# Reading Performance of Elementary Students: Results of a Five-Year Longitudinal Study of Direct Reading Instruction

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A Paper Presented at the 35th Annual Meeting of

the Mid-South Educational Research Association

Birmingham, AL

November 8-10, 2006

The research reported herein was partially funded by Grant Award Numbers H324E017001, H326L000001, H324E017001, H324E020401, H324E031501, H324E042301, and H324E050036 from the U. S. Department of Education, Office of Special Education Programs

## Abstract

The purpose of this longitudinal study was to explore the impact of a direct reading instruction program, *Reading Mastery* (*RM*), on literacy performance of students over a five-year period. Initially, 700 students in grades K-3 were randomly selected from six elementary schools to participate in the study; an additional 100 randomly-selected kindergarten students were added to the sample for each subsequent year of the study.

Literacy performance was assessed using oral and silent reading performance measures from the *Qualitative Reading Inventory-3* (*QRI*), reading scale scores from the *Mississippi Curriculum Test* (*MCT*), and cloze scores from the *Hunter & Grundin Literacy Profiles* (*HGLP*).

Because all students in the school system were receiving *RM* no comparison group was available to aid interpretation of the findings. In an attempt to overcome this difficulty, data were analyzed in three parts. First, only data for students who began *RM* in kindergarten were examined descriptively and graphically. Second, statistical comparisons by grade level were made between students who began *RM* in kindergarten and those who began *RM* in a later grade. Third, descriptive and graphical comparisons of group performance overtime were made between groups of students who began *RM* at different grade levels.

Although a few statistically significant differences were found between students who began receiving *RM* instruction in kindergarten and those who began receiving *RM* at a later grade, the preponderance of data provided little evidence to support the viability of *RM* for improving reading comprehension.

# Reading Performance of Elementary Students: Results of a Five-Year Longitudinal Study of Direct Reading Instruction

In response to the "No Child Left Behind" federal legislation, some school districts have implemented Direct Instruction (DI) for teaching reading, even though inconsistent findings of the effects of DI on students' reading comprehension have been reported in the literature (Abt Associates, 1977; Benbow, 1974; Bruton & Owen, 1988; Contreras, 1980; House, Glass, McLean, and Walker, 1978; Kennedy, 1978; Kuder, 1990; McCabe, 1974; McGlotten, 1982; Meyer, 1984; Mosley, 1997; O'Connor, Jenkins, Cole, & Mills, 1993; Slavin, Karweit, and Madden, 1989; Stallings, 1975; Stebbins, St. Pierre, Proper, Anderson, & Cerva, 1977).

Results from the initial *Project Follow Through* study, the largest reported study of the longitudinal effects of DI on beginning reading instruction via a systematic-code approach (i.e., synthetic phonics) from kindergarten through third grade, indicated that the reading performance of students who received DI was at the 41st percentile, nine percentile points below the median (Stebbins, St. Pierre, Proper, Anderson, & Cerva, 1977), even though the students taught by DI had higher beginning reading achievement scores on the *Metropolitan Achievement Test* (*MAT*) than those in the control group (Abt Associates, 1977; Stallings, 1975). There were inconsistent findings reported, however, across school settings (House, Glass, McLean, and Walker, 1978; Kennedy, 1978). A re-analysis of the *Project Follow Through* data compared the average DI schools' effect size on the *MAT* subscale scores with the control schools' average effect size and reported that the average effect size difference across *MAT* basic skills was 1.8, with an average effect size for *MAT* total reading scores of DI schools being 1.6 and an average effect size for total reading scores of the control schools being .75 (Bereiter & Kurland, 1981-82).

The findings from some studies have not favored DI in the areas of phonics (Benbow,

1974; O'Connor, Jenkins, Cole, & Mills, 1993), reading comprehension (Bruton & Owen, 1988; Contreras, 1980; Kuder, 1990; McGlotten, 1982; Mosley, 1997), basic concepts and vocabulary (McCabe, 1974; McGlotten, 1982), and reading achievement (McGlotten, 1982).

Other studies of the effects of DI have reported mixed results. McCabe (1974) compared the effects of *DISTAR* and traditional early reading programs and reported that pre-kindergarten and kindergarten students in traditional programs did significantly better than *DISTAR* students on the *Peabody Picture Vocabulary Test*, but scores of first-grade students taught by *DISTAR* were higher than students in basal instruction; on the *Wide Range Achievement Test* the scores of first-grade students who received basal reading instruction were significantly higher than scores of *DISTAR* students, while scores of kindergartners taught by *DISTAR* were significantly higher than those of kindergartners taught by reading readiness materials. Scarcelli (1999) found that DRI instruction for first-grade students who were in the average-to-below-average range of reading ability produced significantly higher scores on the *Gates-MacGinitie Reading Test* than scores of students receiving whole language instruction, but no significant differences on the measure were found for students in the middle-third and upper-third ranges of reading ability. Carnine, Carnine, and Gersten (1984) reported that first-grade students taught by *DISTAR* did not perform well when decoding un-taught words, but that third-grade students taught by *DISTAR* demonstrated integration of phonic and contextual strategies during oral reading.

A meta-analysis of 15 studies (Adams & Engelmann, 1996), including only those studies that used complete DI programs developed by Engelmann and associates, indicated an effect size of .69 for reading (based on 43 comparisons across the 15 studies). This finding, however, should be considered in light of the study's limitations: only four of the 15 studies specifically examined reading comprehension (the remainder examined vocabulary/language development and word recognition); only three studies contained procedures that attempted to ensure fidelity of

implementation of DI; only two studies included more than 60 students; 12 studies included only special education students; and five of the studies examined DI that was in place less than a year. In addition, Adams and Engelmann ignored the weak reading comprehension effect (.07) reported by Slavin, Karweit, and Madden (1989).

Promoters of DI programs for teaching reading believe that ". . . virtually all the reading failure in the early grades could be avoided if teachers . . . were given well-constructed code-emphasis instructional materials" to teach reading during the beginning stages of reading (Carnine, Silbert, & Kameenui, 1997, p. 56). This belief by advocates of DI has encouraged the production of large numbers of commercial materials designed to develop phonological decoding processes, some of which are designed to supplement a school's adopted reading program. Also, there are commercially-produced developmental reading programs that include a strong phonological decoding component, such as *Reading Mastery*, *Rainbow Edition,* developed by Engelmann and Hammer (1995).

*Reading Mastery* (*RM*) is one of several *DISTAR* programs (*DISTAR* is an acronym for Direct Instruction System for Teaching Arithmetic and Reading, which eventually became Direct Instruction System for Teaching and Remediation) developed by Engelmann and his colleagues (Engelmann and Hammer, 1995). *RM* lessons exemplify DI principles: (a) teacher-directed, scripted lessons; (b) presentation of phonological decoding skills (synthetic phonics) follows a hierarchical sequence; (c) student mastery is required at each step; (d) students respond orally as individuals, as a choral group, or by completing workbook assignments; and (e) systematic practice and review with a range of examples provide opportunities to correct student errors immediately.

Most of the published studies of the effects of DI, using the *RM* program or some other commercial program, have included fewer than 100 students and only a few studies have included

samples of students who received more than a year of DI. Also, the inconsistent findings reported in the research literature related to the effects of DI, the lack of research examining the impact of DI on reading comprehension, and the lack of longitudinal studies of the effects of DI indicated the need for further study. This study presents the findings from a five-year longitudinal study that was designed to explore how sequential, systematic direct instruction impacts students' reading comprehension as they progress through the elementary grades. The major research question addressed by the study was: How does sequential, systematic direct instruction in reading via the *Reading Mastery* (*RM*) program impact students' reading comprehension over time, when considering grade level at which *RM* began and length of time that students received *RM*?

## Method

### *Participants and School Setting*

In August 2000 the target school district implemented direct instruction in reading in grades K-6 in all six elementary schools via the *Reading Mastery* (*RM*) program (1995). Because of inconsistent findings in published studies of the effects of direct reading instruction, the superintendent felt that it was important to examine the effects of *RM* over a five-year period. Although the school district administration believed that the use of sequential, systematic direct instruction would positively influence the reading skills of students, the district requested that researchers from a nearby university conduct an independent, longitudinal study of the impact of *RM* on students' reading comprehension scores. It was agreed that the measures of reading comprehension performance would be selected by the researchers.

Students enrolled in the school district's six elementary schools when the study began represented four racial groups: African American (approximately 89%), European American (approximately 9%), Hispanic (approximately 1%), and Pacific Rim (slightly less than 1%).

Approximately 2,900 students were enrolled in the six elementary schools at the initiation of the study period, with approximately 89% of the students being from low socioeconomic backgrounds.

Prior to the implementation of the *RM* program, students in grades K-6 received traditional instruction, with kindergarten students being taught through learning centers designed to develop language/vocabulary skills, alphabet/phonics skills, social skills, age-appropriate mathematics, science, and social studies concepts, and interest in children's books; in grades 1-6, commercial basal programs were used to teach reading, including the *Harcourt Brace Jovanovich Reading Program, Laureate Edition* (Cullinan *et al*., 1989) and the *Macmillan/McGraw-Hill Reading Program, Spotlight on Literacy* (Aoki *et al*., 1997). The chart presented below shows the instructional programs received by participants prior to implementation of *RM* (i.e., first-, second-, and third-grade participants the first year of the study).

Upon initiation of this longitudinal study, 700 students enrolled in grades K, 1, 2, and 3 (approximately 175 students per grade level) were randomly selected from the six elementary schools to participate in the study, with an additional 100 randomly-selected kindergarten students being added to the sample each subsequent year of the study. Thus, the sample contained eight groups of participants who had received varied amounts of *RM* instruction (i.e., four groups had five years of *RM*; one group had four years of *RM*; one group had three years of *RM*; one group had two years of *RM*; one group had one year of *RM*). Because *RM* was taught in all six elementary schools, it was not possible to form a control group of students from the school district.

Based on the grade at which each group of participants began receiving *RM*, the grade-level composition for each of the eight groups across the five-year period of the *RM* program is shown in *Figure 1*.

| Grade | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|---|---|---|---|
| K | **K: *RM*** | **K: *RM*** | **K: *RM*** | **K: *RM*** | **K: *RM*** |
| 1 | **1: *RM***; K: traditional | **1:*RM*; K: *RM*** | **1: *RM*; K: *RM*** | **1: *RM*; K: *RM*** | **1: *RM*; K: *RM*** |
| 2 | **2: *RM***; 1: basal;<br>K: traditional | **2: *RM*; 1: *RM***;<br>K: traditional | **2: *RM*; 1: *RM*;<br>K: *RM*** | **2: *RM*; 1: *RM*;<br>K: *RM*** | **2: *RM*; 1: *RM*;<br>K: *RM*** |
| 3 | **3: *RM***; 2: basal;<br>1: basal;<br>K: traditional | **3: *RM*; 2: *RM*;**<br>1: basal;<br>K: traditional | **3: *RM*; 2: *RM*;<br>1: *RM***; K: traditional | **3: *RM*; 2: *RM*;<br>1: *RM*; K: *RM*** | **3: *RM*; 2: *RM*;<br>1: *RM*; K: *RM*** |
| 4 | | **4: *RM*; 3: *RM*;**<br>2: basal; 1: basal;<br>K: traditional | **4: *RM*; 3: *RM*;<br>2: *RM***; 1: basal;<br>K: traditional | **4: *RM*; 3: *RM*;<br>2: *RM*; 1: *RM*;**<br>K: traditional | **4: *RM*; 3: *RM*;<br>2: *RM*; 1: *RM*;<br>K: *RM*** |
| 5 | | | **5: *RM*; 4:*RM*;<br>3: *RM***; 2: basal;<br>1: basal;<br>K: traditional | **5: *RM*; 4: *RM*;<br>3: *RM*; 2: *RM*;**<br>1: basal;<br>K: traditional | **5: *RM*; 4: *RM*;<br>3: *RM*; 2: *RM*;<br>1:*RM*;**<br>K: traditional |
| 6 | | | | **6: *RM*; 5: *RM*;<br>4: *RM*; 3: *RM*;**<br>2:: basal; 1: basal;<br>K: traditional | **6: *RM*; 5: *RM*;<br>4: *RM*; 3: *RM*;<br>2: *RM*;** 1: basal;<br>K: traditional |
| 7 | | | | | **7:*RM*; 6: *RM*;<br>5: *RM*; 4: *RM*;<br>3: *RM***; 2: basal;<br>1: basal;<br>K: traditional |

At the end of the five-year of the study, complete sets of reading comprehension data were available for eight groups of participants, with group numbers ranging from 48 to 433, as follows: four groups of participants who began *RM* instruction in the first year of the study at different grade levels (i.e., K, 1, 2, or 3) with each group having completed five years of *RM*; and four groups of participants who began receiving *RM* instruction in the second, third, fourth, and fifth years of the study with each group having completed four, three, two, and one years of *RM*, respectively (*Figure 1*).

*Assessments of Reading Performance*

Two assessments were used to measure students' reading comprehension performance: a) the *Hunter-Grundin Literacy Profiles* (Hunter-Grundin & Grundin, 1990), and b) the *Qualitative Reading Inventory-3* (Leslie & Caldwell, 2001). In addition, reading scale scores from the *Mississippi Curriculum Test* (2003), a state-adopted instrument, were used as the measures of students' general reading performance.

The *Hunter-Grundin Literacy Profiles* (*HGLP*) use a cloze procedure to measure reading comprehension. The *HGLP* consists of grade-level stories, which were drawn from classic literature. The first sentence of each story is left intact, with deletions in the remainder of the story occurring in a set pattern (e.g., after every 3-5 words of connected text); for each deleted word, there is a group of four words from which to select the one word that will give meaning to the text. A student's raw score on a story is the number of accurate words that the student selected for deleted words in the story. Establishment of lower- and upper-limit raw score boundaries of a given passage is determined by multiplying the total number of deletions in a passage by .40 and by .60, respectively, thus indicating the score boundaries for a passage considered to be at the student's instructional reading level; raw scores below the lower limit

indicate that the passage is at the student's frustration reading level, and raw scores above the upper limit indicate that the passage is at the student's independent reading level.

The levels of the HGLP were standardized based on a sample of students enrolled in more than 70 schools, representing 23 different local education authorities, in England, Scotland, and Wales; the sample of students represented inner-city, suburban, small town, and rural areas, with the socioeconomic range of the students being from low to middle class including students from Educational Priority Area schools (the composition of these schools included student populations in which 50% or more were from immigrant families) and from schools whose student populations were composed almost exclusively of middle-class backgrounds. The authors reported that the HGLP was highly correlated (r = .87) with the Neale Analysis of Reading Ability measure, a standardized measure of reading comprehension (Hunter-Grundin & Grundin, 1979).

The *Qualitative Reading Inventory-3* (*QRI-3*) was designed ". . . to provide diagnostic information about (1) conditions under which students can identify words and comprehend text successfully, and (2) conditions that appear to result in unsuccessful word identification, decoding, and/or comprehension" (Leslie & Caldwell, 2001, p. 1). The *QRI-3* provides graded passages, from pre-primer through high school levels; for pre-primer through sixth-grade levels both narrative and expository passages are included, and for the upper-middle-school and high-school grades the passages are drawn from the content areas of literature, social studies, and science. The grade-level passages are used to analyze oral miscues and to assess reading comprehension.

Using the graded passages, independent, instructional, and frustration reading levels may be determined for the student. The criteria associated with each of the three reading levels are as

follows: (1) **independent level** = word identification in context (oral reading of graded passages) is 98% or higher, and comprehension is 90% or higher; (2) **instructional level** = word identification in context (oral reading of graded passages) is 90% to 97% for *total accuracy*, and comprehension is 70% to 89%; and (3) **frustration level** = word identification in context (oral reading of graded passages) is less than 90% for *total accuracy*, and comprehension is less than 70%. The formulae used to determine percentages are: (1) word identification in context = (number of words in passage minus number of miscues) divided by the number of words in the passage; and (2) comprehension = number of questions correctly answered divided by total number of questions with the result multiplied by 100.

As a passage is being read aloud by the student, miscues are marked by the examiner on the examiner's copy of the passage; a tape recording of the student's reading is recommended so that the examiner can ascertain that all miscues are marked on the examiner's copy. Any oral-reading deviation from the printed passage is considered a miscue (i.e., insertions, omissions, substitutions, reversals, and self-corrections); the total numbers of miscues per type of miscue are recorded by examiner. The *QRI-3* includes a Miscue Analysis Worksheet which allows the examiner to qualitatively analyze the student's miscues. After all miscues have been recorded on the worksheet, the examiner totals the columns for graphic similarity-initial, graphic similarity-final, semantically acceptable, and self-corrections; these totals permit the examiner to analyze the word identification strategies used by the student. By dividing the total number of miscues into each column total and multiplying the result by 100, the examiner can determine the percent of miscues represented by each column. For example, if a student made a total of 27 miscues, of which 8 contained graphically similar letters in the final position, the percent of miscues that

were graphically similar in the final position would be 29%. The manual of the *QRI-3* provides guidelines for interpreting the results of the Miscue Analysis Worksheet.

