. Skills and knowledge are necessary to children and a large part of our tasks as teachers is to find ways to help develop the expressive skills they need and to make the knowledge they need an integral part of themselves (Strickland, 1953).

How does a child think? How does he speak? What are the characteristics of his judgment and of his reasoning? "Thoughts in a child are like a network of tangled threads which may break at any moment if one tries to disentangle them." (Piaget, p. 221, 1952). Each child is a school unto himself. We must realize that the child's problem will have to be reached through and because of him.. To teach, we must take into account his overall stability: mental, physical and emotional. If he is a student who can think only in terms of the concrete and quite easily fails in dealing with the abstract concept then he must be reached through the concrete. Again, he may not only need visual cues but auditory and kinesthetic cues in order to speak, write and read.

Claims for success in remedial reading are made for highly directive methods. Some programs rely heavily on reading games and special devices while others think in terms of interrelationship. But whatever, one must be concerned with the necessary break-through to overcome the defeatist attitude. Emphasis must be placed on infusing the teaching situation with new hope (Kirk, 1960).

In the early development of language the various facets of language expression were tightly interwoven in the overall fabric of communication. Later, we became more specialized and a time range was set aside for each individualized subject; reading, writing, speaking, spelling and penmanship proceeded in its own water tight compartment. But now, once again the pendulum swings and each subject is being taught in relationship to the other (Robinson, 1963).

Tronsberg (1960) stated that in adjusting reading material to the slow learner vocabulary must be simplified and provision made for many repetitions. The sentences must be short and simple and the subject matter should be familiar. Excursion and construction activities, playing games, caring for pets, listening to and dramatizing stories and interpreting pictures is part of a method necessary to follow if the student is to be adequately prepared in the use of expressive language. Poems and songs are learned as a

means of strengthening their auditory memory. Simple picture books with little writing are used to strengthen the expressive language level.

Cruickshank (1956) was concerned with the evidence indicating a tendency for disabilities in speech and reading to be related when both are mediums for expressive language. He felt that when the child learns to read by strictly the oral method speech disabilities may cause reading disabilities or vice versa.

In teaching brain - injured children, whatever the subject or tool, the first part is to teach the child to see the whole picture. If he cannot distinguish a triangle from a square he will certainly not be able to tell an A from an H. If all he sees in the word family is the y then every word with a y becomes family (Cruickshank, 1961). We must first fill the gaps.

Visual discrimination must be checked: colors must be recognized, sizes, shapes not only recognized but reproduced. Activities in motor training must be given; matching pictures, letters and words are part of the program in this specific approach. Phonetic training, auditory and visual recognition combined are important. This may be done by presenting the letter and having the child trace it while giving the sound of the letter. Again, we see that writing

and reading are integrated in the education of the handicapped as well as for "normal" children (Lewis, Strauss & Lehtinen, 1960; Kirk, Bateman, 1960).

Strang (1955) reminded us that:

"Words can be read only if these words have meaning. They have meaning only if they have been seen or heard in association with the ideas they represent. Reading then, is dependent upon speaking and listening before it can start at all. One learns to read a well - constructed paragraph by learning how to write a well - constructed paragraph (p. 58)."

A reading program must indeed be a language program.

In his doctoral thesis Zepp (1963) experimented using the content area for improving expressive language. The goals of this study were to identify reading and writing and reading study skills which could be emphasized in the content areas, and to learn if there were any evidence that such an in-service training program would bring about more than normal reading and writing among the pupils involved in this program. When the statistics were tabulated, this study showed that language skills should be applied to the content area but that this could not be considered the total or regular language program.

Dolch (1939) pointed out the necessity for a remedial reading program well planned out and given a real time slot in the schedule, stating that: "New emphasis on reading in the regular language program demands that other work be

lightened" (p. 33). Orton (1937) cited case after case of children who read "next to nothing" after several years of school, but who pass I.Q. tests with quotients ranging from low average up to 145 and who give evidence of ability in every other field but reading, writing and spelling. Thus intelligence does not always correlate with expressive language skills; in any group of non-readers and non-writers all ranges of intelligence can be found.

