The Effect of Summer Recess on the Reading Achievement of Title I Students at L.C. Curry School, Bowling Green, Kentucky

Virginia Scheider
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1981
THE EFFECT OF SUMMER RECESS ON THE READING ACHIEVEMENT OF TITLE I STUDENTS AT L. C. CURRY SCHOOL, BOWLING GREEN, KENTUCKY

A Thesis
Presented to
the Faculty of the Department of Educational Leadership
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Educational Specialist

by
Virginia E. Schneider
April, 1981
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THE EFFECT OF SUMMER RECESS ON THE
READING ACHIEVEMENT OF TITLE I STUDENTS
AT L. C. CURRY SCHOOL, BOWLING GREEN, KENTUCKY

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THE EFFECT OF SUMMER RECESS ON THE READING ACHIEVEMENT OF TITLE I STUDENTS AT L. C. CURRY SCHOOL, BOWLING GREEN, KENTUCKY

Virginia E. Schneider April, 1981 57 pages

Directed by Dr. V. J. Christenson, Dr. David Shannon, and Dr. Billy Broach

Department of Educational Leadership
Western Kentucky University

Purpose of the Study

The purpose of the study was to determine if there were significant differences between spring reading achievement scores and fall reading achievement scores in the Title I students of L. C. Curry School, Bowling Green, Kentucky, and if significant differences did occur, were these differences related to grade level, IQ, sex, or reading achievement level.

Methods and Procedures

Eighty-two students, which included all students in grades two through six who participated in the Title I reading program the entire 1978-79 school year and who were enrolled in the school at the beginning of the 1980-81 school year, participated in the study.

A pretest/posttest procedure was used in which the subjects were pretested in May, two weeks prior to the end of the 1979-80 school year, with the appropriate grade level of the Gates MacGinitie Reading Test. Students were posttested with the alternate form of the
same grade level test the first week of September, two weeks after the beginning of the 1980-81 school year. The test score data was then submitted to computer analysis.

Findings and Conclusions

Pretest/posttest score differences by grade levels revealed a small increase in reading achievement occurred during the summer recess at the third and fourth grade levels in contrast to a decrease in reading achievement at the second, fifth, and sixth grade levels. The decrease was statistically significant only for grades five and six however. A high correlation in rank order between pretest and posttest scores was found at every grade level, indicating that students tended to maintain their relative group position despite individual gains and losses. When grouped by IQ, sex, and school year achievement each group showed some regression in summer reading achievement but regression differences between paired groups were not statistically significant.

Based upon the limited amount of significant differences in summer progression/regression of reading ability found within the various groups of this study, it appears that large scale fall testing may not be necessary to properly place students in appropriate
reading materials at the beginning of a new school year. The tendency toward an overall group regression during the recess period however indicates that government reporting of Title I programs based on a fall-spring testing period may show a larger gain than when based on a spring-spring testing period, and thus, it is recommended that government Title I reporting dates should be standardized for equality of comparison.
CHAPTER I

Introduction

Background

Each fall, as another school year gets underway, elementary teachers can frequently be heard bemoaning the amount of learning that appears to have been lost by young students during the summer recess period. Much of the academic work that takes place during the first month of a new school year involves extensive review of the previous year's work. Despite this common expectation of a "summer slump," some researchers have found evidence to the contrary and have shown that certain children continue to make academic progress during the summer. Schrepel and Laslett found junior high students made achievement test gains over the summer in 14 out of 22 subtests. They, as well as Soar and Soar and


Botwin commented on the greater likelihood of growth over the summer in material involving concepts, understanding, or application of principles, in contrast to factual learning, which is more likely to show a decline.

Most standardized achievement tests do not recognize the existence of a regression factor in test norms established for spring and fall testing periods. In the norming of the Iowa Test of Basic Skills one month of growth is assigned to the summer months. This plan is commonly followed by other major achievement tests in the establishment of norms.

The majority of school systems administer achievement tests only in the spring and use these test scores for the assessment of student progress during that school year and also as a basis for instructional grouping for the following year, thus leaving the teacher of the following academic year with a question as to whether these scores represent a true level of performance for students at the beginning of the fall.

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term. Possibly enough change occurs between spring and fall to justify the time and expense of fall achievement testing.

The question of whether there is a significant increase or decrease in student achievement during the summer vacation period is also of importance in the reporting of student gains in federally supported Title I programs. Federal guidelines leave it to individual school districts to determine their own testing procedures. Some districts administer a test in the spring and use these scores as posttest scores to measure students' achievement for that year as well as pretest scores for the following year. Other districts administer two tests, one in the fall for pretest scores and another in the spring for posttest scores. If a significant increase or decrease in student achievement occurs during the summer recess period, Title I programs, through the use of different testing procedures, are not being equally evaluated. Therefore, reported yearly gains among school districts may be misleading. If student achievement drops during the summer, those schools who administer September pretests will tend to show higher yearly student gains than those Title I districts who rely on a spring pretest. On the other hand, if student achievement progresses during the recess period, then Title I school districts that pretest in the
fall will tend to show less per student yearly gain than those Title I districts that use a spring pretest. For continuity of comparison and evaluation, the question of summer recess achievement change needs to be considered.