Comprehension assessment may be done orally and/or silently, by asking the student to retell the content of the passage and/or by asking questions about the content of the passage. The percent of questions answered correctly by the student is used to determine the student's reading performance level on the passage (i.e., independent, instructional, or frustration level). Since the retelling procedure was not used in this study, the question procedures are described here. After the student has read the passage, the examiner asks the questions that accompany the passage; the questions are of two types, explicit and implicit. Explicit questions require answers that were stated directly in the passage, while implicit questions require that the student make use of clues that were in the passage in order to derive inferences from having read the passage. For example, an explicit question might be: Where did Mark and his brother go after the ballgame?, and an implicit question might be: How do we know that Mark cared about his brother? The manual of the *QRI-3* recommends that ". . . answers be scored as either right or wrong with no half points given" (p. 73). Credit may be given, however, for ". . . any answer that includes the same information in different words" (p. 73). Prior knowledge may not be used to answer explicit questions, as the answer must have been included in the passage. Similarly, prior knowledge may not be used to answer implicit questions, as the answer must be related to a clue in the passage. Implicit questions are not included for the pre-primer passages, although the student ". . . may answer an explicit question by using information from the pictures" (p. 74). Five, six, or eight questions are provided for pre-primer through grade six passages. The following criteria are used to determine reading levels, based on the number of correct answers to questions:

| | | |
|---|---|---|
| Five questions: | Independent level: | 5 correct |
| | Instructional level: | 4 correct |
| | Frustration level: | 0-3 correct |
| Six questions: | Independent level: | 6 correct |
| | Instructional level: | 4 correct |
| | Frustration level: | 0-3 correct |
| Eight questions: | Independent level: | 8 correct |
| | Instructional level: | 6-7 correct |
| | Frustration level: | 0-5 correct (p.74) |

Although total comprehension may be determined by calculating the percent of questions answered correctly for each passage, it is recommended that separate calculations be done for explicit and implicit questions. For example, the examiner should record the total number of explicit questions asked of the student and the total number answered correctly, and record the total number of implicit question asked of the student and the total number answered correctly; the percentage of correct answers for each category of questions may be obtained by dividing the total correct by the total asked and multiplying the result by 100. For the purposes of our study, comprehension scores for total comprehension and for category of questions (i.e., explicit and implicit comprehension) were used.

The authors of the *QRI-3* report reliability and validity information (Leslie & Caldwell, 2001). Inter-scorer reliability, using three scorers who were reading teachers or specialists with master's degrees, were obtained using Cronbach's alpha (Cronbach, 1951) as follows: .99 for total miscues, .99 for meaning-change miscues, .98 for explicit comprehension, and .98 for implicit comprehension. Internal consistency reliability was calculated using the standard error

of measurement (SEM) procedure described by Crocker and Algina (1986) for criterion-referenced tests "where there is reduced variability in subject's performance" (Leslie & Caldwell, 2001, p. 436). According to Crocker and Algina (1986), the standard error must be between .00 and .25/number of items minus one; the lower the result, the better the internal consistency. The SEMs of all passages (Pre-primer through high school) ranged from .12 to .21, all being within the acceptable SEM range. Alternate-form reliability for criterion-referenced tests was estimated using Livingston's $K^2$ formula; the index indicates the magnitude of the discrepancy of misclassification when judging the reliability of an instructional decision. Using two similar passage types (i.e., narrative or expository), if a student's performance on both indicates the same instructional level, then there is evidence of alternate form reliability. Based on comprehension scores obtained from both passages the reliabilities of the instructional-level decisions were above .80; across readability levels, 71% to 84% of the time the same instructional level was found on both passages. Reliability of diagnostic profiles was examined by two judges who independently classified 108 readers' abilities according to word recognition and comprehension; the judges agreed on the students' abilities 87% of the time. Also, the findings of studies designed to assess the QRI's sensitivity to change, as a result of instructional interventions, indicate that the instrument is sensitive to immediate change (Glass, 1989) and to long-term (3-7 months) interventions (Leslie & Allen, 1999; Regner, 1992).

Content validity, criterion-related validity, and construct validity of the *QRI-3* are discussed. Regarding content validity, Leslie and Caldwell (2001) state that they used the reading research literature as the basis for test development. Thus, the *QRI-3* includes both narrative and expository material and passages vary in content familiarity; the instrument assesses prior knowledge, examines both total miscues and uncorrected miscues that change the

meaning of the passage, and includes three measures of comprehension (i.e., retelling, implicit questions, and explicit questions).

Criterion-related validity was examined by correlating students' *QRI-3* instructional levels for familiar material with their NCE Total Reading Scores on standardized achievement tests, by grade level, for grades 1, 2, 3, 4, and 8. All of the correlations were statistically significant ($p < .01$ or $p < .05$). Also, Regner (1992) reported statistically significant correlations between weighted word-recognition scores on the *QRI-3* and combined word-identification and word-attack scale scores on the *Woodcock Reading Mastery Test-Revised* (*WRMT-R*, 1987) and between weighted *QRI-3* comprehension scores with passage comprehension on the *WRMT-R*.

Evidence of construct validity was found in the high intercorrelations among word identification, total oral reading accuracy, acceptable accuracy, and rate of reading for beginning readers. Also, high intercorrelations were obtained among conceptual-knowledge scores, prediction, retelling, and comprehension. Further evidence of construct validity was found using stepwise regression analyses with grade instructional levels, acceptable miscues, reading rate, prior conceptual knowledge, and type of text (i.e., narrative or expository) serving as the predictor variables and total comprehension serving as the dependent variable. The results were that for the group of children at the pre-primer, primer, and first grade instructional levels with poor word-identification skills, nothing predicted comprehension; for children at the same instructional levels who had good word-identification skills, acceptable miscues accounted for 16% of the variance in oral reading comprehension and type of text explained an additional 7% of the variance in comprehension scores. For the group of children at the second and third grade instructional levels with poor word-identification skills, nothing predicted oral or silent reading comprehension; for children at the same instructional levels who had good word-identification

skills, type of text accounted for 26% of the variance in oral reading comprehension scores and for 16% of the variance in silent reading comprehension scores. For the group of children at the fourth, fifth, and sixth grade instructional levels who had good word identification skills, prior knowledge accounted for 34% of the variance in oral reading comprehension scores and for 23% of the variance in silent reading comprehension scores. Leslie and Caldwell (2001) concluded that at the lower reading instructional levels, comprehension is best predicted by the percentage of miscues that retain meaning and by type of text, while at the upper reading instructional levels the conceptual knowledge that the reader possesses prior to reading a text is the best predictor of comprehension.

The *Mississippi Curriculum Test* (*MCT*) assesses reading performance in seven categories: Context Clues (Semantic); Word Structure (Syntactic); Word Patterns (Phonetic Structure); Vocabulary; Main Idea and Details (Textual); Expanded Comprehension (Metacognitive); and Workplace Data (Evaluative). *MCT* reliability estimates using Cronbach's coefficient alpha ranged from .88 to .90 (*Mississippi Curriculum Test*, 2003). In our study, data from six of the seven *MCT* categories that compose the reading subtest were used because the Workplace Data (Evaluative) category is not assessed until Grade 4.

*Procedures*

*RM* Instruction. In 2000, the school implemented in grades K-6 a sequential, systematic, direct instruction reading program, *Reading Mastery*, Rainbow Edition, developed by Engelmann and Hammer (1995), in an effort to improve elementary students' reading performance. *Reading Mastery* (*RM*) includes: (a) explicit instruction in phonemic awareness, (b) direct, systematic teaching of phonics skills, (c) direct teaching and practice in developing fluency, (d) direct teaching of vocabulary, and (e) direct teaching of comprehension strategies

and skills ("Reading and Learning," 2001).

*RM* requires a minimum of 90 minutes of direct reading instruction per student per day, which includes a minimum of 45 minutes of direct instruction in phonics followed by a minimum of 45 minutes of group oral reading and vocabulary drills. *RM* contains highly-scripted lessons offered to small, homogeneously-grouped students with each lesson focused on a well-defined set of skills, followed by independent and small group activities so that students can practice and generalize skills; thus, in practice, every student receives approximately 120 minutes or more of direct instruction in reading and language arts activities per day. The format of *RM* lessons requires a large portion of classroom time devoted to fast-paced, teacher-directed instruction that is ". . . punctuated by rhythmic choral-group and individual student responses" (*Master Learners*, 2002, p. 6). The goal is for all students to reach 100 percent mastery, thus ". . . teachers may ask 300 or more questions in six small-group sessions each day and perform reading checks at frequent intervals" Master Learners, 2002, p. 6).

Also, *RM* requires intensive training for all teachers, so that they will understand the script that must be followed to effectively implement the program. *RM* requires an initial 15-25 hours of teacher training followed by on-going training; the teachers who have been with the school district since 2000 have received over 400 hours of training. Regularly conducted classroom observations of teachers ensure fidelity to the implementation of direct instruction procedures.

Data Collection. The school superintendent invited a research team from a nearby university to assess the impact of *RM* on the participants' reading performance. The research team administered the *HGLP* and the *QRI-3* in April 2001 when the participants had received one school year of *RM*, referred to as Year 1, and administered the instruments again in April of

the four subsequent years as the participants progressed through the grades, referred to as Year 2, Year 3, Year 4, and Year 5, respectively. The *HGLP* and the *QRI*-3 were administered by graduate students in literacy education who had been trained to administer the measures. The *HGLP* was administered to the participants at each school in small groups, by grade level and by classroom (i.e., when two or more participants were in the same classroom), over a period of six days (i.e., a day of testing per school was required to complete testing of all participants). The *QRI-3* was administered to the participants, individually, using the oral and silent reading passages that corresponded to the grade level of each participant. Kindergarten students responded only to the oral narrative kindergarten-level passage of the *ORI-3*; students in grades one and above responded to two grade-level narrative passages (oral and silent reading forms) and the grade-level expository passage (silent reading form). An additional source of data was the participants' reading scale scores from the *MCT* (a measure used by the state to assess general reading performance) which were obtained annually from the school district.

*Analysis*

Given that all elementary schools in the school system had implemented *RM*, a straight forward analysis and interpretation of the effects of the *RM* program was not possible since no control or comparison group was available. In an attempt to overcome this limitation, the available data were analyzed in three parts. First, the data for those participants who began the *RM* program in kindergarten was examined descriptively and graphically. Second, statistical comparisons were made by comparing the performance of those participants who began the *RM* program in kindergarten with those participants who began the program at some later grade. For example, the performance of (a) those participants who began *RM* in kindergarten and completed grade one was compared with that of participants who did not begin the *RM* program until

grade1; (b) those participants who began *RM* in kindergarten and completed grade two were compared to that of participants who did not begin the *RM* program until grade two; and (c) those participants who began *RM* in kindergarten and completed grade three were compared with that of participants who did not begin the *RM* program until grade three. Third, performance of those participants who began the *RM* program in kindergarten was examined descriptively and graphically by comparing their performance with that of all other participants available at each year of the program.

## Results

### *Data Analysis, Part 1*

The results for the first set of analyses are presented in Tables 1 through 11 and Figures 2 through 23. For each of the reading performance variables examined, two figures are provided to show the performance of students across the five years of the program for those who began *RM* in kindergarten. The first of each pair of figures shows the performance of each of the five kindergarten groups as intact groups as they progressed through subsequent grades. The second figure of each pair shows the performance by grade-level groups (by combining all K data, all grade 1 data, etc.), regardless of the length of time that students had received *RM* instruction. Since the performance of the groups (i.e., intact groups and grade-level groups) was similar across the years, as can be seen in the first of each pair of figures, the second figure appears to more clearly describe the performance of students across all five years.

MCT Reading scale score performance for students who began the *RM* program in kindergarten increased linearly across grades 2, 3, and 4 (Figures 2 and 3). Average performance for these students was above the cut-off for proficient performance for each of the three grade levels.

On the *HGLP* (CLOZE) measure, student performance tended to improve across grades 1, 2, and 3 and then decreased at grade four (Figure 5). For grades 1, 2, and 3, average student performance on the *HGLP* (CLOZE) measure was at or above the independent reading level.

Examination of Figure 7 indicated that the percentage of students performing at the independent oral reading level was modest at best, reaching a maximum of about 36% at grade three. Also, the percentage of students reading at the instructional level or higher on the *QRI-3* oral reading measure increased through year two and then appeared to stabilize at about 70% (Figure 9). The percentage of students reading below the frustration level on the *QRI-3* oral reading measure dropped notably through grade 2 but then appeared to stabilize at around 25% (Figure 11).

Students' silent reading performance (expository text) was quite poor. Very few students were reading at the independent or instructional level for grades K through 4 (Figures 12 through 15) and the percentage reading at the frustration level was consistently above 90% (Figure 17).

Explicit, implicit and total reading comprehension was consistently low rarely exceeding the 30% correct level (Figures 18 through 23).

*Data Analysis, Part 2*

The results of the statistical analyses constituting part 2 are presented in Tables 12 and 13. Each of the comparisons presented in Tables 12 and 13 are such that the students beginning *RM* in kindergarten are compared with those students who began *RM* at a later grade level.

A statistically significant difference was found in the MCT Reading scale score means of those students who began *RM* in kindergarten and those who began *RM* at grade 2 ($t(266) = 2.83$, $p < .01$) with the mean of those who began *RM* in kindergarten exceeding that of those who began *RM* at grade 2 (Table 12). However, no statistically significant difference in the means of

those students who began *RM* in kindergarten and those who began *RM* in grade 3 was found ($t(225) = 1.92$, ns).

The only statistically significant difference found for the *HGLP* (CLOZE) measures was at the end of grade 1 ($t(418) = 5.05$, $p < .01$). The mean CLOZE percentage score was greater for those who began *RM* in kindergarten (58.44) than for those who began *RM* at grade 1 (45.21). No statistically significant differences were found at grades two and three (Table 12).

For the *QRI-3* oral and silent reading measures, no statistically significant differences in the percentage of students performing at the instructional level or higher were found for grades 1, 2, and 3 (Table 13). Comparison of the explicit, implicit, and total comprehension levels yielded statistically significant differences ($p < .01$) only on the implicit comprehension measures at grades 1 and 2. However, at grade 1 those students who did not begin RM in kindergarten out scored the children who began RM in kindergarten. The reverse held at grade 2 with those students who began RM in kindergarten scoring higher.

*Data Analysis, Part 3*

Part three of the analysis compared the performance of those who were in the *RM* program beginning in kindergarten with all students who began the program at a later grade level. The results are presented descriptively in Tables 14 through 20 and graphically in Figures 24 through 45. For each pair of these figures, the first figure indicates that the performance of those who began the *RM* program in kindergarten is virtually identical to that of those who began the program at later grades. The second figure of each pair presents the performance averaged across all groups. Little difference in performance between those who began *RM* in kindergarten and those who began *RM* at a later grade was found on any of the measures examined.

In summary, it was found that: (a) *MCT* mean scores increased linearly from grades 2 to 7; (b) CLOZE performance increased from grades 1 to 3 and decreased thereafter; (c) the percentages of students performing at the **independent reading level on narrative texts** (oral reading) were low, generally in the 30s; (d) the percentages of students performing at the **instructional reading level on narrative texts** (oral reading) were generally in the 80s; (e) the percentages of students performing at the **frustration reading level on narrative texts** (oral reading) were generally in the 20s; (f) virtually no students performed at the **independent reading level on expository texts** (silent reading); (g) there was some improvement in percentage of students performing at the **instructional reading level on expository texts** (silent reading) beginning at grade 5; (h) percentages of students performing at the **frustration reading level on expository texts** (silent reading) were generally in the upper 70s; and (i) explicit, implicit, and total reading comprehension scores indicated slow improvement across the years.

## Discussion

The design of this longitudinal study required that grade-level passages be administered annually, using both oral and silent reading assessments, so that the extent to which *RM* instruction promoted grade-level or higher reading comprehension could be examined over a five-year period of time. Overall, the results of this study suggested that sequential, systematic direct instruction via the *RM* program over the five-year period did not have a consistent positive impact on reading comprehension scores of students. This finding was supported by three procedures used to examine the data: descriptive results, statistical comparisons, and graphs comparing group performance over the five years.