Knud (1959) defined word blindness as signifying a defective capacity for acquiring at the normal time, a proficiency in reading and writing corresponding to average performance. He further stated that this deficiency is often accompanied by difficulties with other symbols, numbers, musical notation, etc. Gates (1942) spoke of its counterpart, dysgraphia, the diminished or totally lacking capacity for expression in writing. Though word blind and dysgraphic students are always poor in reading and writing, those poor in reading and writing cannot be said to suffer from word blindness or dysgraphia. Still, it must be reckoned with. Though Knud (1959) went on at great length in describing one afflicted with dyagraphia, he regretted that he nad no time to offer treatment or special teaching techniques.

Goodfellow (1963) administered the <u>Language Modalities</u>

<u>Test for Aphasia</u> to a group of junior high school students

to identify those "average" I.Q. individuals who had trouble in expressive language. He proved that the test provides a new and practical means for differentiation of language problems. However, though it was not the purpose of his theses to put forth ideas that would help remediate or alleviate these problems, his testing did show that even those who are not classified "aphasic" can, and often do present the same symptoms.

Sister Carolyn Whitlock (1966) accepted the challenge to teach a "normal", intelligent six year old male who was "below normal" in expressive language, to read. Her experiment began with fifteen minute periods and gradually lengthened into sixty minute sessions. Reinforcements of "tokens" in jars were used. The reading stimuli were presented to the child in a discrimination procedure via flash cards; each card contained one word. The cards were presented in groups of two or three, pairing one unknown word with one known. The Phonics Method was used wherever possible. When interest began to lag backup ticket reinforcements were used. Three months after completion of this study the experimenter reported that the student read with ease and accuracy both alone and in a group within his class.

In order for a child to be able to identify and recognize words he must first be able to distinguish between the

h-n, c-o-b-d-p- etc. He must likewise, be able to see and hear the difference between was and saw; let-get; come, came etc. He must have had the experience of what he is reading. If he is to benefit in knowledge from the sentence, "John ate an apple," he must at some time have experienced the eating of an apple. Even in "normal" chidren the importance of writing is part of the reading act, is stressed. For integration the two are inseparable, and the ability to spell the word is the final integration of that word in expressive language. One of the most successful techniques is to have the child write of his own experience and then to read it (Mecham, Berko, Berko, 1960; Kottmeyer, 1959).

Literacy is essential in our society; yet, four million school children are failing to acquire proficiency in expressive language. Any methods or procedures which will enhance a child's ability to express himself clearly and concisely without fear of any kind, is a method which must be given thought (Westman, 1965).

### CHAPTER III

### PROCEDURE

### Selection of Groups

A total of twenty students from one parochial school were divided into an experimental group and a control group. They were matched according to age, grade placement, I.Q. (Kuhlmann - Anderson Scale was used), and socio - economic background. In both groups the fathers of two were classified "professional"; three in "business" and the remaining five as "skilled laborers." Six mothers from each of the groups worked outside the home. The teachers selected these students on the basis that they were "very poor" in expressive language. Besides the present teachers' word, past report card grades were consulted, all of which admitted C-'s, D's and E's at each grade level. The experimenter also had access to the Diocesan National Tests which are administered to each student annually. Each of the students ranked below the average percentile.

The standard Science Research Associates test was administered which showed each of the twenty children to be at least twelve months below his present grade level. The quarterly tests of the Weekly Reader were given, and all but two ranked "poor." The remaining two ranked "beginning."

This indicated that each student was at least one year lower than his present grade level in expressive language.

Concerned with the expressive language ability of writing, for which no standardized test was available, each child wrote two different paragraphs, one at the beginning of the experiment and one at its completion. These paragraphs were ranked by expert teachers from a different school, as to which were submitted "first" and which were "second."