The Title I Reading Program of L. C. Curry School is evaluated on the basis of student gains achieved between September pretesting and May posttesting. The objective of the Title I Reading Program is for each student enrolled in the program to make one month gain in reading achievement for each month of instruction.⁵ While spring test scores over the past several years indicate 75 to 80 percent of the students in the program have been meeting or exceeding this achievement goal, many of these students continue to remain in the program year after year because they are unable to reach their expected grade level despite reading gains of one or more years. In some instances this appears to be the result of a summer loss in reading achievement between the spring posttest and the fall pretest. How extensive this problem is and whether patterns of reading regressions exist among particular groups of students has not been documented.

⁵Bowling Green City Schools, ESEA Title I Project Component, Part IV (Bowling Green, Kentucky, 1978).
Statement of the Problem

The purpose of this study was to determine if there were significant differences between spring reading achievement scores and fall reading achievement scores in Title I students of L. C. Curry School, and if a significance did exist was the difference uniform among the students. While uniform differences between spring and fall scores would enable a teacher to establish a fall competency level for the group, uneven differences may justify the continuation and expansion of a fall testing program to enable the teacher to place each student in a reading program at his/her proper level of competency.

Objectives of the Study

The specific objective of this study was to identify the difference between Title I students' reading achievement scores in May and September. This data was then analyzed to determine:

a) the difference in summer progression/regression of reading achievement scores among grade levels.

b) the difference in summer progression/regression of reading achievement scores between low IQ and high IQ students.

c) the difference in summer progression/regression of reading scores between boys and girls.
d) the difference in summer progression/regression of reading achievement scores between high achievers and low achievers.

Definition of Terms

The following definitions of terms are used for the purpose of this study:

1. **Title I School** - A school which qualifies for federal funds to support compensatory programs in reading and math based on the number of students from low income families served by that school. In the Bowling Green School System, the district-wide percentage of children from low income families is 30.3 percent. To meet government regulations for qualification, any school within the district with more than 30.3 percent children from low income families may have a Title I program. Four of the six elementary schools in Bowling Green meet this qualification. L. C. Curry School, as one of these four qualifying schools, has a student population of 57.8 percent from low income families.  

2. **Title I Student** - Any student, regardless of parent income level, who attends a Title I school, demonstrates normal intelligence by scoring 76 or above on an individual intelligence test, and shows an

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6Ibid.
academic deficiency by scoring one or more years below grade level in reading or math.  

3. **Test Score** - The total reading score of a student derived from the sum of the vocabulary and comprehension subtest scores of the Gates-MacGinitie Reading Test. Unless otherwise noted, the score is expressed as a T-Score for purpose of standardization.

4. **High IQ Students** - Students whose IQ scores on the Slossen Intelligence Test are above 105.

5. **Low IQ Students** - Students whose IQ scores on the Slossen Intelligence Test are between 76 and 85.

6. **High Achievers** - The 25 percent of participating students who made the most reading achievement gain on the California Achievement Test during the 1979-80 school year.

7. **Low Achievers** - The 25 percent of participating students who made the least reading achievement gain on the California Achievement Test during the 1979-80 school year.

**Limitations**

Certain aspects of this project need to be noted to avoid oversimplification of the results and to keep the study in its correct perspective.

7Ibid.
In any project involving testing there is the possibility that a pretest can sensitize the subjects to the posttest. With the children involved in this study however, testing is a common everyday occurrence and probably has a minimal effect on performance. To prevent reactive arrangements the students were not informed that they were involved in a research study.

When working with varied age groups over a period of months the effect of maturation must be considered. Some students may make summer gains simply because of the presence of a maturation element. This is more likely a factor in the lower grades than in the upper grades involved in this project.

The greatest threat to reliability is that of external validity. Results of this study do not necessarily lend themselves to conclusions about all elementary students but must be confined to similar groups of Title I students. Since Title I students, by definition, are generally from a low socio-economic background, students from a high socio-economic background could possibly show very different results.
CHAPTER II

Review of the Literature

Even though the occurrence of losses and gains in children's reading ability during summer vacation has been recognized by researchers as well as classroom teachers for many years, few attempts have been made to explain or describe these changes. Research on the subject has largely been confined to doctoral dissertations. Despite the common theory that children simply do not engage in enough reading during the vacation period to prevent a loss from taking place, several studies tend to show gains in achievement during the summer rather than losses.

In a study of 3,510 students in grades two through seven, Botwin found increases in all but two subtests of the California Achievement Test Battery, and in these two subtests of spelling and arithmetic fundamentals the losses were small. Botwin also related factors of grade level and grade intelligence to the differences in achievement test scores during the school year and

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8Botwin, "Academic Achievement."
during the summer vacation. Results showed that students in the lower grades tended to make more gain during the school year than students in higher grades, but there was no significant difference in summer achievement change between grade levels with the exception of a high summer loss among second graders in arithmetic fundamentals. This loss was attributed to a lack of mastery in arithmetic fundamentals at the second grade level and indicated a need for extensive review at the beginning of grade three. IQ was found to be significant for reading comprehension and mechanics of English. Students with higher IQ's tended to achieve the most gain in reading comprehension during the summer months while students with lower IQ's were more likely to show some loss in reading comprehension during the summer.