The first set of descriptive analyses (Tables 1-11 and Figures 2-23) contrasted grade-level performance of students who began *RM* in kindergarten with groups of students who began

*RM* at later designated grade levels; for example, in year 5 of the study students who began *RM* in kindergarten were in grade 4, having received only *RM* instruction throughout the five-year period, so this group's performance at each grade level served as a point of comparison for the corresponding grade-level performance of groups of students who began *RM* after the kindergarten year. In general, the performance of the students was such that: (a) students who began *RM* in kindergarten performed similarly to students who began *RM* after the kindergarten year; (b) the means of the *MCT* reading scale scores fell above the “proficient” level and increased linearly over the years examined; (c) mean scores on the *HGLP* (CLOZE) measure changed in a clearly nonlinear fashion with students performing at or above the “independent” level for grades K through 3 and dropping thereafter; (d) student performance on the oral reading measure was such that generally less than one third of the students were reading at the independent level over the years examined, but the percentage of students reading at the instructional level increased over the years leveling off at about 80% with a commensurate decrease in the percentage of students reading at the frustration level; (e) the performance of the students on the silent reading tasks was disappointing with very few students reading at the independent level and nearly all reading at the frustration level; and (f) on the explicit, implicit, and total reading comprehension measures, performance was generally low over the years examined though modest improvement was indicated over the years. These results contradict the findings of Meyer, Gersten, and Gutkin (1983) who reported that Follow Through students who received sequential, systematic direct instruction via DISTAR in kindergarten through third grades maintained significantly higher reading scores than comparison students in grades 4 and 5.

Of particular interest is the contrast in student performance on the MCT and the cloze

measure where the MCT scale scores improved linearly over the grade levels while the cloze scores tended to level off or drop after grade 3, a finding further substantiated in part three of the analysis. The *MCT* places considerable emphasis on assessment of word recognition skills, such as word structures, word patterns, phonics, and vocabulary, with comprehension assessment focusing on literal comprehension with some attention to inferential comprehension. In contrast to the *MCT*, both the *HGLP* (CLOZE) measure assesses a fuller range of reading comprehension skills (e.g., literal, inferential, evaluative, etc.). Some caution should be exercised in the interpretation of this drop, however, since the mean at grade 4 is based on the smallest number of students. It is noted, however, that *HGLP* (CLOZE) scores dropped at the fourth-grade level as well for students who did not enter the *RM* program in kindergarten (see Figures 26 and 27). More research is needed to explore why initial gains in reading comprehension scores may, or may not be, sustained in subsequent years of *RM* instruction. Collectively, the results of the descriptive analyses provide little support for *RM*.

Results of the statistical analyses (Tables 12 and 13), further indicated lack of a consistent, positive impact by *RM* on students' reading comprehension performance. Of the twenty statistical comparisons made between students who began RM in kindergarten with students beginning RM at some later grade, only four were statistically significant. Students beginning RM in kindergarten had higher mean scores on the MCT and cloze at grade 1 and a higher mean implicit reading comprehension scores at grade two than did students beginning RM at those grade levels ($p < .01$). However, the students who began RM at grade 2 out performed ($p < .01$) the students who began *RM* in kindergarten at grade 2. These results provide little support for the *RM* program.

Results of the third analysis of data reinforced the findings of the statistical analyses, as shown in the 11 pairs of graphs (Figures 24-45) and the associated tables (Tables 14-20) from the analyses. Over the years examined, the performance of the students on each of the measures, as seen in the first of each pair of graphs, is remarkably similar regardless of when they began *RM*. Student performance on the MCT continued to improve linearly, cloze performance tended to drop and level off after grade 3, performance on the oral reading tasks was clearly better than that for the silent reading tasks, and comprehension on the explicit, implicit and total reading comprehension measures of the QRI tended to improve slowly.

It was disappointing to see that during the five-year period of study the percentage of students reading at the frustration reading level *QRI* narrative passages was so high particularly on the *QRI* expository passages, especially when considering that all passages were grade-level selections. Even though reading experts (Dreher & Sammons, 1994; Duke, 2004; Frey & Fisher, 2007) recognize that expository reading tends to be more difficult for students, it was disconcerting to find such high percentages of students unable to comprehend grade-level expository texts. Some studies have reported that lack of prior knowledge about a topic decreases comprehension Marr & Gormley, 1982; Pearson, Hansen, & Gordon, 1979; Taft and Leslie, 1985), so this may have been a factor in students' poor comprehension of expository passages.

Collectively, results of the three analyses of this longitudinal data indicate that neither the grade level at which students began the *RM* program nor the length of time that students participated in the *RM* program impacted reading comprehension performance in a consistently positive direction. The credibility of this interpretation of the results of the study is supported by

the fact that the students were randomly drawn from six different schools and the study was done by researchers who were not officially connected with the school district.

Since the *RM* program requires that all students, regardless of their grade levels, progress through the same sequence of lessons, the focus on graphophonemic skills in the early lessons may have affected students' comprehension performance; over-reliance on the graphophonemic cue system indicates an imbalance in the reader's use of the three cue systems during the reading process, and an imbalance tends to have a negative affect on reading comprehension (Burke, 1976; Christie, 1981; Menosky, 1976; Taft & Leslie, 1985). According to Allen (1976), "... growth in reading is retarded when individuals are asked to distort their language in drills which isolate the phonemic and graphic systems from functioning language contexts" (p. 73).

Although a few statistically significant differences were found in part 2 of the analysis, the preponderance of data provide little evidence to support the viability of the *RM* program for the development of reading comprehension abilities of students as they progress through the elementary grades. It should be kept in mind that the absence of a control group makes these conclusions less than definitive. Nevertheless, based on the data available, little support for the program was found.

The findings of this study raise some questions to be addressed in future research studies. First, will students who receive only *RM* instruction for three or more consecutive school years, beginning in kindergarten, be able to read grade-level narrative and expository texts with adequate comprehension (i.e., 75% or higher) as they progress through the grades.

Second, what is the optimum time period (i.e., grade levels) in which *RM* instruction benefits oral- and silent-reading comprehension performance? And, will continued sequential, systematic direct instruction beyond the optimum time period have a positive, neutral, or

negative impact on reading performance? The findings in this study suggest that the benefits of *RM* instruction are more evident from kindergarten through grade two, but further research is needed to answer this question.

Third, is there a relationship between *RM* instruction and reading comprehension demands associated with increase in grade level? If so, is the relationship a positive or a negative one? For example, if the major reading comprehension demand in the lower grades tends to be at the explicit level, do we find that sequential, systematic direct instruction is more effective than when reading comprehension demands are at implicit levels, such as the interpretive or evaluative levels

Fourth, do students who exhibit low, average, or high early reading ability benefit in similar ways from *RM* instruction? Scarcelli (1999) compared the effects of direct instruction and whole language instruction on first-grade students' decoding and comprehension performance and reported that students in the average to below average range (i.e., the bottom third) of reading ability did significantly better with direct instruction, but that type of instruction did not produce significant post-test differences for students in the middle-third and upper-third subgroups. Scarcelli noted, however, that students in the top-third subgroup (based on pretest results) who entered first grade with a strong vocabulary and good decoding skills seemed to achieve and progress at a quicker rate in the whole language environment. More research is needed to determine how *RM* impacts different levels of early reading ability.

Since the findings of this study may provide useful information to school administrators who are considering the implementation of *RM* (or some other DI program), the following suggestions are offered. First, the inclusion of a comparison group of randomly selected students will allow for a comparison of the effects of *RM* instruction and some other instructional

approach to reading. Second, a longitudinal study designed to address some of the questions raised in this study may provide insights into the specific ways in which a selected DI program impacts reading performance. Third, the initial implementation of a DI program should occur at the kindergarten level, as the impact of DI on the reading performance of students who have been exposed to other instructional programs is unclear, especially when DI begins after second grade. Based on our study, the greatest benefits of *RM* occurred from kindergarten through grade two, especially between grades 1 and 2. Four, the inclusion of both expository and narrative texts as measures of comprehension is recommended, since expository text is used increasingly as students progress through the grades. Five, the selection of a DI program which balances instruction in word-recognition and reading-comprehension strategies is recommended.

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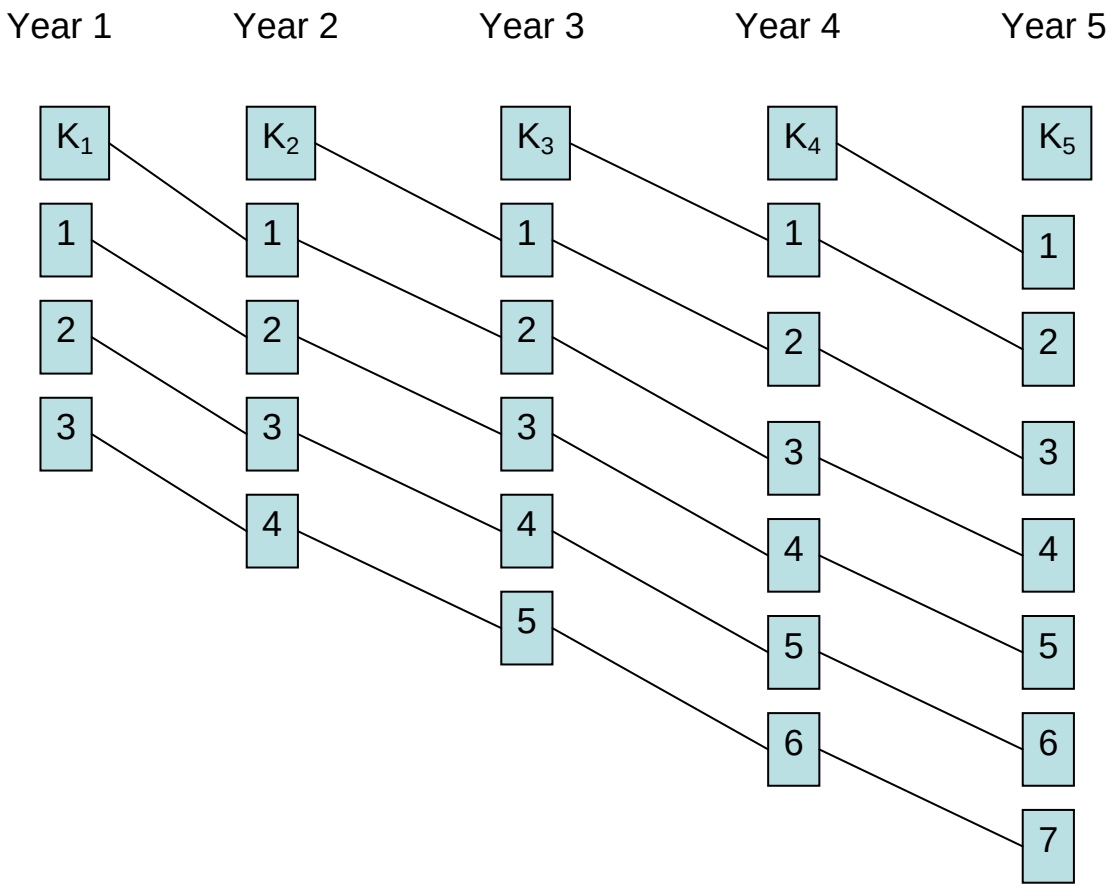


*Figure 1.* Grade-Level Composition for Eight Groups of Participants Across the Five-Year Period of *RM* Instruction

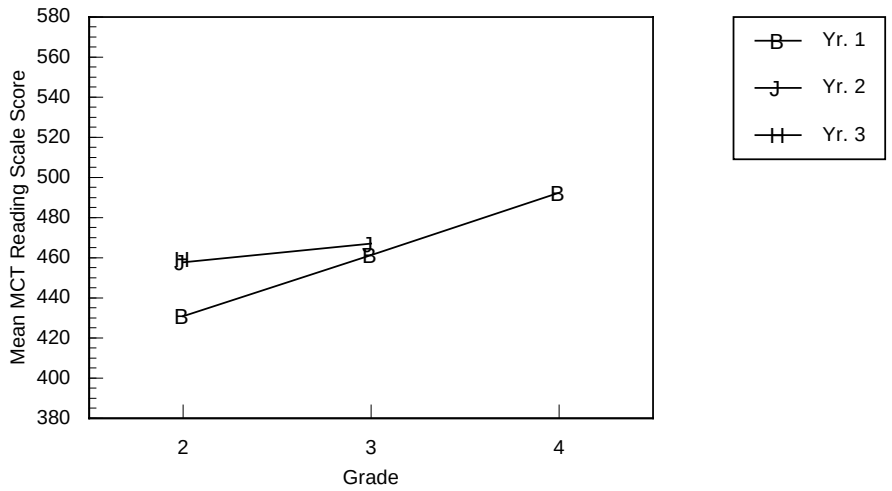


*Figure 2*. *MCT* Reading Scale Score Performance for Students Beginning *RM* in Kindergarten by Year

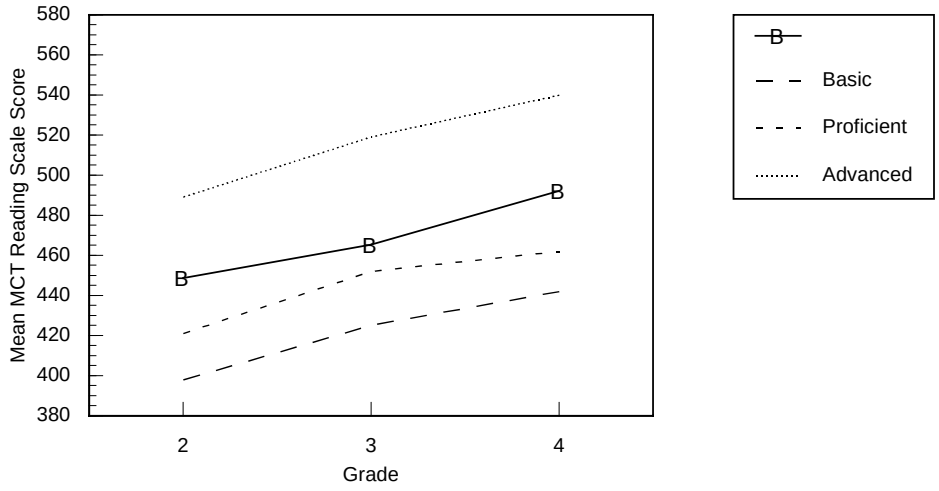


*Figure 3*. *MCT* Reading Scale Score Performance for Students Beginning *RM* in Kindergarten by Year

*Table 1*

*MCT* Reading Scale Scores for Students Beginning *RM* in Kindergarten by Program Year

| | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* |
| 2 | 430.92 | 43.82 | 61 | 457.83 | 41.22 | 59 | 459.37 | 37.56 | 51 | 448.69 | 41.03 | 171 |
| 3 | 461.17 | 47.07 | 46 | 467.07 | 39.37 | 54 | | | | 465.37 | 41.63 | 100 |
| 4 | 492.35 | 52.21 | 40 | | | | | | | 492.10 | 52.21 | 40 |

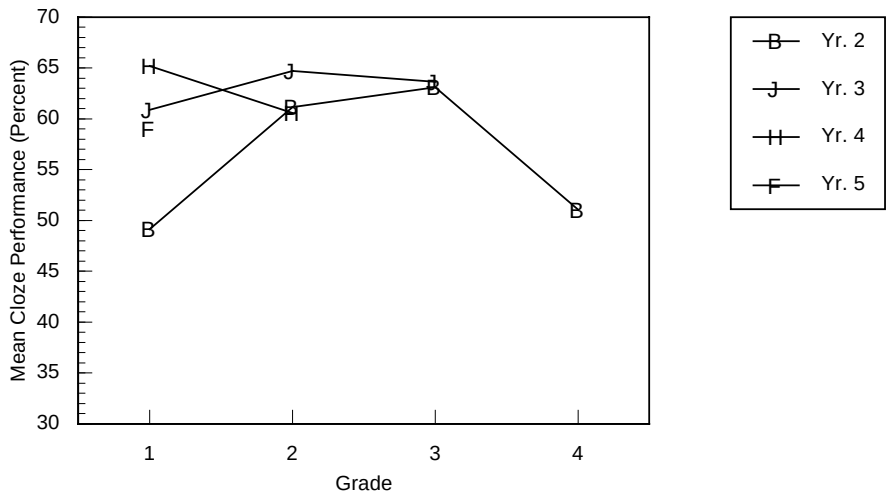


*Figure 4.* Mean *HGLP (CLOZE)* Performance (%) for Students Beginning *RM* in Kindergarten