Healthwise, each student had a satisfactory report concerning visual acuity. Regarding hearing, two of the twenty had referrals; at the time it was believed in both cases to be due to colds, but nevertheless, special check - ups were made and showed the above to be true. After the initial testing was completed, the control group received no language training except that given in the ordinary classroom procedures. The experimental group of Fifth and Sixth Grade pupils met on Fridays and Mondays for a forty-five minute period and on Saturdays and Sundays for one hour. The Seventh Grade pupils met on the same days but for an hour period each session. This provided the experimental group with a four consecutive days-a-week schedule for nine week program.

### Teaching by the Treanor Method

The Treanor method introduces the following categories and then develops them throughout the year as a regular English Program: Generic Words, Familiar Situations, Phrase Patterns, Technicalities, and Composition.

A generic word is introduced as a general word which develops meaning by thinking of specific words of the same meaning. Color, see, go, person, beautiful, work are samples of generic words. One specific word to each of these would be pink, glance, amble, sailor, lovely, sew. Throughout the nine weeks definite generic words will be introduced. Together as a class and on their own, the students list as many specific words as possible. The words will be used in poetry and in simple sentence strucure where the students will use their auditory skill in choosing the specific words. The words will be used in poetry and in simple sentence structure where the students will use their auditory skill in choosing the specific word and in writing the exact word to give a sentence a specific meaning. As an example, the generic word see might be dictated. Words such as peek, glance, examine, scan, stare, etc. are some of the possibilities the students might use. The older students, hopefully, will make good use of the Roget's Thersaurus. Some of the generic words in this experiment will be taken from the reading text. This will provide one new way of introducing

vocabulary.

Phrase patterns are introduced in order to show the students the variety of ways to arrange words in sentence form in order to produce the right effect. Several noun phrase and verb phrase patterns are taught at each grade level. The beginning patterns introduced in this experimental study are as follows: Noun Phrase I pattern is composed of one noun preceded by one adjective, a full moon, the eager child, etc. Again sentence writing is included plus the added fact that specific words from any given generic word studied, can be applied. Now the student begins to see the value of sorting, choosing and picking the exact word to fit any given pattern. Finding Noun Phrase I pattern in his assigned reading story shows him the value of phrasing words for smoother reading and better comprehension. The second noun phrase pattern consists of a noun followed by two adjectives separated by the conjunction. and; the moon, full and bright; the duckling, timid and alone; an apple, tiny and green, etc. As the student uses these phrases in sentences it is called to his attention how they can be used in the subjective case or objective case. His style of writing and reading take on a new dimension. The third and last noun phrase for this experimental study is composed of the noun followed by a simile phrase; smoke, like a blanket; the class, like a beehive; the river, like

a serpent.

Verb phrase patterns are developed in the same way.

Verb Phrase I is composed of the verb followed by an adverb: runs swiftly; the second verb phrase is composed of the verb followed by a prepositional phrase: shouts in distress, works for hours, lives near Denver, etc. The third verb phrase is a simile composed of the verb followed by the simile: moves like a snail, sings like a bird, etc. Again, the various patterns are to be spotted on a given page of the reading and again, the vocabulary is built from this system of phrase patterns. The student becomes conscious of the various ways of stating ideas both in simple sentences and in composition form.

Expanding the base sentence is an integral part of this method if the student is to learn the art of composing. Starting with a simple two word sentence the student is told and taught how to expand it from a noun phrase point and then from the verb phrase. From this point he can develop a good, solid paragraph. To illustrate this, a picture of "The Great Wave at Kanegawa" is shown to the students. After finding specific words for the generic words big and ugly, the students offer a two word sentence e.g. Wave leaps. The teacher then asks the students to give noun phrase II concerning the wave: The terrifying, gigantic wave leaps.

Now the sentence is to expand through the use of a verb

phrase, such as verb phrase I: the terrifying gigantic wave leaps treacherously. This is a good beginning sentence for a paragraph. Each sentence does not have to be composed of one of these patterns, in fact, that would be overdoing it. But throughout the paragraph the student should have a sprinkling of the various noun and verb phrases. This then explains the category of composition.