This same relationship between IQ and summer achievement level change was noted by Bergin in research involving 4,243 students in the New York area who had just completed first grade. A significant mean gain in reading ability occurred in those students classified on the highest IQ level while those with the lowest IQ's

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showed significant losses in reading ability over the summer vacation. When students were grouped according to spring end-of-term reading levels, those who were grouped as low-average or slow readers showed significant loss in achievement while those scoring high on spring end-of-term reading levels showed a significant gain in reading ability over the summer vacation. More boys than girls had significant mean reading losses over the vacation period. When subjects were classified according to socio-economic levels, a significant gain in reading ability over the summer vacation was noted for the highest and a significant loss for the lowest.

In testing children in grades one through five in the public schools of Corvallis, Oregon, Florence found a mean loss of only about one-tenth of a year in reading achievement during the summer. No significant difference was found between the mean scores of boys and girls nor between the various grade levels. There also was no significant difference noted between the summer reading achievement loss of students who attended summer school and those who did not.

Like Florence, Rude was unable to find a significant correlation between sex and summer retention of reading ability. Using the Wisconsin Tests of Reading Skill Development, he found only 15 percent of the students changed from being considered "masters" (achieving scores of 80 percent or better on a criterion referenced test) of the specific reading skills in the spring to being classified as "nonmasters" in the fall. He concluded that this small number of score changes did not warrant a mass scale fall testing program. IQ and type of reading curriculum did not appear to be important variables related to retention of specific reading skills or overall reading ability.

In a research project involving a group of middle class kindergarten and first graders, Rude et al found that visual discrimination ability did not deteriorate during summer but actually appeared to increase, and though there was a slight loss in auditory discrimination ability, the loss was minimal. Although sex


and chronological age were not found to be significant factors affecting retention, a significant relationship did occur between intelligence and retention on two of the four subtests of the Wisconsin Test of Reading Skill Development. From the data collected the authors concluded that basic reading abilities in beginning readers are not lost over the summer, and massive review periods at the beginning of each school year may be unnecessary. Instead of a readiness or review period during the first three to six weeks of school, focused reading instruction might have a more beneficial effect on later student achievement.

Just the opposite conclusion was reached by Harry E. Elder. After a study measuring the effects of summer vacation on the silent reading ability of intermediate grade students, he concluded that considerable teaching power should be expended at the opening of each school year to restore reading habits and skills lost during the summer months. Despite a gain in the total group mean during the recess period, he found a sizeable number of students made a summer loss. At the third grade level 47 percent of those above grade level

lost in reading ability or made no gain during the summer recess while 44 percent of those below grade level lost in reading ability or made no gain. Of those who improved, some gains were very impressive and served to bring the mean average up to a gain of 4.7 months. Some pupils added more to their reading ability in the summer than during the entire nine months school year. At the sixth grade level, despite an average gain of 3.6 months, 59 percent of above level students lost or made no gain and 44 percent of the below grade level students lost or made no gain. He concluded that although many students read enough voluntarily to cause growth in reading ability, a large percent of the children in the intermediate grades do not read enough in the summer to prevent a decline in reading ability during the vacation period. Because of increases in ability on the part of some of the better readers and decreases in the ability of some of the poorest readers, a group of pupils is likely to be less homogeneous with respect to silent reading ability at the opening of school in September than at the close of school in the spring.

Andrea Frieder-Vierra's research on the reading growth of minority and non-minority children in Albuquerque, New Mexico, did not support Elder's conclusions. Frieder-Vierra found that the reading achievement gap
between students tended to close during the summer and widened during the school year. From his data three different calendar-year learning patterns emerged. The first, shared by both low-income and middle-income barrio Chicano children, involved substantial school year loss, relative to other children, offset by summer gain. The second pattern, shared by Anglo children and middle-income non-barrio Chicano children, involved moderate school year gain, relative to other children, offset by summer loss. The third pattern which emerged was characteristic of only one group of children, low-income non-barrio Chicanos. This pattern involved excellent school year gain, relative to other children, and no summer loss. Residence appeared to be the most effective independent variable in this research.

Soar and Soar attempted to relate type of classroom emotional climate and teaching method to pupil subject matter growth during the summer vacation period. They found that students taught with a strongly controlled, teacher directed approach tended to make little or no gain during summer, while those in a permissive, indirect teacher setting which allowed a high degree of

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student freedom tended to show more summer growth as well as more growth during the school year. The tendency for summer gain to occur was greater with more capable students than with those less capable. As with Elder, they found a certain number of individual children made as much or more gain in the summer than they did during the previous school year, and these high summer achievers tended to distort mean scores.

From the review of literature it appeared that researchers have been unable to agree on the amount of gain or loss in reading skills that occurs during the summer recess or identify any consistent factors contributing to this gain or loss. There is also disagreement as to how summer change in reading skills should affect the fall reading instructional program. Some researchers feel a lengthy review period is needed at the beginning of a new school year while other researchers feel that such a review period is unnecessary and impedes student progress.

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CHAPTER III

Methods and Procedures

This chapter presents the design for the study, population selected for the study, materials and procedures used for obtaining data, and analysis procedures applied to the data.