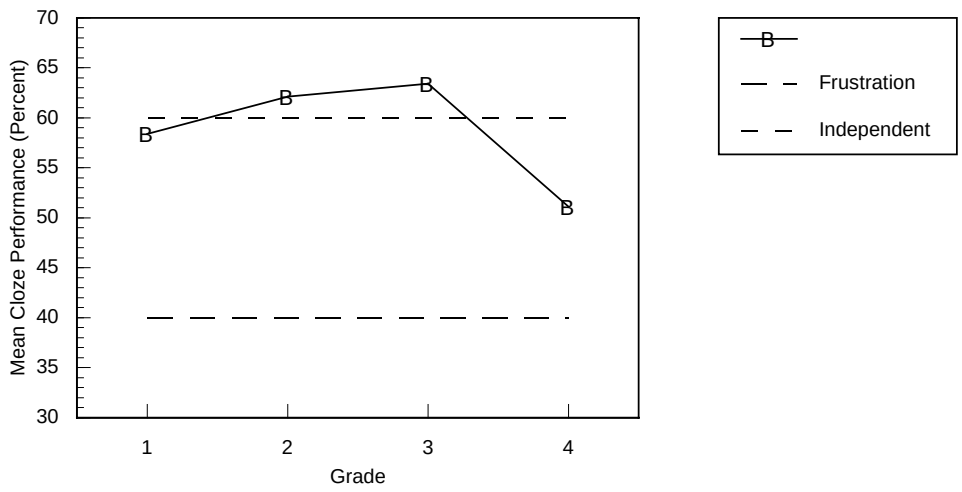


*Figure 5.* Mean *HGLP (CLOZE)* Performance (%) for All Students

Table 2

*HGLP (CLOZE)* Performance of Students Beginning *RM* in Kindergarten by Program Year

| | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* |
| 1 | 49.16 | 19.95 | 77 | 60.89 | 19.71 | 80 | 65.22 | 17.89 | 71 | 59.02 | 18.77 | 62 | 58.44 | 19.08 | 290 |
| 2 | 61.13 | 21.14 | 73 | 64.69 | 18.14 | 64 | 60.56 | 18.92 | 59 | | | | 62.12 | 19.40 | 196 |
| 3 | 63.12 | 17.93 | 55 | 63.65 | 14.03 | 47 | | | | | | | 63.36 | 15.89 | 102 |
| 4 | 51.07 | 12.76 | 42 | | | | | | | | | | 51.07 | 12.76 | 42 |

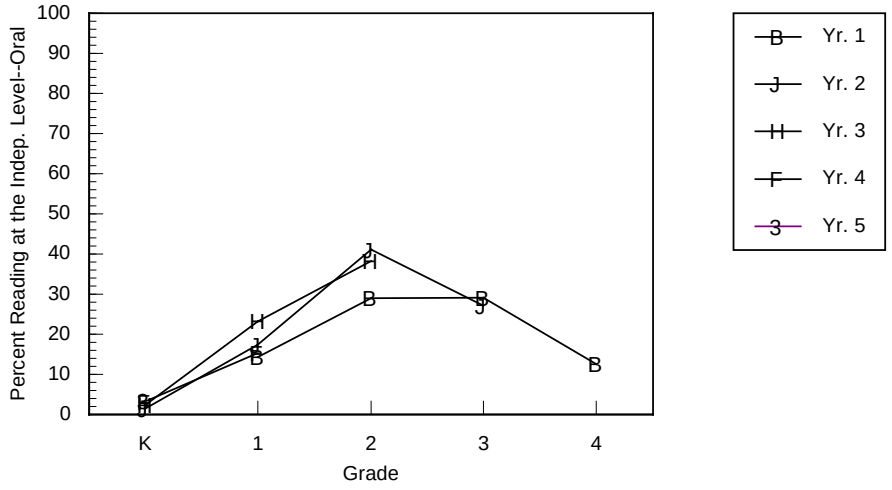


*Figure 6.* Percent of Students Reading at the Independent Level for Students Beginning *RM* in Kindergarten

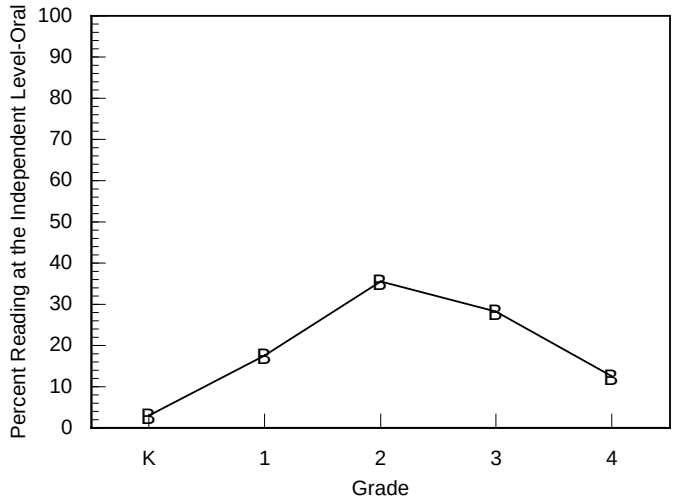


*Figure 7.* Percent of Students Reading at the Independent Level for All Students

*Table 3*

Percent of Students Beginning *RM* in Kindergarten Reading at the Independent Level—Narrative (Oral) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *N* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 4 | 93 | 4.30 | 1 | 72 | 1.39 | 2 | 85 | 2.35 | 3 | 94 | 3.19 | 3 | 89 | 3.37 | 13 | 433 | 3.00 |
| 1 | 11 | 77 | 14.29 | 11 | 63 | 17.46 | 16 | 69 | 23.19 | 9 | 59 | 15.25 | | | | 47 | 268 | 17.54 |
| 2 | 20 | 69 | 28.99 | 23 | 56 | 41.07 | 21 | 55 | 38.18 | | | | | | | 64 | 180 | 35.56 |
| 3 | 16 | 55 | 29.09 | 13 | 48 | 27.08 | | | | | | | | | | 29 | 103 | 28.16 |
| 4 | 6 | 48 | 12.50 | | | | | | | | | | | | | 6 | 48 | 12.50 |

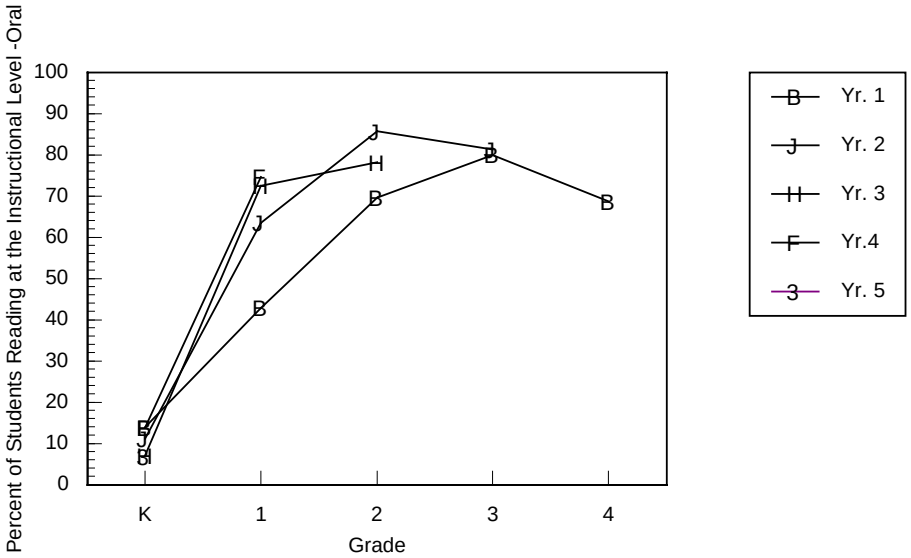


*Figure 8.* Percent of Students Reading at the Instructional Level (Independent or Instructional) for Students Beginning *RM* in Kindergarten

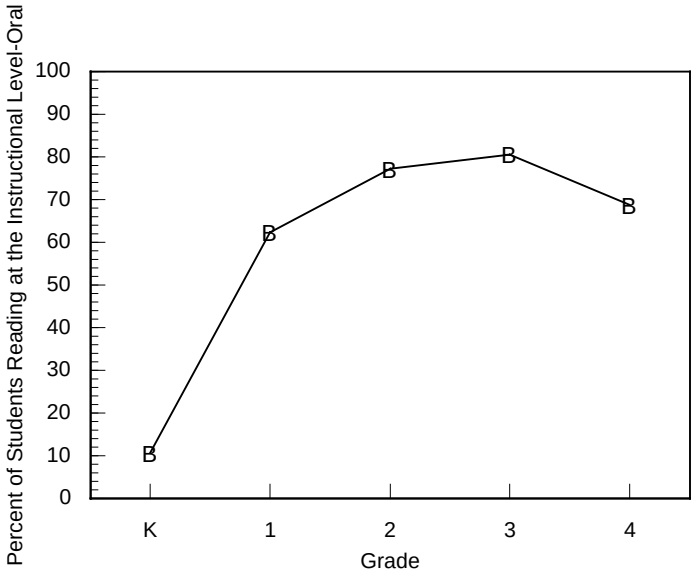


*Figure 9.* Percent of Students Reading at the Instructional Level (Independent or Instructional) for All Students

*Table 4*

Percent of Students Beginning *RM* in Kindergarten Reading at the Instructional (Independent or Instructional) Level—Narrative (Oral) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *N* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 13 | 93 | 13.98 | 8 | 72 | 11.11 | 6 | 85 | 7.06 | 13 | 94 | 13.83 | 6 | 89 | 6.74 | 46 | 433 | 10.62 |
| 1 | 33 | 77 | 42.86 | 40 | 63 | 63.49 | 50 | 69 | 72.46 | 44 | 59 | 74.58 | | | | 167 | 268 | 62.31 |
| 2 | 48 | 69 | 69.57 | 48 | 56 | 85.71 | 43 | 55 | 78.18 | | | | | | | 139 | 180 | 77.22 |
| 3 | 44 | 55 | 80.00 | 39 | 48 | 81.25 | | | | | | | | | | 83 | 103 | 80.58 |
| 4 | 33 | 48 | 68.75 | | | | | | | | | | | | | 33 | 48 | 68.75 |

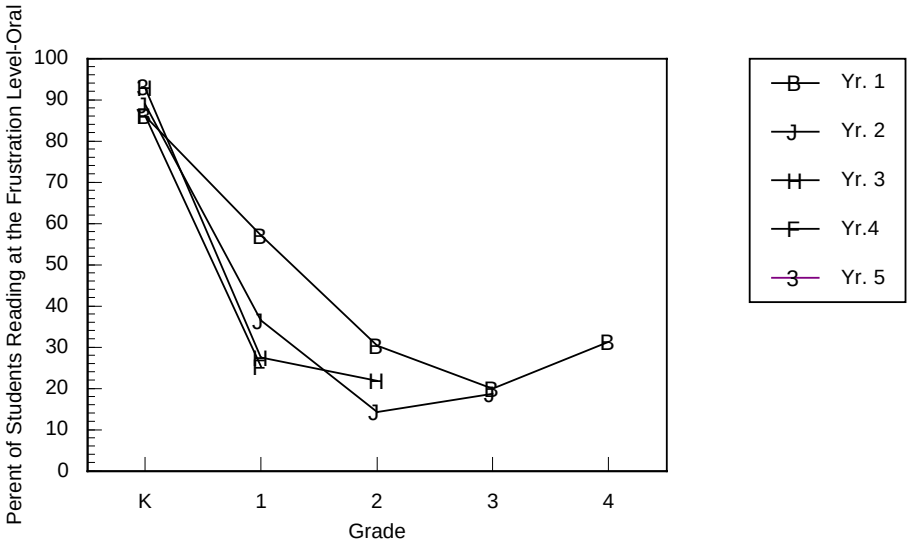


*Figure 10.* Percent of Students Reading at the Frustration Level for Students Beginning *RM* in Kindergarten

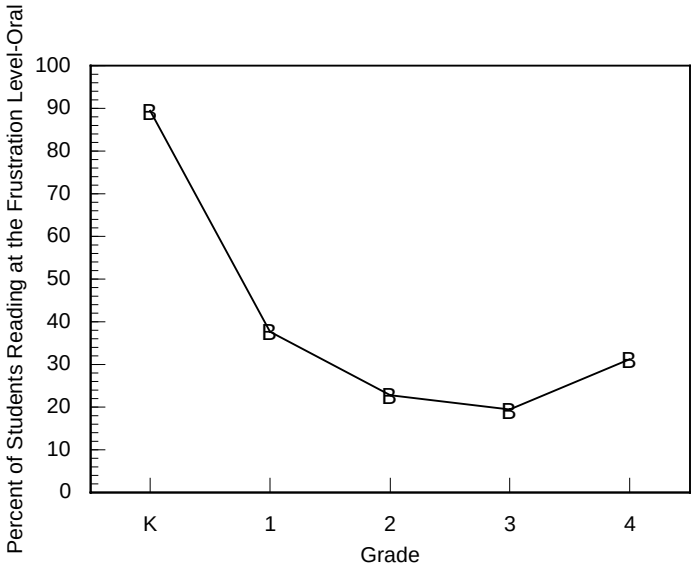


*Figure 11.* Percent of Students Reading at the Frustration Level for All Students

*Table 5*

Percent of Students Beginning *RM* in Kindergarten Reading at the Frustration) Level—Narrative (Oral) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *N* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 80 | 93 | 86.02 | 64 | 72 | 88.89 | 79 | 85 | 92.94 | 81 | 94 | 86.17 | 83 | 89 | 93.26 | 387 | 433 | 89.38 |
| 1 | 44 | 77 | 57.14 | 23 | 63 | 36.51 | 19 | 69 | 27.54 | 15 | 59 | 25.42 | | | | 101 | 268 | 37.69 |
| 2 | 21 | 69 | 30.43 | 8 | 56 | 14.29 | 12 | 55 | 21.82 | | | | | | | 41 | 180 | 22.78 |
| 3 | 11 | 55 | 20.00 | 9 | 48 | 18.75 | | | | | | | | | | 20 | 103 | 19.42 |
| 4 | 15 | 48 | 31.25 | | | | | | | | | | | | | 15 | 48 | 31.25 |

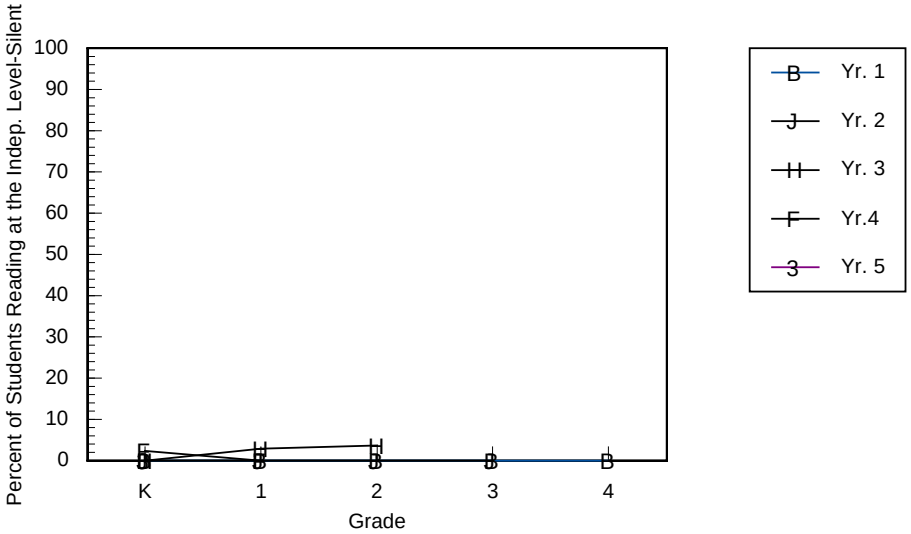


*Figure 12.* Percent of Students Reading at the Independent Level for Students Beginning *RM* in Kindergarten

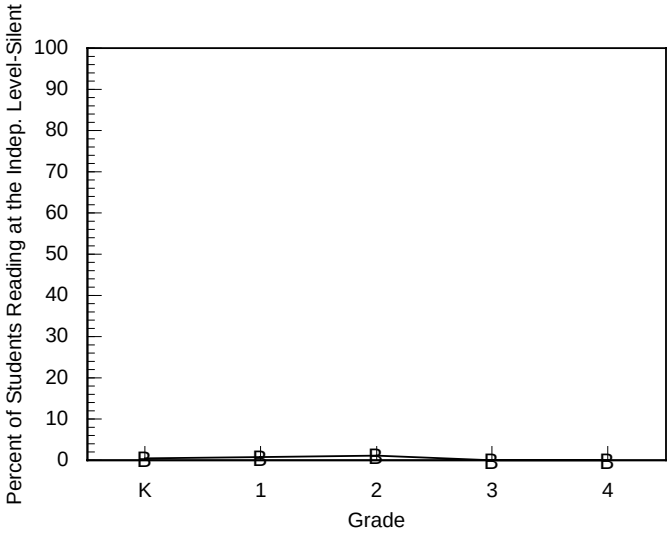


*Figure 13.* Percent of Students Reading at the Independent Level for All Students