The familiar situation is just what it is named to be. A familiar situation is suggested to the pupils to arouse their imagination. These situations may be in relation to some story in their reader or it may be a situation they meet in life. Now the pupil is called upon to make use of his five senses. "The First Christmas" might be suggested to them. Using their five senses as they look at a picture of a Christmas scene, the students together state what they see, hear, touch or feel, taste and smell. They state their ideas in phrase patterns such as, the cold, dark stable; a clear night; a starry sky; a young mother, sweet and serene; mooing of the cow; the wind, warm and gentle; the prickly hay; etc. And again we begin developing ideas for a story which will be read by each student from his own paper and from his classmates papers.

The category of technicalities simply include the rules of grammar and of spelling. Some time each day is used in studying the various mechanics that the children need the

most at the present time. Again these are spotted in the regular reading text.

Not included in the Treanor method but adapted by the experimenter to be used daily with the method is an expressive language activity giving special attention to the question words of who, what, where, when, why, how, how many. The students are given short news items from the Weekly Reader or Junior Messenger. After reading the news item, they are to re-write it in their own words answering the question words as exactingly as possible. This exercise has been included as a means of strengthening the student's comprehension.

### CHAPTER IV

### SUMMARY AND RESULTS

### Summary

The purpose of the study involved the comparison in ability of the expressive language of two groups of Fifth, Sixth and Seventh grade students. The Experimental Groups regular classroom program was augmented with the Treanor Method; the control group continued on the regular classroom program only. The duration of the Treanor Method was nine weeks.

A review of the literature gave evidence of a number of methods used in teaching expressive language. Many of the studies indicated a positive relationship between the expressive language of reading and creative writing. None of the studies cited actually attempted to measure creative writing ability, but many studies indicated that various facets of language expression were tightly interwoven in the overall fabric of communication.

Standardized scores were used to measure the expressive language of reading. Three judges were used to evaluate the creative writing to determine any changes in the expressive ability of creative writing.

### Results

In the creative language each member of the controlled and experimental groups wrote a short composition on the subject of his choice before the Treanor Method was used. At the conclusion of the nine - week period the two groups again wrote compositions of their choice. The forty compositions were given to each of the judges who individually graded them A, representing the first compositions written or B, indicating the compositions written after the Treanor Method had been used. The judges had no knowledge of which compositions were written by members of the control group and those who actually worked with the Treanor Method, nor did the judges confer with the other judges or with anyone else. Differences of the two groups were treated according to those norms set up by the experimenter and the judges dealing with sentence construction, grammar, punctuation, vocabulary and creativity. Their findings were submitted to the experimenter who tallied the results of the judges and subjected them to the Fisher Exact Probability Test (Siegel, 1956, pp. 96 - 104).

The Fisher Exact Probability Test, showing a significant change at .005 probability, led the experimenter to anticipate that the instructions introduced during the nine - week period had an effect on creative writing performance.

The Mann - Whitney U Scale (Siegel, 1956, pp. 119-120) was used to determine if any change occurred between the groups on the remaining tests: Science Research Associates, quarterly test of the Weekly Reader, and the Diocesan.

<u>National Tests.</u> Differences between the two groups were treated statistically and yield the following results:

- 1. the <u>Science Research Associates</u>. The .01 one tailed test was selected and showed a significant difference between groups for all potential U value of one.
- 2. There was no significant difference between groups on the Weekly Reader test.
- 3. A significant difference existed between the two groups at .05 level for the <u>Diocesan National Tests</u>.

On the basis of the foregoing results the Treanor Method appears a potential method to effect change in the Left - Over Child, and it can be a significant factor in helping the Left - Over Child reach his full potential at his appropriate grade level. (See Appendix B)

### APPENDIX A

### SELECTION OF JUDGES

The three judges were chosen on the bases of their experiences in dealing with students who have language difficulties.

