

**AN ANALYSIS OF
STUDENT READING
AS MEASURED ON
THE DIAGNOSTIC ASSESSMENT OF
READING (DAR)**

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An Analysis of Student Reading As Measured on the Diagnostic Assessment of Reading (DAR)

Background

As part of the reporting of Delaware's State Improvement Grant (DelaSIG), the Delaware Education Research and Development Center (R & D Center) completed a study on the Diagnostic Assessment of Reading (DAR) scores of students whose teachers attended either one or both Delaware Department of Education (DDOE) professional development program(s) designed to help focus teacher instruction of struggling readers in Grades 4 through 12, *Success for Secondary Struggling Readers (SSSR)*, and/or *Implementing Multiple Practices for Activating Comprehension in Teaching (IMPACT)*. Each of these programs includes 30 hours of training in reading content knowledge, pedagogy, and application. An additional 60 hours of implementation are necessary to meet the requirements of each "cluster", a 90-hour professional development program provided by the DDOE. A complete description of the content and requirements of the SSSR cluster can be found on the DDOE website at http://www.doe.k12.de.us/files/pdf/reading_clusters.pdf; in addition, a complete description of the content and requirements of the IMPACT cluster can be found on the DDOE website at <http://www.doe.k12.de.us/programs/reading/readingimpact.shtml>.

Training for SSSR and IMPACT was provided through a *Train the Trainer* Model in five, six-hour modules. SSSR modules include: Assessment and Word Identification, Assessment and Fluency, Assessment and Vocabulary, Assessment and Comprehension, Motivation and Instructional Management, and DAR administration. IMPACT modules include: Word Identification and Fluency, Assessment for Teaching and Learning, Vocabulary, Comprehension, and Motivation and Instructional Design for Reading.

All teachers who participated in the SSSR and/or IMPACT cluster training(s) were instructed to select 3 to 5 of their struggling readers for DAR data collection. The DAR was chosen by the DDOE to be used to analyze student data as part of the reporting of the DelaSIG, Goal 1, Objective 3: "Through the use of trained teachers and the implementation of scientifically-based research regarding the teaching of literacy and reading skills, [Grade] 4-12 students with disabilities will make significant reading gains over their baseline (entry level) scores, or against comparable control groups" (DelaSIG, 2002). Further, according to the SSSR cluster as found on the DDOE website at http://www.doe.k12.de.us/files/pdf/reading_clusters.pdf :

For statewide consistency in the measurement of reading achievement growth, the Diagnostic Assessment of Reading (DAR) will be used in the areas of Word Identification, Word Analysis, Vocabulary, and Comprehension with the three case

study students. This individually administered instrument is brief, valid, reliable, and endorsed by the United States Department of Education's Technical Assistance Team for Delaware's Reading First Leadership [Eastern Regional Reading First Technical Assistance Center] as research-based and appropriate for grades 1 through 12 [sic]. For statewide consistency in the measurement of reading achievement growth in the area of fluency, a timed measurement of the Words Correct per Minute (WCPM) will be used with the three case study students in addition to the subtests of the DAR stated above.

The DAR, a criterion referenced test designed to measure the important components of reading, was used to assess struggling students' reading before or at the beginning of the SSSR and/or IMPACT training(s) and again after the SSSR and/or IMPACT training(s). Ideally, as an outcome, teachers' reading instruction for struggling readers would become more targeted and purposeful based on the trainings, and students reading scores from fall to spring as measured on the DAR would increase.

Purpose

A part of the R & D Center's DelaSIG workscope for Grades 4-12 called for an "Analysis of DAR data on a random sample of struggling readers¹". This was further defined in the following way: "Data will be collected by classroom teachers in the fall and spring of each year (05-06, 06-07). Data will be analyzed at the state level and reported in a separate document. This data will be reported for formative purposes and will not be analyzed as part of the annual outcome evaluation report" (R & D Center's DelaSIG Outcome Evaluation Plan, 2005 and 2006). Here, the findings of the 2006-2007 DAR data are reported and their results and implications are discussed.

Use of the DAR

The development of the DAR arose from the findings and experiences of its' authors, Roswell, Chall, Curtis, & Kearns (2005) in the research of reading. Perhaps the most basic is Chall's (1983) research finding that reading consists of a number of different processes and the author's judgment that using five or more separate norm-referenced tests to assess the separate skills related to reading was inefficient. This led to their desire to develop a single tool that assessed each of the reading-related skills. The tests were developed and given an initial item "try-out" in 1989 with 1,664 students in grades 2 through 8. A 1990-91 national validation study involved 1,216 students in grades 1 through 12. These authors note the DAR should be administered to assess the reading skills of students who need reading remediation in order to help with their reading difficulties. In their paper, Hennings and Hughes (1992) describe the results of the prepublication research of the pilot items. Participants were selected by teachers, who were asked to identify students who were

¹ Due to the limited amount of data that met the criterion for use, a random selection process was not utilized.

not reading up to their potential. Hennings and Hughes compared the results of the pilot DAR items with the results of the Gates-Miginity Reading Tests and found the scores correlated well.

The DAR authors compared the items on their pilot assessment to existing curriculum and assessment tools; these items and measures included “word lists, readability measures, and grade placement” (p. 15). They note that the tools they use for this comparison are in general use and have been thoroughly validated by existing research (2005). According to the DAR Technical Manual (2005), the results of the data from Form A of the DAR demonstrate both convergent and divergent validity (p. 50).

The subtests of the DAR align with the critical areas of reading as recognized by the National Reading Panel (2000). According to Roswell, Chall, Curtis, & Kearns (2005), the DAR technical manual claims the DAR subtests, “meet the highest technical requirements for reliability and validity-following scientifically based research guidelines within No Child Left Behind (NCLB)” and “meet NCLB reading mandates by offering information about student performance in the essential components of reading as defined by the National Reading Panel-alphabeticity, fluency, vocabulary, and comprehension.”