Design of the Study

The objective of this study was to identify and describe the difference between Title I students' reading achievement scores in May and September through the use of a pretest/posttest process and then to analyze the data to determine:

a) the difference in summer progression/regression of reading achievement scores among grade levels,

b) the difference in summer progression/regression of reading achievement scores between low IQ and high IQ students,

c) the difference in summer progression/regression of reading achievement scores between boys and girls,
d) the difference in summer progression/regression of reading achievement scores between high achievers and low achievers.

Population

The population of this study included all students in grades two through six of L. C. Curry Elementary School, Bowling Green, Kentucky, who participated in the Title I Reading Program for the entire 1979-80 school year and were available for testing at the beginning of the 1980-81 school year. First grade students were not included since they do not enter the Title I program until the beginning of their second year in school. Although seventh grade students participate in the Title I program, they were also excluded from the study since they were not available for fall posttesting due to promotion to the junior high school. A total of ninety-four students were enrolled in the L. C. Curry Title I Program during the 1979-80 school year and were pretested in the spring of 1980. Twelve of these students moved from the Bowling Green School District during the summer and were thus unavailable for posttesting, leaving a remaining number of eighty-two students who were posttested in the fall and included in this study.
**Materials**

The instrument selected for pretesting and post-testing was the Gates-MacGinitie Reading Test, Levels A, B, C, and D. Level A is designed for first grade, Level B is designed for second grade, Level C is designed for third grade, and Level D is designed for fourth, fifth, and sixth grades. Two alternate equivalent forms of the test are provided for each level. Form 1 was used for pretesting and Form 2 was used for posttesting. Students were tested at their operating level, defined as the level of the test at which they could answer between 30 percent and 75 percent of the test questions correctly. For most student involved in the study this meant taking a test one year below their grade level placement in school, i.e. second graders were tested with Level A, third graders with Level B, fourth graders with Level C, and fifth and sixth graders with Level D.

**Procedures**

The subjects were given the appropriate grade level test as a pretest during the first week in May, two weeks prior to the end of the 1979-80 school year. The subjects were then given the alternate form of the same grade level test as a posttest the first week of September, two weeks after the beginning of the 1980-81 school year.
school year. In addition, all subjects were given the Slosson Intelligence Test prior to participation in the program. This test is administered individually and compares favorably in score results with the Binet or WISC-R. Students scoring 75 or below are not eligible for the Title I program and were not included in this study. For the purpose of this research, students scoring between 76-85 were classified as low, those scoring between 86-105 as average, and those scoring above 105 were classified as high.

Students' scores on the reading section of the California Achievement Test, administered in September 1979 and March 1980, were used to identify high achievers and low achievers during the 1979-80 school year. The 25 percent of students who made the most gain during the seven month school period were designated as the high achievers, and the 25 percent of students who made the least gain during the seven month school period were designated as the low achievers for the purpose of this study.

After completion of the testing process, a table was constructed by grade level to show each student's sex, IQ score, reading gain for the 1979-80 school year, and reading scores for the spring-fall testing program. Raw scores were converted to T-Scores so comparisons could be made across grade levels. Each student's
May 1980 pretest score was subtracted from his/her September 1980 posttest score to obtain a gain score for the 1980 summer recess period. The correlated data was then subjected to computer analysis. A correlated t-test was applied to the gain scores of each grade level to determine if there was a significant difference in group pretest and posttest scores. A one-way ANOVA with Scheffe was then used to reveal any significant differences between gain scores of the various grade level groups. The correlated t-test was also used to determine significant differences between boys and girls, between low IQ and high IQ groups, and between low achievers and high achievers. The data was then organized into appropriate tables and figures.
CHAPTER IV

Presentation and Analysis of Data

Summerized data and pertinent findings relative to
the purpose of the study are presented in this chapter.
It is organized into four parts. Part one deals with
students' summer progression/regression as grouped by
grade levels. Part two analyzes the data according to
IQ groups, while part three examines the data by sex
groups, and part four compares the data between low
achievers and high achievers.

Summer Progression/Regression Analysis by Grade Levels

Grade 2

Twenty-two second grade students, which included
twelve girls and ten boys, participated in this study.
Their pretest scores ranged from a T-score of 29 to a
T-score of 63, with a mean score of 46.4091 and a standard
deviation of 8.808. Posttest scores showed a
slightly wider range of scores with a low score of 30
and a high score of 64. Mean score on the posttest how-
ever dropped to 44.5455 with a standard deviation of
9.038, showing a group regression of -1.8638 (Figure 1).
Of the twenty-two second grade students in the study, seven showed a gain in score, two made no change, and thirteen showed a loss in score on the posttest. Gain scores ranged from 6 to -12 (Figure 2). Although only 32 percent of the group recorded a summer gain in reading achievement while 68 percent made no gain or regressed, the difference in pretest and posttest scores did not show a statistical significance at the .05 level when subjected to a t-test. There was however a high positive correlation (0.87) in the rank order of scores. Those students who tended to score high on the pretest also tended to score high on the posttest and likewise those who tended to score low on the pretest also tended to score low on the posttest.