*Table 6*

Percent of Students Beginning *RM* in Kindergarten Reading at the Independent Level—Expository (Silent) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 0 | 95 | 0.00 | 0 | 73 | 0.00 | 0 | 84 | 0.00 | 2 | 87 | 2.29 | 0 | 86 | 0.00 | 2 | 425 | 0.47 |
| 1 | 0 | 74 | 0.00 | 0 | 63 | 0.00 | 2 | 68 | 2.94 | 0 | 58 | 0.00 | | | | 2 | 263 | 0.76 |
| 2 | 0 | 69 | 0.00 | 0 | 56 | 0.00 | 2 | 55 | 3.63 | | | | | | | 2 | 180 | 1.11 |
| 3 | 0 | 56 | 0.00 | 0 | 47 | 0.00 | | | | | | | | | | 0 | 103 | 0.00 |
| 4 | 0 | 47 | 0.00 | | | | | | | | | | | | | 0 | 47 | 0.00 |

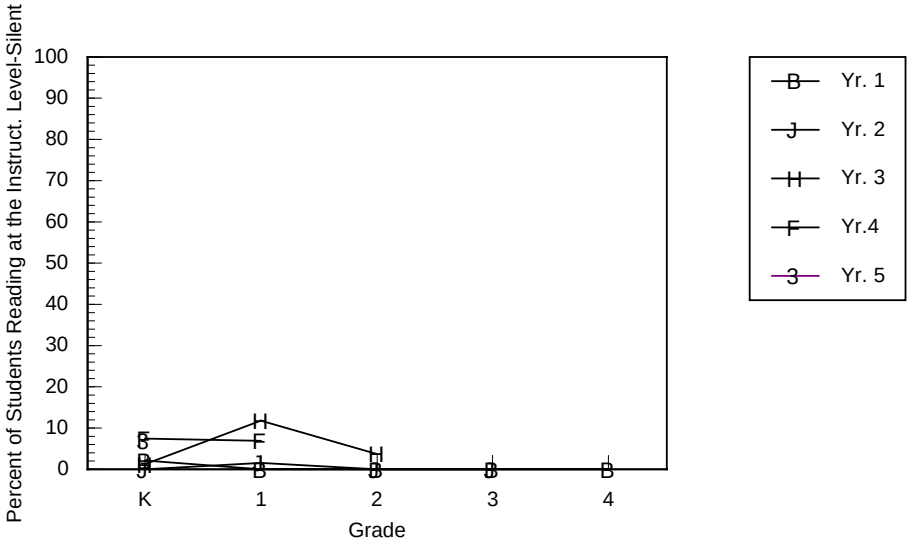


*Figure 14.* Percent of Students Reading at the Instructional Level (Instructional or Independent) for Students Beginning *RM* in Kindergarten

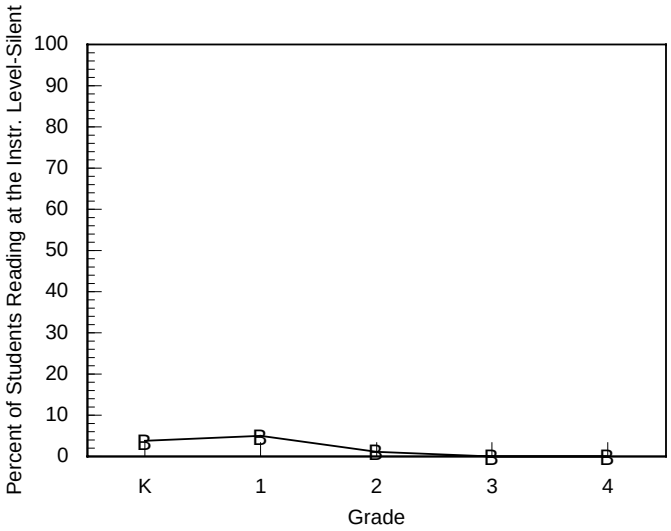


*Figure 15.* Percent of Students Reading at the Instructional Level (Independent or Instructional) for All Students

*Table 7*

Percent of Students Beginning *RM* in Kindergarten Reading at the Instructional (Independent and Instructional) Level—Expository (Silent) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 2 | 95 | 2.11 | 0 | 73 | 0.00 | 1 | 84 | 1.19 | 7 | 94 | 7.45 | 6 | 86 | 6.98 | 16 | 432 | 3.70 |
| 1 | 0 | 74 | 0.00 | 1 | 63 | 1.58 | 8 | 68 | 11.76 | 4 | 58 | 6.90 | | | | 13 | 263 | 4.94 |
| 2 | 0 | 69 | 0.00 | 0 | 56 | 0.00 | 2 | 55 | 3.64 | | | | | | | 2 | 180 | 1.11 |
| 3 | 0 | 56 | 0.00 | 0 | 47 | 0.00 | | | | | | | | | | 0 | 103 | 0.00 |
| 4 | 0 | 47 | 0.00 | | | | | | | | | | | | | 0 | 47 | 0.00 |

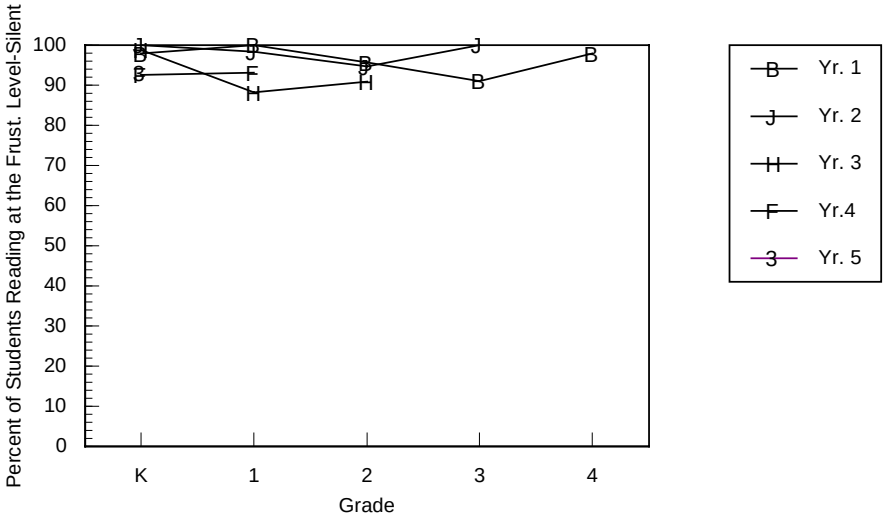


*Figure 16*. Percent of Students Reading at the Frustration Level for Students Beginning *RM* in Kindergarten

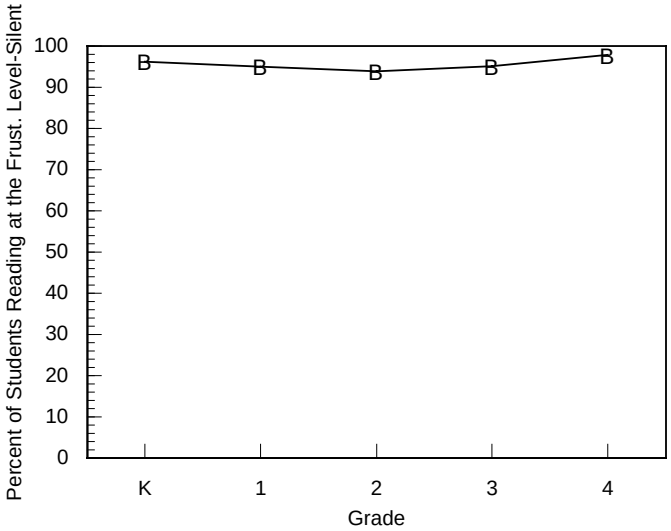


*Figure 17*. Percent of Students Reading at the Frustration Level for All Students

*Table 8.*

Percent of Students Beginning *RM* in Kindergarten Reading at the Frustration) Level—Expository (Silent) Reading

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* | *n* | *N* | *p* |
| K | 93 | 95 | 97.89 | 73 | 73 | 100.00 | 83 | 84 | 98.81 | 87 | 94 | 92.55 | 80 | 86 | 93.02 | 416 | 432 | 96.30 |
| 1 | 74 | 74 | 100.00 | 62 | 63 | 98.41 | 60 | 68 | 88.24 | 54 | 58 | 93.10 | | | | 250 | 263 | 95.06 |
| 2 | 66 | 69 | 95.65 | 53 | 56 | 94.64 | 50 | 55 | 90.91 | | | | | | | 169 | 180 | 93.89 |
| 3 | 51 | 56 | 91.07 | 47 | 47 | 100.00 | | | | | | | | | | 98 | 103 | 95.15 |
| 4 | 46 | 47 | 97.87 | | | | | | | | | | | | | 46 | 47 | 97.87 |

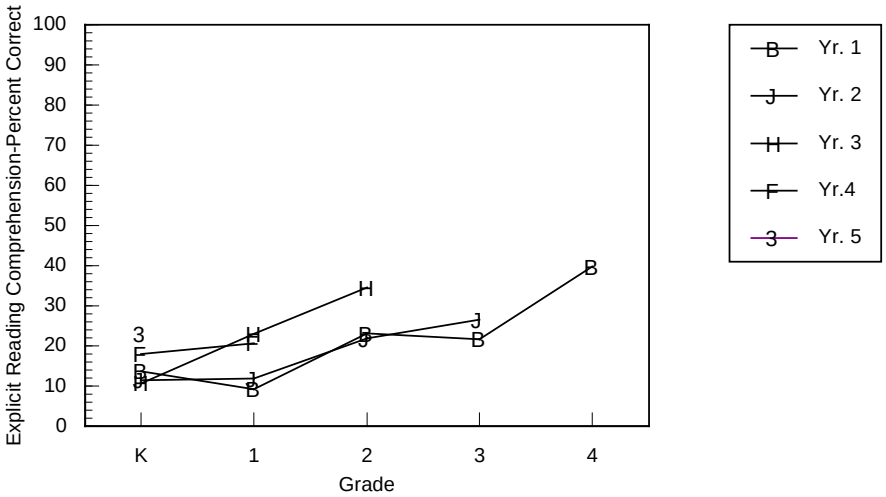


*Figure 18.* Explicit Reading Comprehension Performance (Percent Correct) for Students Beginning *RM* in Kindergarten

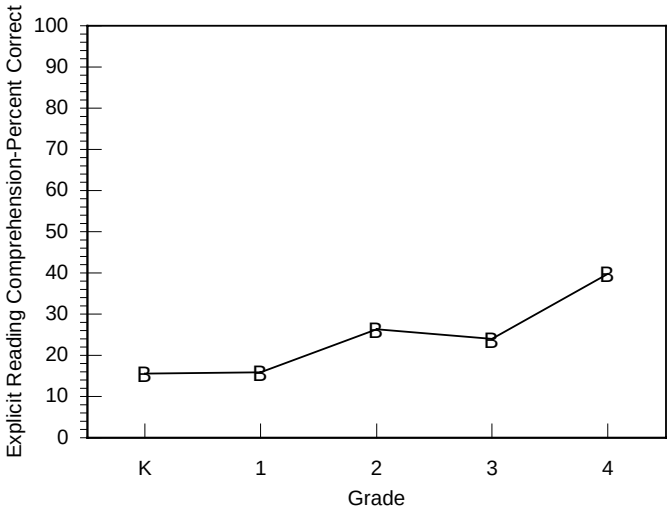


*Figure 19.* Explicit Reading Comprehension Performance (Percent Correct) for All Students

*Table 9*

Explicit Reading Comprehension Performance (Percent Correct) for Students Beginning *RM* in Kindergarten

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* |
| K | 13.61 | 18.04 | 90 | 11.49 | 16.65 | 74 | 10.71 | 15.17 | 84 | 17.95 | 22.34 | 94 | 23.11 | 22.81 | 86 | 15.54 | 19.62 | 428 |
| 1 | 9.17 | 15.01 | 75 | 11.90 | 17.45 | 63 | 22.98 | 29.18 | 68 | 20.69 | 24.40 | 58 | | | | 15.91 | 22.02 | 264 |
| 2 | 23.08 | 27.35 | 65 | 21.88 | 26.57 | 56 | 34.55 | 31.64 | 55 | | | | | | | 26.28 | 28.52 | 176 |
| 3 | 21.63 | 12.50 | 52 | 26.60 | 21.59 | 47 | | | | | | | | | | 23.99 | 17.41 | 99 |
| 4 | 39.83 | 28.51 | 43 | | | | | | | | | | | | | 39.83 | 28.51 | 43 |

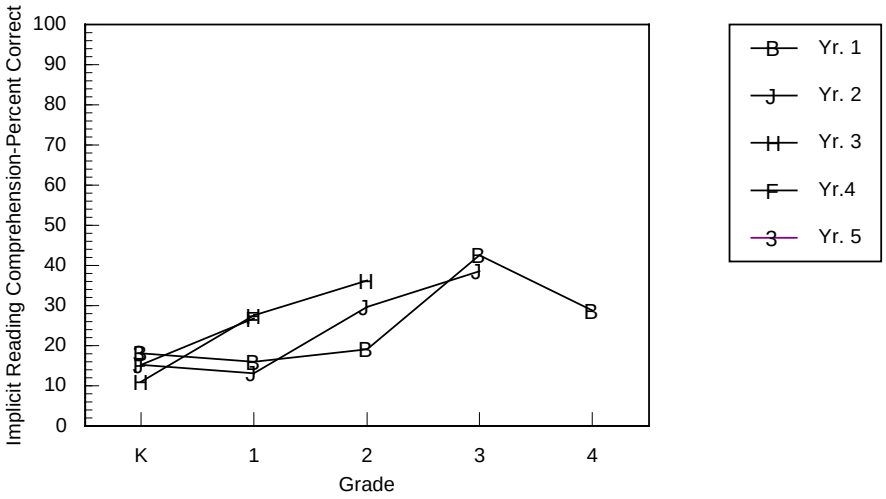


*Figure 20.* Implicit Reading Comprehension (Percent Correct) for Students Beginning *RM* in Kindergarten

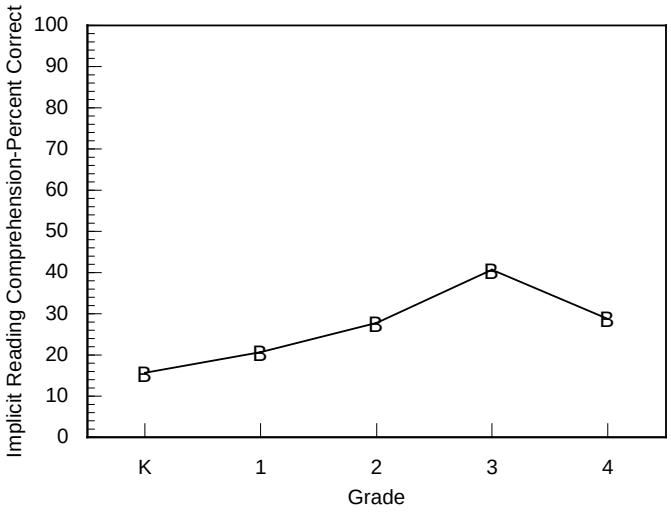


*Figure 21.* Implicit Reading Comprehension (Percent Correct) for All Students

*Table 10*

Implicit Reading Comprehension Performance (Percent Correct) for Students Beginning *RM* in Kindergarten

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* |
| K | 18.06 | 25.97 | 90 | 15.20 | 26.76 | 74 | 11.01 | 18.35 | 84 | 15.16 | 25.46 | 94 | 18.31 | 25.27 | 86 | 15.60 | 24.57 | 428 |
| 1 | 16.00 | 24.88 | 75 | 13.10 | 25.34 | 63 | 27.57 | 32.65 | 68 | 26.72 | 26.85 | 58 | | | | 20.64 | 27.61 | 264 |
| 2 | 19.04 | 19.52 | 65 | 29.69 | 26.39 | 56 | 36.14 | 22.91 | 55 | | | | | | | 27.77 | 22.94 | 176 |
| 3 | 42.55 | 26.11 | 52 | 38.56 | 20.99 | 47 | | | | | | | | | | 40.66 | 23.53 | 99 |
| 4 | 28.78 | 25.37 | 47 | | | | | | | | | | | | | 28.78 | 25.37 | 43 |