### FIRST JUDGE

At present Sister M. is a Junior High school teacher in the department of language arts. She has been teaching for eighteen years in this field and has done much work with those students who need remedial work.

### SECOND JUDGE

Mrs. F. is a Sixth Grade teacher in a departmentalized school system where she teaches remedial reading and language arts. She has worked with the various facets of expressive language in the Bellevue Reading Clinic. Mrs. F. has taught for twenty one years.

### THIRD JUDGE

At present Miss B. is a Sixth Grade teacher in a departmentalized school district where she teaches four classes
of reading and three of language arts. Past experience in
thirty seven years of teaching includes six years as an elementary school principal and the other years teaching on the

Junior High School level in the fields of social studies and language arts. Miss B. has conducted special studies in the field of expressive language at the St. Cloud Clinic in Minnesota.

APPENDIX B

CREATIVE WRITING SCORES

| CONTROL GROUP |                      |       |                       |      |     |   |          | E                    | (PERIMEN | TAL GF                | OUP |
|---------------|----------------------|-------|-----------------------|------|-----|---|----------|----------------------|----------|-----------------------|-----|
| Students      | First<br>Composition |       | Second<br>Composition |      |     | 7 | Sangenas | First<br>Composition |          | Second<br>Composition |     |
| 1             | 28                   | AAA   | 1                     | A    | A A |   | L        | 18                   | AAA      | 26                    | AAA |
| 2             | 39                   | AAA   | 13                    | A    | A A | 2                                       | 2        | 35                   | AAA      | 3                     | ввв |
| 3             | 14                   | AAA   | 40                    | A A  | A A |   | 3        | 30                   | АВВ      | 21                    | ABB |
| 4             | 10                   | AAB   | 32                    | A I  | 3 A | 1                                       | +        | 37                   | AAA      | 36                    | ввв |
| 5             | 12                   | B A A | 22                    | A A  | A A | ءِ                                      | 5        | 16                   | A A A    | 24                    | вав |
| 6             | 33                   | AAA   | 5                     | A A  | A A | 6                                       | 5        | 4                    | AAA      | 34                    | АВВ |
| 7             | 23                   | AAA   | 6                     | A A  | A   | 7                                       | ,        | 7                    | ввв      | 15                    | ввв |
| 8             | 31                   | ввв   | 38                    | ВЕ   | ВВ  | ع   ا                                   | 3        | 20                   | A A A    | 8                     | ВАВ |
| 9             | 11                   | A A A | 25                    | A. A | В   | 9                                       | ,        | 2                    | A B A    | 17                    | ВАВ |
| 10            | 9                    | вва   | 19                    | ВЕ   | ВВ  | 10                                      | ,        | 27                   | AAA      | 29                    | АВВ |