Grade 3

At the third grade level eleven students, three girls and eight boys, were included in the study. Their pretest scores ranged from a T-Score of 32 to a T-Score of 56, with a mean score of 46.2727 and a standard deviation of 6.872. Posttest scores showed a similar range with a low score of 31 and a high score of 56. The mean score of the posttest was 47.1818 with a standard deviation of 7.782. Thus the third grade group showed a mean gain of +.9091 in contrast to the mean loss of the second grade. (Figure 3).
FIGURE 1
SECOND GRADE  
T-SCORE RANGE

Pre  
m=46.4091

Post  
m=44.5455

FIGURE 2
SECOND GRADE  
GAIN SCORE VARIANCE
Seven of the third graders showed a gain in reading achievement and four showed a loss in reading achievement. Gain scores ranged from 7 to -4 (Figure 4). Despite the fact that 64 percent of the group increased in reading scores during the summer while only 36 percent regressed, the score differences did not prove to be statistically significant at the .05 level. A high positive correlation (0.898) in the rank order of scores was evident however.

GRADE 4

Fourteen fourth graders, evenly divided between boys and girls, were included in the study. Their pretest scores ranged from a T-Score of 41 to a T-Score of 52, with a mean of 46.3571 and a standard deviation of 3.388. Posttest scores ranged from a T-Score of 33 to a T-Score of 54, with a mean of 46.7857 and a standard deviation of 5.191. The greater range in posttest scores was primarily caused by a 11 point drop in score by one student. The mean difference was a minimal gain of +0.4286 (Figure 5).

Eight of the fourth graders, or 57 percent, improved their reading achievement scores during the summer while six of the students, or 43 percent, regressed. Gain scores varied from 7 to -11 (Figure 6).
FIGURE 3
THIRD GRADE
T-SCORE RANGE

Pre

Post

FIGURE 4
THIRD GRADE
GAIN SCORE VARIANCE
With the group showing almost as many students regressing as progressing, the small mean gain recorded on the posttest by the group did not prove to be statistically significant at the .05 level. Although the correlation in rank order of scores for the fourth grade was not as high as in other grade levels, it still showed a positive correlation (0.613).

**GRADE 5**

The fifth grade group was composed of nineteen students, eight girls and eleven boys. Their pretest scores varied from a T-Score of 33 to a T-Score of 55, with a mean of 43.6842 and a standard deviation of 8.056. The posttest scores varied from a T-Score of 27 to a T-Score of 52, with a mean of 41.6316 and a standard deviation of 7.342. Thus, the posttest showed a drop both in the range as well as in the mean. Mean regression in reading achievement during the summer recess for the group was -2.0526 (Figure 7).

Gain scores ranged from 5 to -7 (Figure 8). Seven students, or 37 percent, progressed in reading achievement while twelve students, or 63 percent, regressed during the vacation period. Even though a higher percentage of the second grade students showed
FIGURE 5
FOURTH GRADE
T-SCORE RANGE

Pre

Post

m=46.3571
m=46.7857

FIGURE 6
FOURTH GRADE
GAIN SCORE VARIANCE
a regression on the posttest (68 percent), the losses of those who regressed at fifth grade level were more severe, and the mean loss of -2.0526 for the total fifth grade group showed a statistical significance at the .05 level ($T=2.26$, $df=18$, $p<.036$) which was not apparent at the second grade level. A high positive correlation in the rank order of scores (0.872) was evident showing that the fifth graders, like the other grade level students, tended to maintain their relative ranking within the group during the summer recess period.

GRADE 6

The study involved sixteen students at sixth grade level. Seven of these students were girls and nine of these students were boys. Their pretest scores ranged from a T-Score of 31 to a T-Score of 55, with a mean of 46.0 and a standard deviation of 6.763. The posttest scores showed a tendency to be somewhat more homogeneous as they ranged from a T-Score of 33 to a T-Score of 50, with a mean of 43.1875 and a standard deviation of 5.167. Group mean loss in reading achievement on the posttest was -2.8125 (Figure 9).

The sixth grade gain scores ranged from 3 to -6, the smallest range of any grade level (Figure 10). Only two, or 12.5 percent, of these sixth graders showed a gain while fourteen, or 87.5 percent, recorded a loss in
FIGURE 7
FIFTH GRADE
T-SCORE RANGE

Pre

Post

m = 43.6842

m = 41.6316

FIGURE 8
FIFTH GRADE
GAIN SCORE VARIANCE

Gain Scores

Frequency
FIGURE 9
SIXTH GRADE
T-SCORE RANGE

Pre

\[ m = 46.0 \]

Post

\[ m = 43.1875 \]

FIGURE 10
SIXTH GRADE
GAIN SCORE VARIANCE

Gain Scores

Frequency
reading achievement during the summer recess. This was the highest percentage of students in any grade level to record a loss. The sixth grade group mean loss of -2.8125 on the posttest was also the largest regression of any group in the study and proved to be highly significant when subjected to a t-test ($T=3.79$, $df=15$, $p<.002$). Again a very high positive correlation (0.910) in the rank order of scores existed.

**Summary of Grade Level Analysis**

Although at each grade level some students increased in reading achievement during the summer vacation period while others regressed, only grades three and four showed a group mean gain while grades two, five, and six showed a group mean loss. Even though the mean gain in grades three and four was small and did not prove statistically significant, it is in contrast to the regression of the other three grades which was significant in grades five and six. With the exception of grade two, each successive grade tended to move from a pattern of progression to one of significant regression, which reached the highest level of regression at grade six (Figure 11).