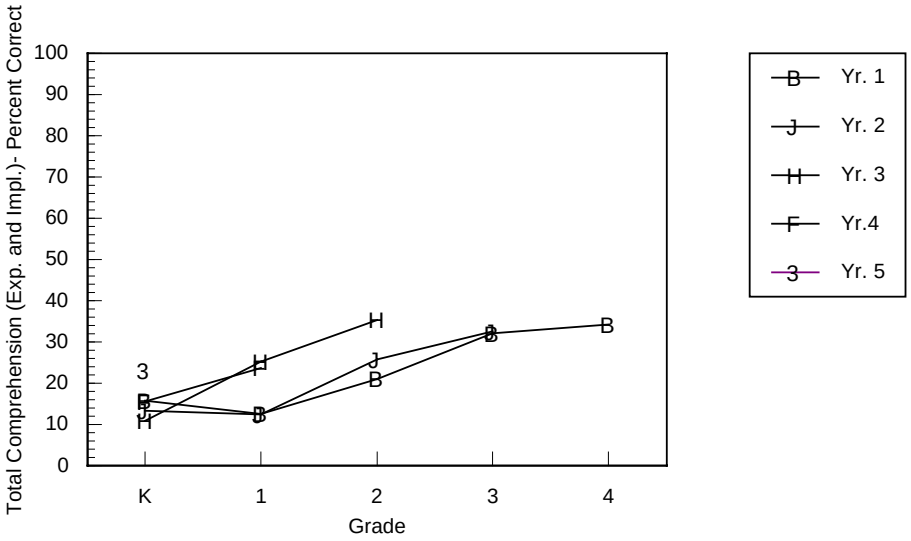


*Figure 22.* Total Comprehension (Explicit and Implicit) Percent Correct for Students Beginning *RM* in Kindergarten

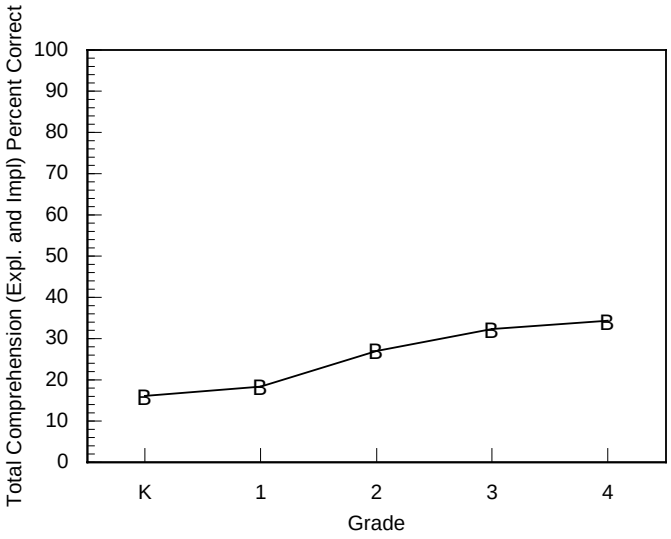


*Figure 23.* Total Comprehension (Explicit and Implicit) Percent Correct for All Students

*Table 11*

Total Reading Comprehension Performance (Explicit and Implicit) Percent Correct for Students Beginning *RM* in Kindergarten

| | Year 1 | | | Year 2 | | | Year 3 | | | Year 4 | | | Year 5 | | | All | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* | *M* | *S* | *n* |
| K | 15.83 | 22.01 | 90 | 13.34 | 21.70 | 74 | 10.86 | 16.77 | 84 | 16.56 | 23.90 | 94 | 23.11 | 18.75 | 86 | 16.05 | 20.63 | 428 |
| 1 | 12.58 | 19.95 | 75 | 12.50 | 21.40 | 63 | 25.28 | 30.92 | 68 | 23.71 | 25.63 | 58 | | | | 18.28 | 24.48 | 264 |
| 2 | 21.06 | 23.44 | 65 | 25.78 | 26.48 | 56 | 35.34 | 27.28 | 55 | | | | | | | 27.02 | 25.77 | 176 |
| 3 | 32.09 | 26.94 | 52 | 32.58 | 21.29 | 47 | | | | | | | | | | 32.32 | 24.12 | 99 |
| 4 | 34.30 | 26..94 | 43 | | | | | | | | | | | | | 34.30 | 26.94 | 43 |

*Table 12*

Comparisons of Means on *MCT* and *HGLP CLOZE* Measures: Students Beginning *RM* in Kindergarten Compared with Students Beginning *RM* at the Designated Grade

| | | When *RM* Began | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | At Kindergarten | | | At Designated Grade | | | | | |
| Measure | Grade | Mean | *S* | *n* | Mean | *S* | *n* | *t* | *df* | *p* |
| MCT | 2 | 448.69 | 41.03 | 171 | 432.04 | 54.34 | 97 | 2.83 | 266 | < .01 |
| | 3 | 464.36 | 41.63 | 140 | 452.71 | 48.72 | 87 | 1.92 | 225 | ns |
| CLOZE | 1 | 58.44 | 19.05 | 290 | 45.21 | 34.43 | 130 | 5.05 | 418 | < .01 |
| | 2 | 62.12 | 19.40 | 196 | 59.36 | 24.59 | 131 | 1.13 | 325 | ns |
| | 3 | 63.36 | 15.98 | 102 | 63.63 | 15.79 | 131 | -0.13 | 231 | ns |
| Explicit | 1 | 15.91 | 22.05 | 264 | 12.23 | 19.99 | 94 | 1.42 | 356 | ns |
| | 2 | 26.28 | 26.78 | 176 | 26.35 | 24.81 | 102 | -0.02 | 276 | ns |
| | 3 | 23.99 | 22.79 | 99 | 23.27 | 21.40 | 65 | 0.20 | 164 | ns |
| Implicit | 1 | 20.64 | 27.61 | 264 | 31.90 | 33.28 | 94 | -3.21 | 356 | < .01 |
| | 2 | 27.77 | 22.94 | 176 | 19.85 | 20.46 | 102 | 2.88 | 276 | < .01 |
| | 3 | 40.66 | 25.53 | 99 | 38.08 | 21.47 | 65 | 0.68 | 164 | ns |
| Total | 1 | 18.28 | 24.48 | 264 | 18.79 | 19.97 | 94 | -0.18 | 356 | ns |
| | 2 | 27.02 | 25.77 | 176 | 23.10 | 18.63 | 102 | 1.35 | 276 | ns |
| | 3 | 32.32 | 24.12 | 99 | 30.67 | 17.32 | 65 | 0.48 | 164 | ns |

*Table 13*

Comparisons of Percentages of Students Performing at Instructional or Higher Reading Levels on the QRI: Students Beginning *RM* in Kindergarten Compared with Students Beginning *RM* at the Designated Grade

| | | When *RM* Began | | | | | |
|---|---|---|---|---|---|---|---|
| | | At Kindergarten | | At Designated Grade | | | |
| Measure | Grade | *n* | *P* | *n* | *P* | *z* | *p* |
| Oral Reading | 1 | 263 | 62.31 | 103 | 64.10 | -0.32 | ns |
| | 2 | 180 | 77.22 | 108 | 80.40 | -0.59 | ns |
| | 3 | 103 | 80.58 | 77 | 89.60 | -1.65 | ns |
| Silent Reading | 1 | 263 | 4.94 | 110 | 3.60 | 0.57 | ns |
| | 2 | 180 | 1.11 | 85 | 0.00 | 0.97 | ns |
| | 3 | 103 | 0.00 | 99 | 0.00 | 0.00 | ns |

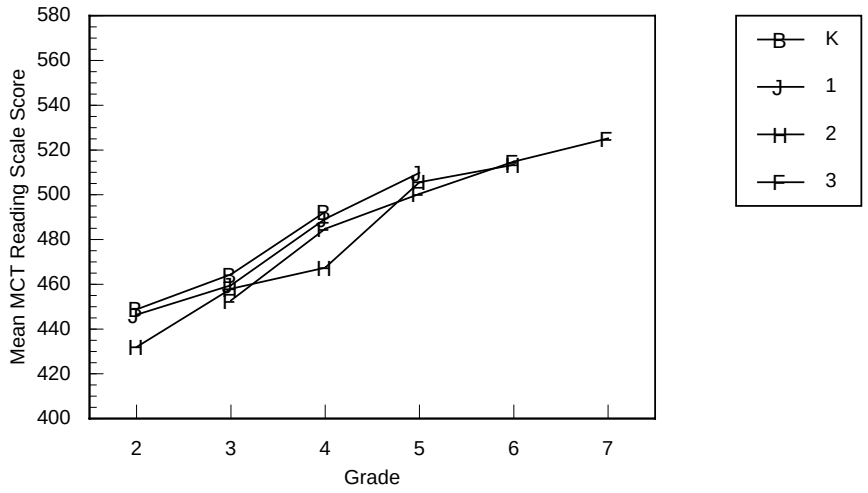


*Figure 24. MCT* Reading Scale Score Performance by Grade *RM* began

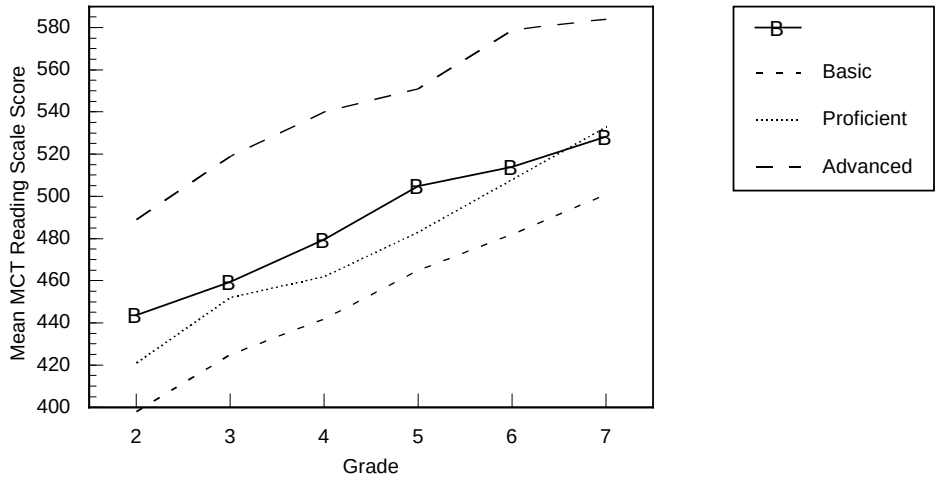


*Figure 25. MCT* Reading Scale Score Performance, Combined All Students by Grade Level

*Table 14*

Summary Data by Grade Level—*MCT* Reading Scale Scores

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | | K | 1 | 2 | 3 | Combined |
| 2 | Mean | 448.69 | 446.41 | 432.04 | | 443.52 |
| | S.D. | 41.03 | 46.20 | 54.34 | | 49.32 |
| | N | 171 | 80 | 97 | | 348 |
| 3 | Mean | 464.36 | 459.45 | 458.06 | 452.71 | 459.37 |
| | S.D. | 41.63 | 45.67 | 49.92 | 48.72 | 46.56 |
| | N | 140 | 84 | 95 | 87 | 406 |
| 4 | Mean | 492.35 | 489.19 | 467.27 | 484.70 | 479.42 |
| | S.D. | 52.21 | 44.64 | 48.42 | 51.00 | 48.34 |
| | N | 40 | 81 | 107 | 74 | 302 |
| 5 | Mean | | 509.74 | 505.55 | 500.36 | 504.86 |
| | S.D. | | 55.26 | 48.72 | 50.68 | 51.68 |
| | N | | 69 | 87 | 88 | 244 |
| 6 | Mean | | | 513.37 | 514.68 | 514.04 |
| | S.D. | | | 53.18 | 37.85 | 34.76 |
| | N | | | 73 | 77 | 150 |
| 7 | Mean | | | | 525.15 | 528.15 |
| | S.D. | | | | 38.85 | 38.85 |
| | N | | | | 67 | 67 |

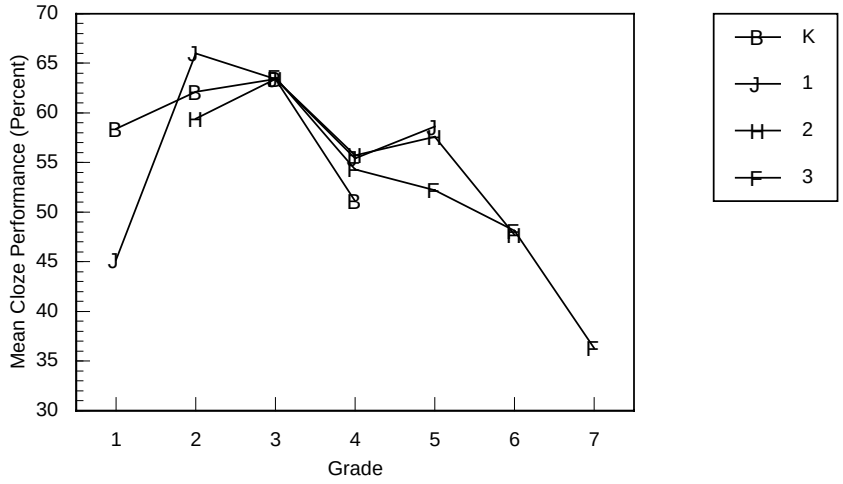


*Figure 26.* Mean *HGLP (CLOZE)* Performance (%) by Grade *RM* began

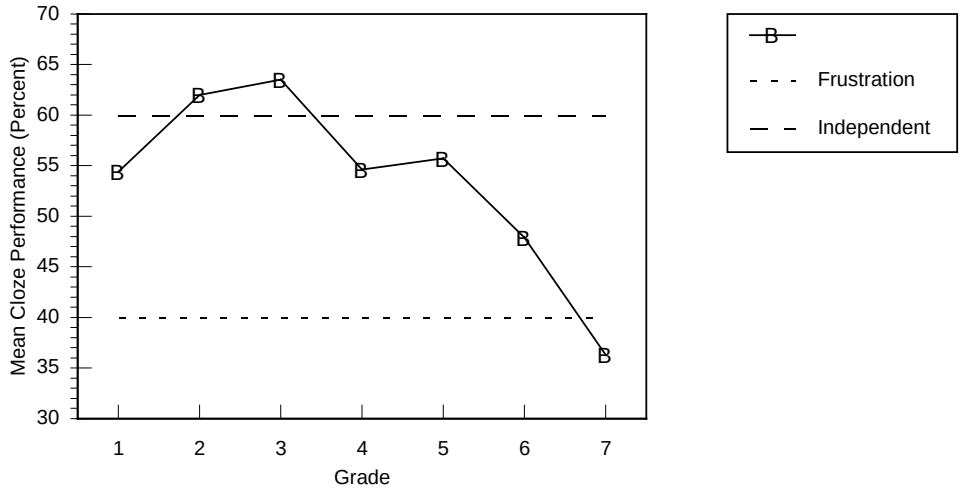


*Figure 27.* Mean *HGLP (CLOZE)* Performance (%), Combined All Students by Grade Level

*Table 15.*

Summary Data by Grade Level—*HGLP (CLOZE)*, Percent

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | | K | 1 | 2 | 3 | Combined |
| 1 | Mean | 58.44 | 45.21 | | | 54.35 |
| | S.D. | 19.05 | 34.43 | | | 32.74 |
| | N | 290 | 130 | | | 420 |
| 2 | Mean | 62.12 | 65.99 | 59.36 | | 62.03 |
| | S. D. | 19.40 | 17.86 | 24.59 | | 25.16 |
| | N | 196 | 84 | 131 | | 422 |
| 3 | Mean | 63.36 | 63.35 | 63.43 | 63.63 | 63.45 |
| | S.D. | 15.98 | 17.23 | 17.85 | 15.79 | 21.80 |
| | N | 102 | 103 | 108 | 131 | 444 |
| 4 | Mean | 51.07 | 55.35 | 55.65 | 54.30 | 54.61 |
| | S.D. | 12.76 | 13.87 | 16.18 | 14.62 | 19.01 |
| | N | 42 | 81 | 95 | 85 | 319 |
| 5 | Mean | | 58.57 | 57.56 | 52.19 | 55.67 |
| | S.D. | | 15.39 | 16.24 | 14.85 | 20.09 |
| | N | | 61 | 87 | 98 | 246 |
| 6 | Mean | | | 47.68 | 48.11 | 47.90 |
| | S.D. | | | 15.53 | 17.17 | 19.60 |
| | N | | | 73 | 75 | 148 |
| 7 | Mean | | | | 36.27 | 36.27 |
| | S.D. | | | | 8.41 | 8.41 |
| | N | | | | 73 | 73 |

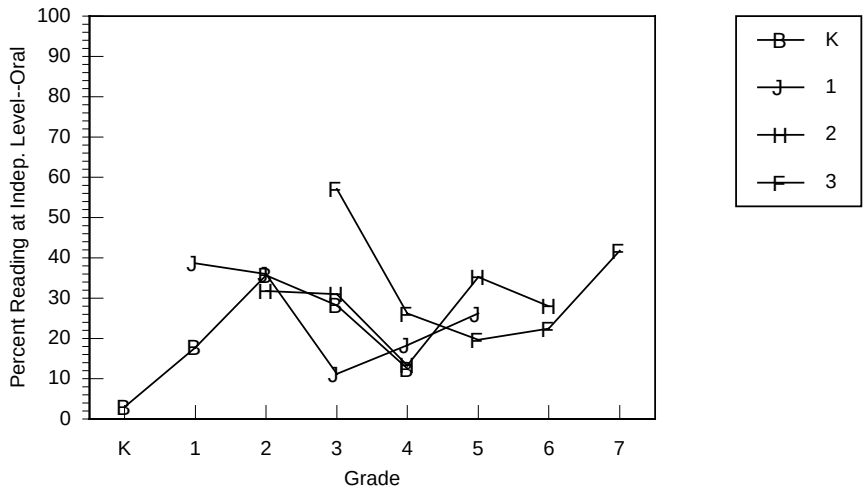


*Figure 28.* Percent of Students Reading at the Independent Level by Grade *RM* began—Narrative (Oral) Reading