NATIONAL DIOCESAN TESTS

| CONTROL GROUP |               |              | EXP           | ERIME    | NTAL   | GROUP    |               |              |               |          |
|---------------|---------------|--------------|---------------|----------|--|----------|---------------|--------------|---------------|----------|
| students      | word identity | word meaning | comprehension | total    |  | students | word identity | word meaning | comprehension | total    |
| 1             | 24<br>14      | 13<br>03     | 13<br>17      | 12<br>08 |  | 1        | 01<br>12      | 03<br>05     | 14<br>16      | 02<br>08 |
| 2             | 20<br>16      | 31<br>58     | 20<br>38      | 20<br>34 |  | 2        | 10<br>10      | 08<br>05     | 17<br>16      | 09<br>08 |
| 3             | 24<br>10      | 71<br>76     | 38<br>10      | 34<br>08 | ANA TAKAN KANAN  | 3        | 53<br>70      | 13<br>34     | 49<br>33      | 40<br>46 |
| 4             | 25<br>20      | 36<br>50     | 57<br>22      | 47<br>19 |  | 4        | 13<br>08      | 04<br>14     | 17<br>05      | 08<br>06 |
| 5             | 78<br>36      | 22<br>38     | 58<br>01      | 58<br>03 | The state of the s | 5        | 07<br>20      | 09<br>92     | 22<br>26      | 21<br>22 |
| 6             | 08<br>08      | 12<br>37     | 05<br>10      | 06<br>10 |  | 6        | 42<br>76      | 23<br>24     | 24<br>58      | 26<br>58 |
| 7             | 52<br>92      | 07<br>16     | 02<br>24      | 06<br>38 |  | 7        | 04<br>94      | 84<br>67     | 22<br>90      | 21<br>92 |
| 8             | 26<br>60      | 30<br>42     | 51<br>40      | 39<br>50 |  | 8        | 10<br>28      | 12<br>56     | 35<br>89      | 19<br>78 |
| 9             | 28<br>35      | 78<br>87     | 32<br>42      | 46<br>52 |  | 9        | 15<br>89      | 29<br>98     | 29<br>98      | 22<br>97 |
| 10            | 92<br>60      | 12<br>12     | 30<br>40      | 40<br>42 |  | 10       | 33<br>97      | 85<br>88     | 44<br>98      | 52<br>99 |

First scores, pre-treatment period Second scores, post-nine week period

### SCIENTIFIC RESEARCH ASSOCIATES

| CONTROL GROUP |             |              | ROUP       | EXPERI | MEN      | TAL C       | ROUP         |            |
|---------------|-------------|--------------|------------|--------|----------|-------------|--------------|------------|
| students      | first score | second score | difference |        | students | first score | second score | difference |
| 1             | 3.0         | 3.0          | 0          |        | 1        | 2.0         | 3.0          | 1.0        |
| 2             | 2.0         | 2.0          | 0          |        | 2        | 2.0         | 3.5          | 1.5        |
| 3             | 6.0         | 6.5          | •5         |        | 3        | 3.5         | 5.0          | 2.5        |
| 4             | 5.5         | 5.5          | 0          |        | 4        | 3.0         | 4.5          | 1.5        |
| 5             | 5.5         | 6.0          | •5         |        | 5        | 3.5         | 5.0          | 2.5        |
| 6             | 3.0         | 3.0          | 0          |        | 6        | 5.0         | 7.5          | 2.5        |
| 7             | 3.5         | 3.0          | 5          |        | 7        | 5.0         | 7.5          | 2.5        |
| 8             | 3.0         | 3.0          | 0          |        | 8        | 4.0         | 5.5          | 1.5        |
| 9             | 4.0         | 3.5          | 5          |        | 9        | 5•5         | 7.5          | 2.0        |
| 10            | 3.5         | 3.5          | 0          |        | 10       | 3.0         | 3.5          | •5         |

GRADE LEVEL SCORES

### WEEKLY READER SCORES

| students | first score | second score | difference |
|----------|-------------|--------------|------------|
| 1        | 9           | 20           | 11         |
| 2        | 3           | 10           | 7          |
| 3 4      | 10          | 32           | 22         |
|          | 14          | 36           | 22         |
| 5        | 12          | 24           | 12         |
|          | 8           | 32           | 24         |
| 7        | 12          | 18           | 6          |
| 8        | 13          | 29           | 16         |
| 9        | 15          | 33           | 18         |
| 10       | 9           | 35           | 26         |

CONTROL GROUP

### EXPERIMENTAL GROUP

| students | first score | second score | difference |
|----------|-------------|--------------|------------|
| 1        | 10          | 19           | 9          |
| 2        | 8           | 19           | 11         |
| 3        | 12          | 25           | 13         |
| 4        | 3           | 23           | 20         |
| 5        | 10          | 22           | 12         |
| 6        | 20          | 41           | 21         |
| 7        | 25          | 53           | 28         |
| 8        | 10          | 40           | 30         |
| 9        | <b>1</b> 8  | 43           | 25         |
| 10       | 4           | 52           | 48         |

RAW SCORES

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