Grade two showed the greatest standard deviation both on the pretest and posttest as well as the largest range in gain scores. Grades three and four also showed
FIGURE 11
SUMMARY OF PRETEST/POSTTEST MEAN SCORES
a higher standard deviation on the posttest than on the pretest, suggesting that these students became somewhat more heterogeneous in reading achievement during the summer. Grades five and six showed a lower standard deviation on the posttest, indicating these students were probably more homogeneous in reading achievement in the fall than in the spring. (Table 1).

At all grade levels a high positive correlation in the rank order of scores showed that most students tended to maintain their rank order regardless of whether they showed an individual gain or loss in score. Those who scored the highest on the pretest generally scored highest on the posttest, and those who scored the lowest on the pretest generally scored lowest on the posttest.

When an analysis of variance was applied to gain scores using the ANOVA with Scheffe procedure, no two groups were found to be significantly different at the .05 level (F=2.435, p<.0543). The greatest difference in mean range was between grade three and grade six (Figure 12). The 95 percent confidence interval for mean at grade three ranged from 3.2061 to -1.3880, while at grade six the range was from -1.2292 to -4.3958. Other grade level ranges are shown in Table 2 and Figure 12. Mean range for all groups was -0.04375 to -2.2210, indicating the overall tendency toward a
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<tr>
<th>Grade</th>
<th>n</th>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Score Range</th>
<th>Difference Mean</th>
<th>Standard Deviation</th>
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<td>29 - 63</td>
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<td>4.549</td>
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<td></td>
<td></td>
<td>Post</td>
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<td>9.038</td>
<td>30 - 64</td>
<td></td>
<td></td>
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<td>3</td>
<td>11</td>
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<td>6.872</td>
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<td>0.9091</td>
<td>3.419</td>
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<td>7.782</td>
<td>31 - 56</td>
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<td>14</td>
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<td>3.388</td>
<td>41 - 52</td>
<td>0.4286</td>
<td>4.108</td>
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<td></td>
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<td>5.191</td>
<td>33 - 54</td>
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<td>7.342</td>
<td>27 - 52</td>
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<td>16</td>
<td>Pre</td>
<td>46.0000</td>
<td>6.763</td>
<td>31 - 55</td>
<td>-2.8125</td>
<td>2.971</td>
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<td></td>
<td></td>
<td>Post</td>
<td>43.1875</td>
<td>5.167</td>
<td>33 - 50</td>
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**TABLE I**

**COMPARATIVE SCORES BY GRADE LEVELS**
TABLE 2
ANALYSIS OF VARIANCE
GAIN SCORES

<table>
<thead>
<tr>
<th>GRADE</th>
<th>N</th>
<th>MEAN</th>
<th>95 PCT CONF INT FOR MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>22</td>
<td>-1.8636</td>
<td>-3.8806 to 0.1533</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>0.9091</td>
<td>-1.3800 to 3.2061</td>
</tr>
<tr>
<td>4</td>
<td>14</td>
<td>0.4286</td>
<td>-1.9436 to 2.8007</td>
</tr>
<tr>
<td>5</td>
<td>19</td>
<td>-2.0526</td>
<td>-3.9568 to -0.1484</td>
</tr>
<tr>
<td>6</td>
<td>16</td>
<td>-2.8125</td>
<td>-4.3958 to -1.2292</td>
</tr>
<tr>
<td>Total</td>
<td>82</td>
<td>-1.3293</td>
<td>-2.2210 to -0.4375</td>
</tr>
</tbody>
</table>

FIGURE 12
95 PERCENT CONFIDENCE INTERVAL FOR MEAN GRADE LEVELS
regression during the summer recess in reading ability.

**Summer Progression/Regression Analysis by IQ Groups**

To investigate the relationship between IQ scores and summer progression/regression in reading achievement, the students were divided into three groups designated as high IQ (above 105), average IQ (86-105), and low IQ (76-85). A comparison was made between the pretest and posttest scores of the high IQ students and the low IQ students. Eight of the eight-two students in the project fell within the high IQ category. Their pretest T-Scores ranged from 43 to 63, with a mean score of 49.625. Posttest scores broadened in range from 40 to 64 but with a mean score drop to 47.375. The resulting group mean loss in reading score was -2.250, with a standard deviation of 3.495 (Figure 13). Two of the eight students had higher scores on the posttest, while six of the eight had lower posttest scores. The gain scores ranged from 4 to -6 (Figure 14).

Seventeen of the eighty-two students were classified as low IQ. Pretest scores for the low IQ group ranged from 27 to 51, with a mean score of 40.117. Posttest scores ranged from 27 to 52, with a mean score of 38.882. Resultant group mean loss in reading score was -1.234, with a standard deviation of 4.327 (Figure 13). Seven of the seventeen students showed higher
FIGURE 13

LOW IQ/HIGH IQ GROUPS
T-SCORE RANGE

Pre
HIGH IQ
m=49.625

Post
m=47.375

Pre
LOW IQ
m=40.117

Post
m=38.882
scores on the posttest and ten of the group showed lower scores on the posttest. Gain scores for this group ranged from 5 to -12, a considerably wider spread than the high IQ group displayed. (Figure 15).