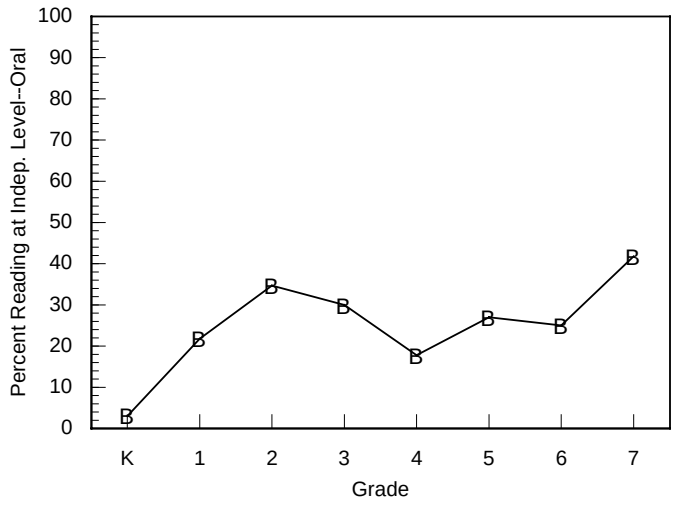


*Figure 29.* Percent of Students Reading at the Independent Level, Combined All Students by Grade Level—Narrative (Oral) Reading

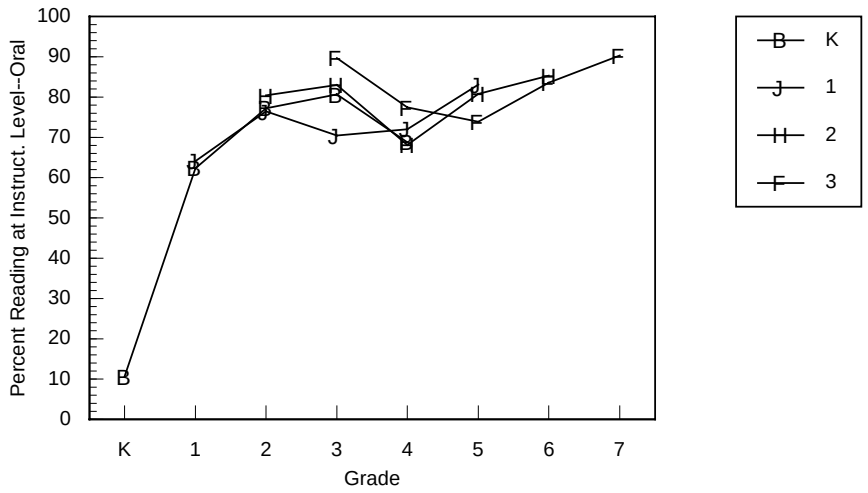


*Figure 30.* Percent of Students Reading at the Instructional Level by Grade *RM* began—Narrative (Oral) Reading (Includes Students Who Performed at Either an Instructional or an Independent Reading Level)

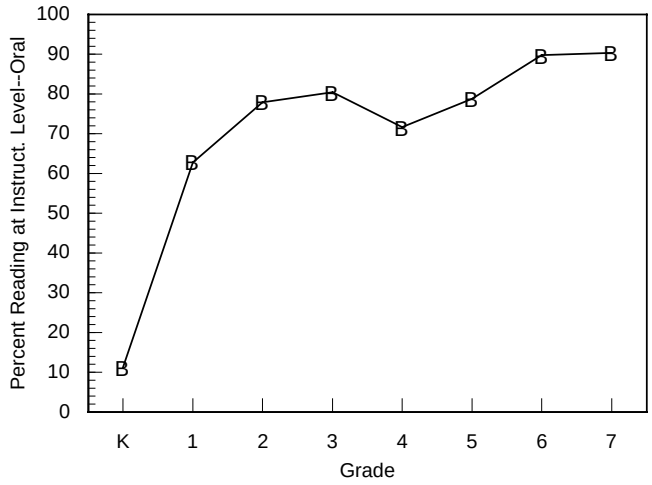


*Figure 31.* Percent of Students Reading at the Instructional Level Combined All Students by Grade Level—Narrative (Oral) Reading (Includes Students Performing at either the Instructional or the Independent Reading Level)

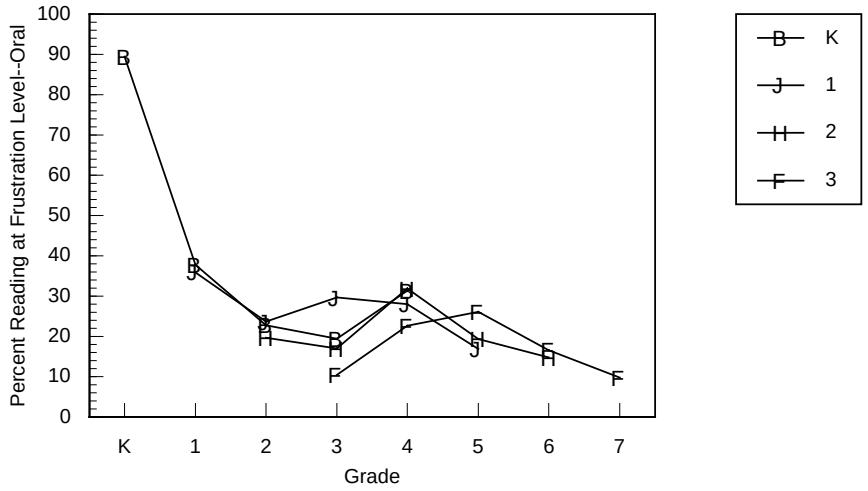


*Figure 32.* Percent of Students Reading at the Frustration Level by Grade *RM* began—Narrative (Oral) Reading

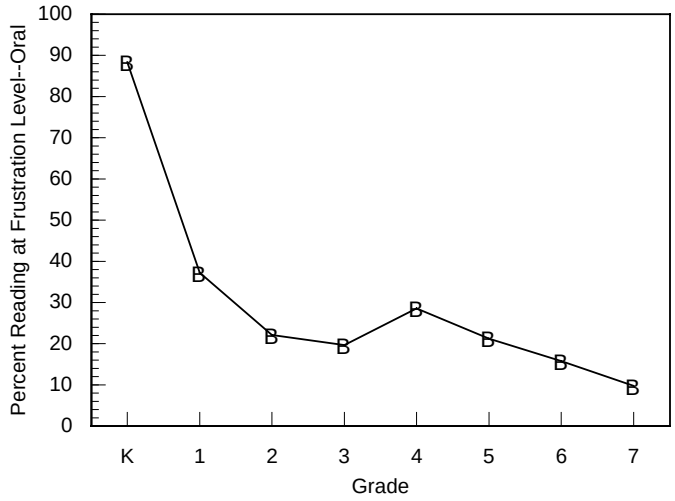


*Figure 33.* Percent of Students Reading at the Frustration Level, Combined All Students by Grade Level—Narrative (Oral) Reading

*Table 16.*

Percent of Students Reading at the Instructional, Independent, and Frustration Levels by Grade Level—Narrative (Oral) Reading

| | | Beginning Grade Level | | | | |
|---|---|---|---|---|---|---|
| Grade | Level | K | 1 | 2 | 3 | Combined |
| K | Independent | 3.0 | | | | 3.0 |
| | Instructional | 10.6 | | | | 11.2 |
| | Frustration | 89.4 | | | | 88.3 |
| 1 | Independent | 17.5 | 33.0 | | | 21.8 |
| | Instructional | 62.3 | 64.1 | | | 62.8 |
| | Frustration | 37.7 | 35.9 | | | 37.2 |
| 2 | Independent | 35.6 | 36.0 | 31.8 | | 34.6 |
| | Instructional | 77.2 | 76.4 | 80.4 | | 77.9 |
| | Frustration | 22.8 | 23.6 | 19.6 | | 22.1 |
| 3 | Independent | 28.2 | 12.2 | 31.0 | 57.1 | 30.0 |
| | Instructional | 80.6 | 70.4 | 83.0 | 89.6 | 80.4 |
| | Frustration | 19.4 | 29.6 | 17.0 | 10.4 | 19.6 |
| 4 | Independent | 12.5 | 18.3 | 13.3 | 26.2 | 17.7 |
| | Instructional | 68.8 | 72.0 | 68.1 | 77.4 | 71.6 |
| | Frustration | 31.3 | 28.0 | 31.9 | 22.6 | 28.5 |
| 5 | Independent | | 26.2 | 35.2 | 19.6 | 27.0 |
| | Instructional | | 83.1 | 80.7 | 73.9 | 78.8 |
| | Frustration | | 16.9 | 19.3 | 26.1 | 21.2 |
| 6 | Independent | | | 28.0 | 22.4 | 25.0 |
| | Instructional | | | 85.3 | 83.5 | 89.7 |
| | Frustration | | | 14.7 | 16.5 | 15.7 |
| 7 | Independent | | | | 41.7 | 41.7 |
| | Instructional | | | | 90.3 | 90.3 |
| | Frustration | | | | 9.7 | 9.7 |

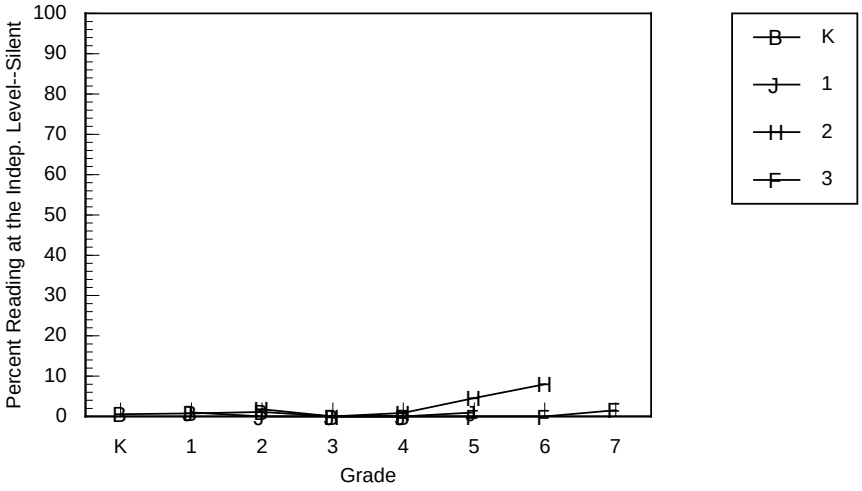


*Figure 34.* Percent of Students Reading at the Independent Level by Grade *RM* began —Expository (Silent) Reading

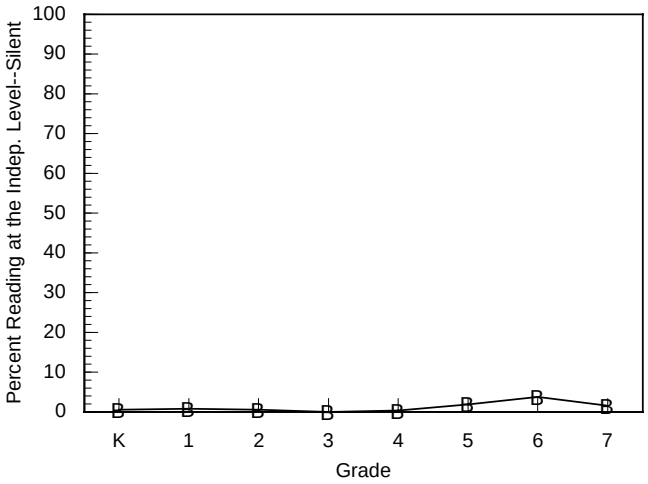


*Figure 35.* Percent of Students Reading at the Independent Level Combined All Students by Grade Level—Expository (Silent) Reading

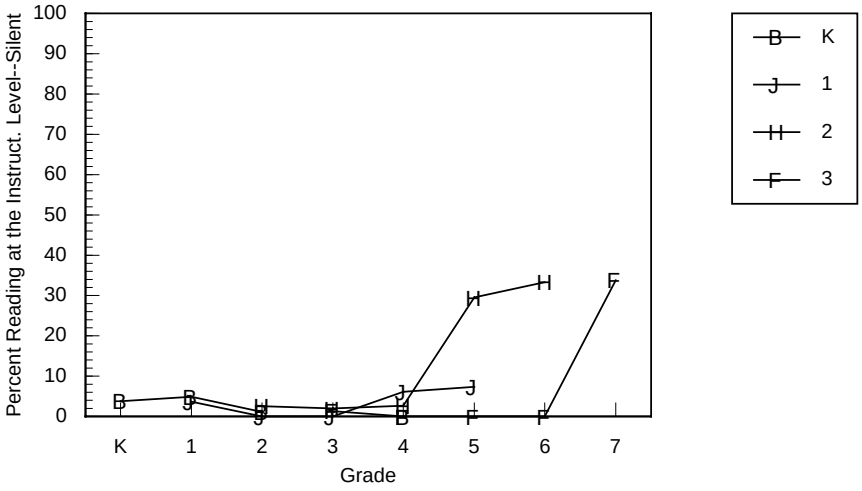


*Figure 36.* Percent of Students Reading at the Instructional Level by Grade *RM* began—Expository (Silent) Reading (Includes Students who Performed at either an Instructional or an Independent Reading Level)

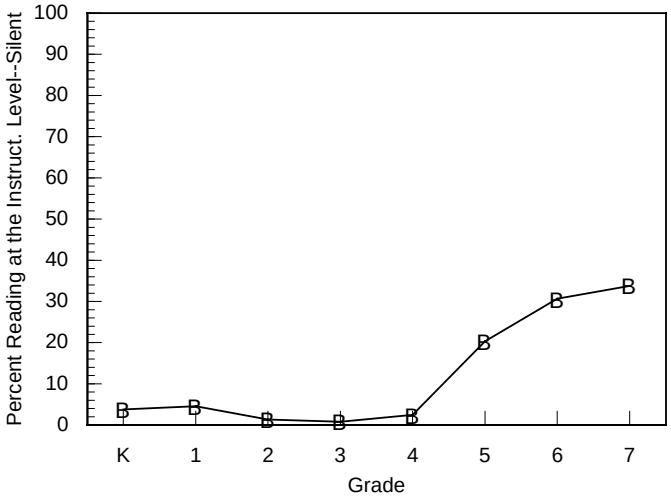


*Figure 37.* Percent of Students Reading at the Instructional Level Combined across Grade Level—Expository (Silent) Reading (Includes Students Performing at either the Instructional or the Independent Reading Level)

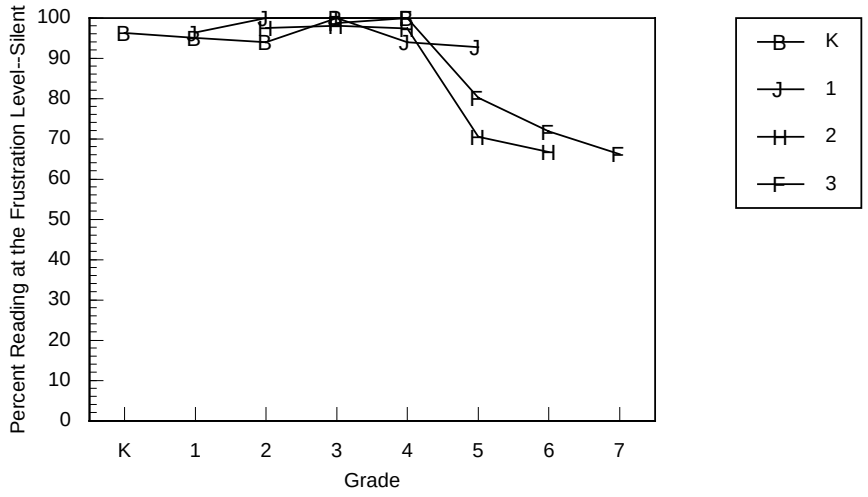


*Figure 38.* Percent of Students Reading at the Frustration Level, by Grade *RM* began—Expository (Silent) Reading

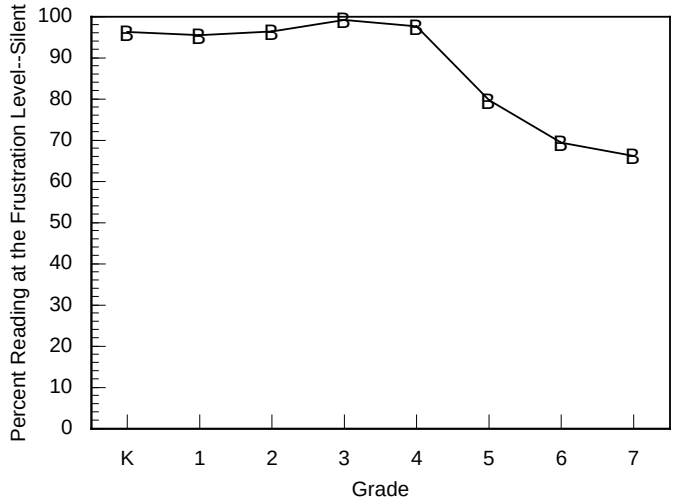


*Figure 39.* Percent of Students Reading at the Frustration Level, Combined All Students by Grade Level—Expository (Silent) Reading

*Table 17*.

Percent of Students Reading at the Instructional, Independent, and Frustration Reading Levels—Expository (Silent) Reading

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | Level | K | 1 | 2 | 3 | Combined |
| K | Independent | 0.5 | | | | 0.5 |
| | Instructional | 3.7 | | | | 3.7 |
| | Frustration | 96.3 | | | | 96.3 |
| 1 | Independent | 0.8 | 1.0 | | | 0.8 |
| | Instructional | 4.9 | 3.6 | | | 4.5 |
| | Frustration | 95.1 | 96.4 | | | 95.5 |
| 2 | Independent | 1.1 | 0.0 | 1.7 | | 0.5 |
| | Instructional | 1.1 | 0.0 | 2.5 | | 1.3 |
| | Frustration | 93.9 | 100.0 | 97.5 | | 96.4 |
| 3 | Independent | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| | Instructional | 0.0 | 0.0 | 2.0 | 1.3 | 0.8 |
| | Frustration | 100.0 | 100.0 | 98.0 | 98.7 | 99.2 |
| 4 | Independent | 0.0 | 0.0 | 0.9 | 0.0 | 0.3 |
| | Instructional | 0.0 | 6.1 | 2.6 | 0.0 | 2.4 |
| | Frustration | 100.0 | 93.9 | 97.4 | 100.0 | 97.6 |
| 5 | Independent | | 1.0 | 4.5 | 0.0 | 1.9 |
| | Instructional | | 7.3 | 29.5 | 19.8 | 20.3 |
| | Frustration | | 92.7 | 70.5 | 80.2 | 79.7 |
| 6 | Independent | | | 8.0 | 0.0 | 3.8 |
| | Instructional | | | 33.3 | 28.2 | 30.6 |
| | Frustration | | | 66.7 | 71.8 | 69.4 |
| 7 | Independent | | | | 1.5 | 1.5 |
| | Instructional | | | | 33.8 | 33.8 |
| | Frustration | | | | 66.2 | 66.2 |

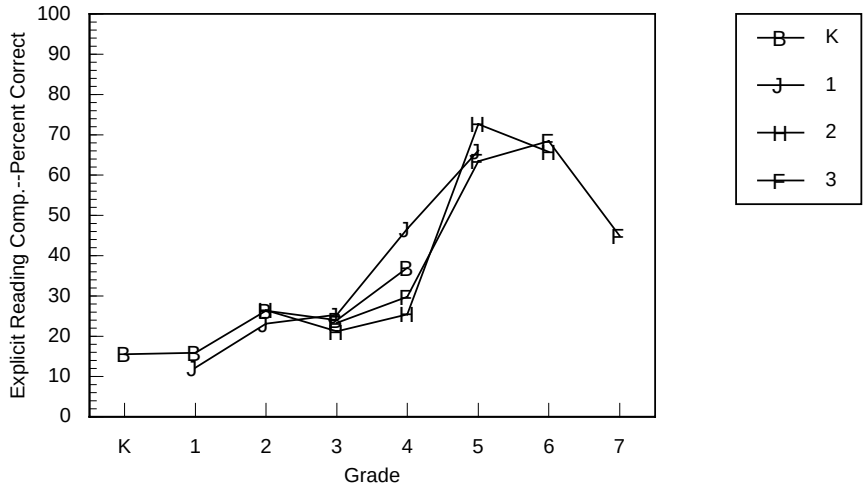


*Figure 40.* Explicit Reading Comprehension Performance (% Correct), by Grade *RM* began—Expository (Silent) Reading

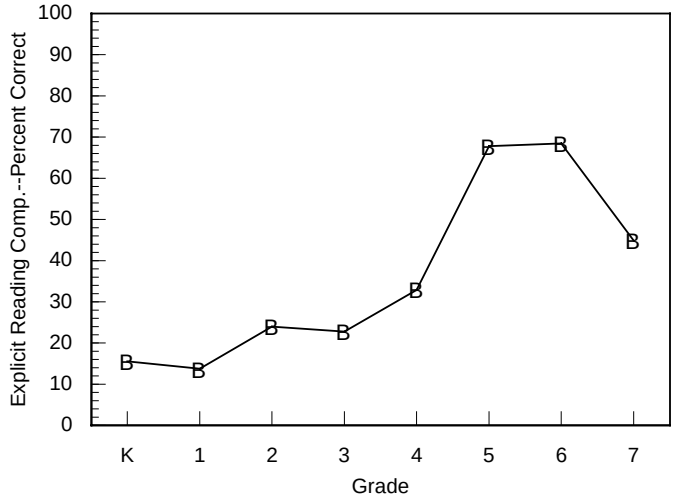


*Figure 41.* Explicit Reading Comprehension Performance (% Correct), Combined All Students by Grade Level—Expository (Silent) Reading

*Table 18.*

Explicit Reading Comprehension Performance by Grade Level—Expository (Silent) Reading

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | | K | 1 | 2 | 3 | Combined |
| K | Mean | 15.54 | | | | 13.71 |
| | S.D. | 18.55 | | | | 18.55 |
| | N | 428 | | | | 350 |
| 1 | Mean | 15.91 | 12.23 | | | 13.70 |
| | S.D. | 22.05 | 19.99 | | | 21.43 |
| | N | 264 | 94 | | | 302 |
| 2 | Mean | 26.28 | 23.13 | 26.35 | | 23.95 |
| | S.D. | 26.78 | 23.39 | 24.81 | | 25.22 |
| | N | 176 | 87 | 102 | | 311 |
| 3 | Mean | 23.99 | 25.30 | 21.20 | 23.27 | 22.79 |
| | S.D. | 22.79 | 23.81 | 19.23 | 21.40 | 21.70 |
| | N | 99 | 82 | 92 | 65 | 289 |
| 4 | Mean | 36.97 | 46.61 | 25.39 | 29.75 | 32.86 |
| | S.D. | 26.93 | 25.81 | 23.87 | 18.59 | 22.91 |
| | N | 47 | 70 | 96 | 79 | 245 |
| 5 | Mean | | 66.10 | 72.60 | 63.41 | 67.74 |
| | S.D. | | 26.25 | 24.80 | 24.98 | 24.90 |
| | N | | 59 | 73 | 82 | 155 |
| 6 | Mean | | | 65.67 | 68.40 | 68.40 |
| | S.D. | | | 25.76 | 26.78 | 26.78 |
| | N | | | 75 | 72 | 72 |
| 7 | Mean | | | | 44.85 | 44.85 |
| | S.D. | | | | 23.88 | 23.88 |
| | N | | | | 68 | 68 |

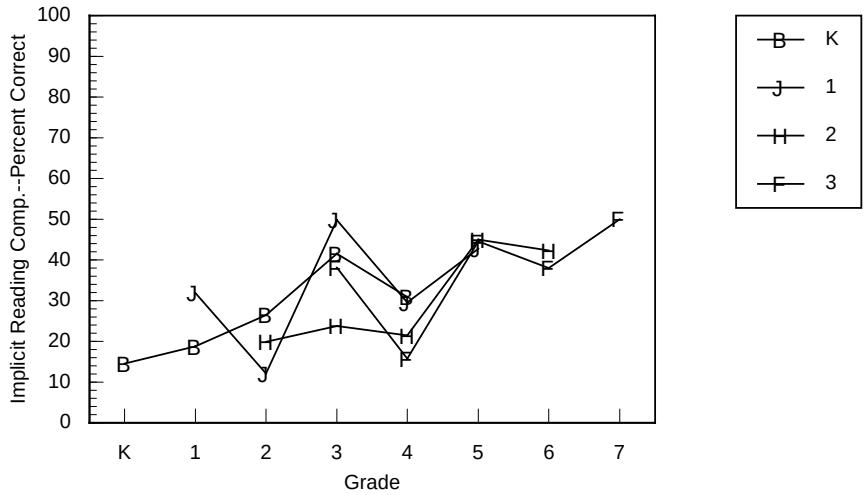


*Figure 42.* Implicit Reading Comprehension Performance (% Correct), by Grade *RM* began—Expository (Silent) Reading

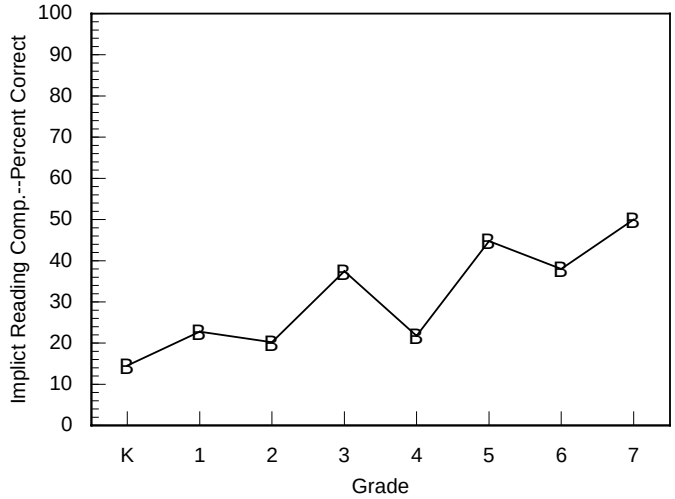


*Figure 43.* Implicit Reading Comprehension Performance (% Correct), Combined All Students by Grade Level—Expository (Silent) Reading

*Table 19.*

Implicit Reading Comprehension Performance (% Correct,) by Grade Level—Expository (Silent) Reading

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | | K | 1 | 2 | 3 | Combined |
| K | Mean | 14.50 | | | | 14.50 |
| | S.D. | 24.13 | | | | 24.13 |
| | N | 350 | | | | 350 |
| 1 | Mean | 18.75 | 31.90 | | | 22.84 |
| | S.D. | 28.29 | 33.28 | | | 29.93 |
| | N | 208 | 94 | | | 302 |
| 2 | Mean | 26.43 | 12.07 | 19.85 | | 20.25 |
| | S.D. | 39.60 | 15.30 | 20.46 | | 28.60 |
| | N | 122 | 87 | 102 | | 311 |
| 3 | Mean | 41.50 | 49.82 | 23.78 | 38.08 | 37.42 |
| | S.D. | 24.15 | 27.71 | 18.90 | 21.47 | 23.16 |
| | N | 50 | 82 | 92 | 65 | 289 |
| 4 | Mean | 30.85 | 29.46 | 21.35 | 15.66 | 21.83 |
| | S.D. | 25.58 | 25.54 | 19.86 | 13.64 | 20.02 |
| | N | 47 | 70 | 96 | 79 | 245 |
| 5 | Mean | | 42.80 | 45.03 | 44.51 | 44.75 |
| | S.D. | | 25.17 | 25.41 | 19.45 | 22.45 |
| | N | | 59 | 73 | 82 | 155 |
| 6 | Mean | | | 42.33 | 38.02 | 38.02 |
| | S.D. | | | 24.69 | 22.93 | 22.93 |
| | N | | | 75 | 72 | 72 |
| 7 | Mean | | | | 50.00 | 50.00 |
| | S.D. | | | | 23.78 | 23.78 |
| | N | | | | 68 | 68 |

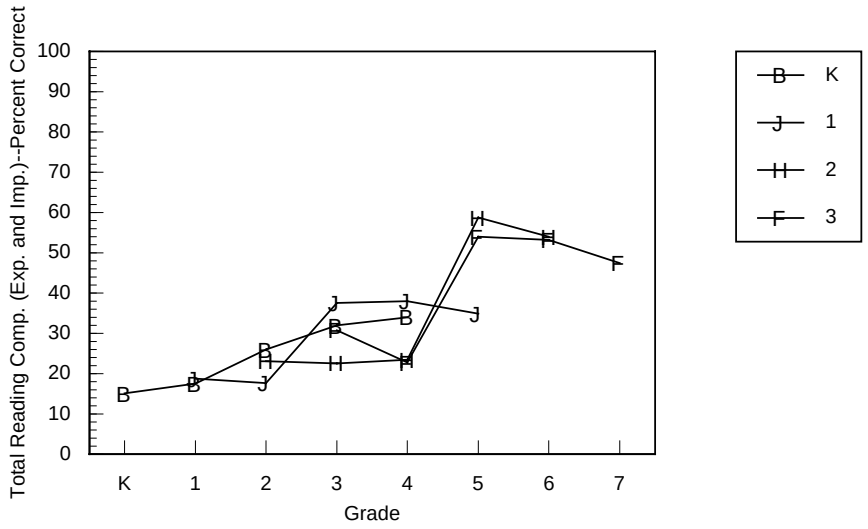


*Figure 44.* Total Reading Comprehension (Explicit and Implicit), by Grade that *RM* began—% Correct

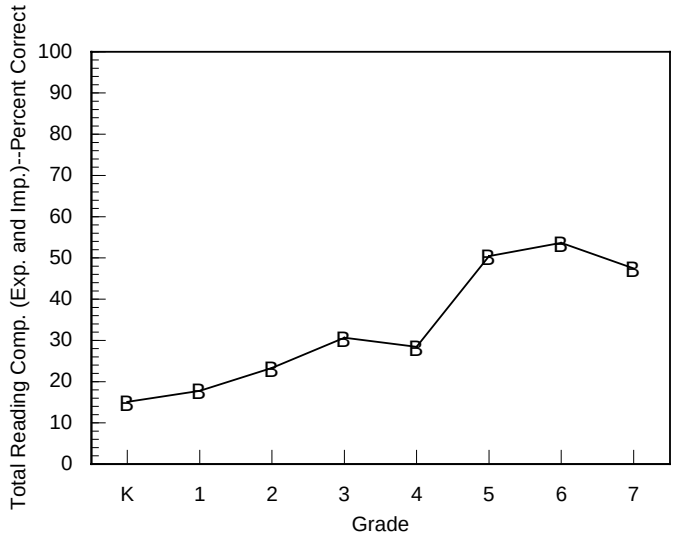


*Figure 45.* Total Reading Comprehension (Explicit and Implicit), Combined All Students by Grade Level—% Correct

*Table 20.*

Total Reading Comprehension Performance (Explicit and Implicit) by Grade Level, Percent Correct

| | | Beginning Grade of *RM* | | | | |
|---|---|---|---|---|---|---|
| Grade | | K | 1 | 2 | 3 | Combined |
| K | Mean | 15.14 | | | | 15.14 |
| | S.D. | 16.87 | | | | 16.87 |
| | N | 452 | | | | 452 |
| 1 | Mean | 17.45 | 18.79 | | | 17.78 |
| | S.D. | 18.55 | 19.97 | | | 18.91 |
| | N | 288 | 94 | | | 382 |
| 2 | Mean | 26.02 | 17.60 | 23.10 | | 23.34 |
| | S.D. | 16.35 | 15.32 | 18.63 | | 16.77 |
| | N | 196 | 87 | 102 | | 385 |
| 3 | Mean | 32.22 | 37.50 | 22.49 | 30.67 | 30.61 |
| | S.D. | 15.55 | 21.09 | 16.18 | 17.32 | 17.48 |
| | N | 110 | 82 | 92 | 65 | 349 |
| 4 | Mean | 33.91 | 38.04 | 23.37 | 22.71 | 28.40 |
| | S.D. | 16.11 | 20.41 | 19.16 | 12.43 | 13.76 |
| | N | 47 | 70 | 96 | 79 | 292 |
| 5 | Mean | | 34.85 | 58.82 | 53.96 | 50.35 |
| | S.D. | | 16.86 | 21.09 | 17.33 | 18.58 |
| | N | | 59 | 73 | 82 | 214 |
| 6 | Mean | | | 54.00 | 53.21 | 53.61 |
| | S.D. | | | 16.75 | 20.82 | 18.85 |
| | N | | | 75 | 72 | 147 |
| 7 | Mean | | | | 47.43 | 47.43 |
| | S.D. | | | | 15.65 | 15.65 |
| | N | | | | 68 | 68 |