Although the mean score on both pretest and posttest tended to be higher for the high IQ group, the low IQ group showed a smaller regression in reading achievement during the summer than the high IQ group. Both groups showed a mean regression, but only 58 percent of the low IQ group regressed while 75 percent of the high IQ group regressed. Gain scores between the two groups did not prove to be statistically significant at the .05 level however when submitted to a t-test.

**Summer Progression/Regression Analysis by Sex Groups**

To observe if there was a relationship between sex and the summer progression/regression of reading achievement scores, the pretest and posttest scores of the boys were compared with like scores of the girls. The project was composed of forty-five boys and thirty-seven girls. The boys had pretest T-Scores which ranged from 27 to 55, with a mean score of 43.977. Their posttest T-Scores ranged slightly higher from 30 to 56, but the mean score dropped to 42.466 resulting in a group mean loss of -1.5111 and a standard deviation of 3.498 (Figure 16). Seventeen of the boys
FIGURE 14
HIGH IQ
GAIN SCORE VARIANCE

FIGURE 15
LOW IQ
GAIN SCORE VARIANCE
**FIGURE 16**

**BOYS AND GIRLS**

**T-SCORE RANGE**

<table>
<thead>
<tr>
<th></th>
<th>Pre</th>
<th>Post</th>
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</thead>
<tbody>
<tr>
<td>Boys</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>$m=43.977$</td>
<td>$m=42.466$</td>
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<tr>
<td>Girls</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>$m=47.729$</td>
<td>$m=46.563$</td>
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improved on the posttest, while twenty-eight showed a 
regression in reading score on the posttest. The range 
of gain scores was from 7 to -12 (Figure 17).

Pretest T-Scores for the girls ranged from 34 to 
63 with a mean score of 47.729. Their posttest T-Scores 
broadened in range from 27 to 64, but the mean score 
fell to 46.563 for a group mean loss of -1.1667 and a 
standard deviation of 3.509 (Figure 16). Of the 
thirty-seven girls in the project, fifteen girls showed 
a mean gain in reading achievement on the posttest, two 
girls had no gain, and the remaining twenty girls 
showed a regression. Gain scores ranged from 6 to -8 
(Figure 18).

Thus, it can be observed that the girls had a 
higher mean score than the boys on the pretest as well 
as the posttest. Both groups experienced negative gain 
score means, but the girls' loss was not as great as the 
boys' loss. The percentage of girls who regressed was 
54 percent while 62 percent of the boys regressed. It 
should be noted that the girls' posttest scores had a 
wider variance than those of the boys, but the variance 
in gain scores was greater for the boys than the girls. 
Differences did not prove statistically significant at 
the .05 level however when gain scores of the two groups 
were subjected to a t-test.
FIGURE 17
BOYS
GAIN SCORE VARIANCE

FIGURE 18
GIRLS
GAIN SCORE VARIANCE
Summer Progression/Regression Analysis by Achievement Group

To determine if there was a relationship between the summer progression/regression of students' reading achievement and the students' reading achievement during the prior school year, the reading achievement gains of the participating students during the 1979-80 school year were rank ordered. These gains were determined by the reading subtest of the California Achievement Test administered as a pretest in September and as a posttest in May. The twenty-five percent of students who made the most reading achievement during the school year were designated as the high achievers and the twenty-five percent who made the least reading achievement during the school year were designated as low achievers for the purpose of this study. A comparison was then made between the summer pretest and the posttest scores of the high achievers and the low achievers.

Pretest T-Scores for the twenty students in the high achiever group ranged from 34 to 59, with a mean score of 47.15. The posttest range of scores narrowed in range from 37 to 57, with a mean score drop to 46.5. The resulting mean loss for the group was -0.65 with a standard deviation of 3.066 (Figure 19). Posttest scores showed a reading improvement for eight students, but the remaining twelve of the high achiever group recorded a regression in reading on the posttest.
FIGURE 19

HIGH ACHIEVER/LOW ACHIEVER GROUPS
T-SCORE RANGE

HIGH ACHIEVERS

Pre

Post

m=47.15

m=46.5

LOW ACHIEVERS

Pre

Post

m=43.28

m=41.28

20 30 40 50 60 70
Gain scores ranged from 4 to -6 (Figure 20).

The low achiever group consisted of twenty-one students. Their pretest T-Scores ranged from 27 to 56, with a mean score of 43.28. Posttest scores ranged from 27 to 54, with a mean drop in score to 41.28. Mean loss for the group was -2.00 and a standard deviation of 4.733 (Figure 19). Only seven students in this group improved their reading scores on the posttest, while fourteen students regressed in reading scores. Gain scores for the low achiever group ranged from 6 to -12 (Figure 21).

The high achiever group and the low achiever group both showed a mean loss in reading achievement during the summer recess. The high achiever group had a higher mean on both the pretest and posttest and recorded a smaller summer loss than did the low achiever group, but the loss difference between the two groups did not prove to be statistically significant at the .05 level. Forty percent of the high achievers regressed in reading achievement on the posttest, while regression was true of sixty-six percent of the low achievers. The high achiever group tended to become somewhat more homogeneous in reading ability during the summer than did the low achiever group. Since there was a tendency for the low achievers to regress more during the summer than the high achievers, this
FIGURE 20
HIGH ACHIEVERS
GAIN SCORE VARIANCE

FIGURE 21
LOW ACHIEVERS
GAIN SCORE VARIANCE
combination of limited achievement during the school year, coupled with a greater summer loss, may result in the low achiever group falling farther and farther behind grade level as they move through their school career should this pattern persist.

Summary

An analysis of pretest/posttest score differences by grade levels revealed a small increase in reading achievement during the summer recess period at third and fourth grade levels, a direct contrast to the decrease in reading achievement at the second, fifth, and sixth grade levels. The decrease proved significant at the .05 level for grades five and six only.

No significant difference was found between the pretest/posttest score differences of the low IQ students and the high IQ students. Both groups registered a mean loss in reading achievement during the three month vacation period, with the loss somewhat greater for the high IQ group than for the low IQ group.

When the pretest/posttest score differences of the boys were compared with those of the girls, similar small mean losses in reading achievement occurred in each group during the recess period. No significant difference was found however.
Pretest/posttest score differences of the low achievers showed no significant differences to those of the high achievers although the regression in reading ability of the low achiever group proved to be larger than the regression of the high achiever group.
CHAPTER 5

Conclusions and Recommendations

Summary of Findings

The purposes of this study were two fold. The first purpose was to measure the amount of progression/regression in reading achievement that occurred during the summer recess period among grade school students receiving reading remediation work in the Title I Program of L. C. Curry School, Bowling Green, Kentucky. The second purpose was to identify any particular groups within these Title I students that might show a uniformity of pattern in summer progression/regression of reading achievement. For the purpose of analysis students were grouped by grade level, IQ, sex, and school year achievement.

The findings revealed significant summer regression in reading achievement occurred in grade levels five and six. A mean score regression was recorded in grade level two but it did not prove to be significant at the .05 level. An increase in summer reading achievement occurred in grade levels three and four, but the increase was too small to meet the criterion of
significance. A high correlation in rank order between pretest scores and posttest scores was found at every grade level, indicating that students tended to maintain their relative group position despite individual gains or losses. When grouped by IQ, sex and school year achievement each group showed some regression in summer reading achievement, but regression differences between paired groups were not statistically significant.

Conclusions and Implications

Based upon the data gathered in this study, it appears that Title I teachers in the middle elementary grades of L. C. Curry School, especially grades three and four, need not be unduly concerned with providing extensive review in reading at the beginning of the school year. Their students may be adequately sustaining their reading competencies during the vacation period. This appears not necessarily true however in the upper elementary grades where significant losses were recorded for grades five and six. The summer reading regression of a high percentage of these preteens should alert teachers of grades six and seven to allow for summer loss in the selection of reading materials at the beginning of the fall school term.
Review of reading skills will also be needed to bring many of these students back to a pre-summer level of ability before progressing with new, more complicated skills.

Due to the significant summer reading loss that occurred in grades five and six, avenues should be explored to overcome this regression. Several approaches could be taken, one of which might be the implementation of a summer home reading program. Summer reading packets might be sent home, reading clubs organized, etc. The public library might also target this group with special programs designed to encourage summer reading. In a study conducted by Crowell and Klein, it was found that first and second grade students who were provided with books to read during the summer showed significantly less loss both in vocabulary and reading comprehension during the vacation period than students in a control group who were not provided with summer reading material. 16

The high positive correlation in the rank order of scores between the pretest and the posttest which

appeared at every grade level reveals that, although some students progressed while others regressed in reading ability during the recess period, the students maintained their relative group rankings. This would indicate that spring reading groups could probably be kept intact the following fall without fear of misplacing many students.

The limited amount of significant differences in pretest/posttest scores found within the various groups of this study make it questionable whether a school system can justify the expense of a large scale fall testing program in the light of tightening educational budgets. For the purpose of government reporting of Title I programs however, fall testing of Title I students may appear beneficial. Findings of the study reveal a tendency toward an overall group regression during the summer recess period (Figure 12, p. 36). Thus, a school who administers fall pretests and reports students' progress based on a September-May testing period will tend to show a higher yearly gain than if no fall test is given and progress is reported strictly on a May-May testing period. If Title I programs are to be equally evaluated, the government should establish a uniform reporting period.
Recommendations for Further Study

As this study was limited to the Title I students of only one school, a similar study carried out in the other three Title I schools of the Bowling Green Public School System might indicate if the grade level patterns of progression/regression revealed in this study are typical of Title I students in other schools or are unique only to the particular students of L. C. Curry School. The study might also be duplicated with non-Title I students. Title I students, by definition, are students achieving one or more years below grade level. Students achieving at or above grade level may exhibit very different summer progression/regression patterns. Title I students also tend to be from lower socio-economic homes, since qualification for Title I funds require that a school must serve a high percentage of families that fall into the government poverty level classification. Contrasting results might appear if this study were duplicated in a non-Title I school serving an upper socio-economic population.

Another avenue of possible exploration would be a longitudinal testing program to determine if the third and fourth grade groups who made progress in this study will continue this pattern of progress as they move up
through the educational program or will demonstrate regression as the upper level students in this study did. Such a program could also indicate if new students entering Title I will develop patterns similar to those shown in this study.
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