The skills that the DAR evaluates are:

- | | |
|--------------------------|--------------------------------|
| • print awareness | • silent reading comprehension |
| • phonological awareness | • spelling |
| • letters and sounds | • word meaning |
| • word recognition | • oral reading |
| • word analysis | |

Several studies using the DAR to assess the reading skills of students have been reported. Curtis and Longo (1996) reported they used the DAR to assess the reading skills of all young people at Boys Town within a week of their arrival. The majority of these young people were “behaviorally disordered and emotionally impaired” (p. 2). Link's (1998) investigation used the DAR to assess the differences between the “lower level 'print skills' and higher order 'meaning' skills among successful adults with dyslexia”. Reale (1999) found the DAR was one of the most helpful tools for “determining literacy level, learning style, and type of instruction” among the participants in her study, who were adults with mental retardation. Reale noted that if the program in which she did her research had more money, they would have used the DAR more widely.

Procedures

All teachers who participated in the SSSR and/or IMPACT cluster training(s) were requested to select three of their struggling readers for this DAR data collection. A struggling reader was defined by the DelaSIG team as a student who did not “meet the standard” according to his/her Delaware Student Testing Program (DSTP) reading performance level (PL). Participants were requested to submit their fall DAR scores electronically or by fax. The fall data collection window for the DAR test administration and submission was from October 31st to November 30th, 2006. The administration and submission window for the spring DAR scores was May 1st through May 31st 2007. Further, data for inclusion in this study had to meet all of the following criteria:

- 1.) The fall and spring DAR scores must have been provided for each student with matching identification number (ID) in at least one subtest.
- 2.) Fall DAR scores must have been accompanied by a DSTP reading PL indicating that the student did not meet the standard.
- 3.) DAR testing must have been administered and scores submitted within the defined administration window for each test season.

Only those students’ DAR scores that met *all* of above criteria were included in this study.

In order to interpret the results and explain the findings, additional information from the teachers concerning their perceptions about the program and their student test scores was requested. In late spring of 2007, all participants who submitted both fall and spring DAR scores were invited to complete a brief electronic survey designed to inquire about the context of their classroom instruction, their beliefs about the influence of the IMPACT training on their students’ DAR scores, and the degree to which they used the strategies taught in the IMPACT training.

Participants

Students

There were 124 unique student identification numbers submitted with DAR data; from these, 26 students' scores met all the criteria required to be included in this study (see procedures for a review of criteria). The students ranged in age from 9 years of age (born April, 1998) to 16 years of age (born December, 1990). The distribution by grade level of students is shown in Table 1.

Table 1. Number of students with valid DAR fall and spring scores by grade.

Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
6	9	1	3	6	0	0	1

Of the 26 students, one student (3.8%) held special education status. Four students (15%) had multiple accommodations; the remaining students had none. Upon examination of the students' accommodation codes provided by the participants, only one of the reported accommodations would have affected DAR scores. The scores of students with DDOE accommodation code 46, "Reading or signing passages or tests for the reading test (or using cued speech or oral interpreter)", are not reported because the DAR test instructions explicitly state:

"Because the test is individually administered, accommodations for individual students are built into test administration. For example, the test administrator adjusts pacing of the DAR assessments for each student as needed. Teachers should use their own judgment and/or the student's IEP in deciding what kind of accommodations are appropriate. However, no accommodation is permitted that involves reading material *to* the student that is meant to be read *by* the student" (p.ii).

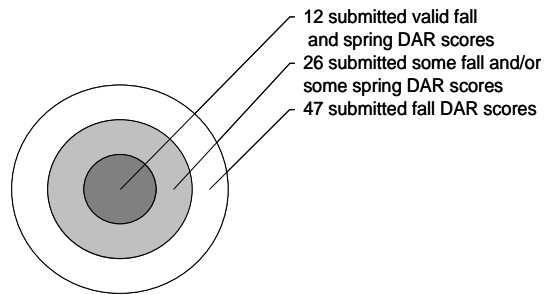
In addition, DAR training(s) emphasized that test administrators explicitly follow the DAR instructions.

Training Participants

All participants enrolled in one or more SSSR and/or IMPACT training module(s) in 2006-2007 were invited to submit student DAR data. A total of 47 SSSR and/or IMPACT participants submitted data in the fall. They represent eight districts in all three counties in Delaware. Of the 47 participants who submitted fall data, 26 participants (representing seven districts in two counties) submitted student spring DAR data. Of those 26, 12 participants submitted data that satisfied all criteria to be included in this report; these data were treated as valid (for a review of these criteria see the procedures section). A diagram of the relationship of the training participants submitting DAR scores is shown in Figure 1.

Figure 1. Participants who submitted DAR scores.

The 12 participants who submitted valid data represent five districts in all three counties. These teachers reported teaching a wide variety of content areas including English Language Arts, reading, Title I, science, social studies, writing, and math. Further, 25% reported holding special education certification. Three completed all IMPACT training modules. Of those three, two participants completed all SSSR and IMPACT trainings for the cluster; the other participant completed all SSSR and IMPACT trainings but did not complete the requirements of either cluster.



The DAR Instrument

According to its authors, Roswell, Chall, Curtis, & Kearns, (2005), the DAR is composed of individually administered tests of essential areas of reading and language. The subtests are suitable for administration to students of all ages who are functioning on reading levels that correspond approximately to kindergarten through the end of high school. The purpose of the DAR is to assess students' relative strengths in various areas of reading and language, and to discover the areas of reading and language in which students need further assistance.

The DAR subtest data collected as part of this study were:

- Oral Reading Fluency (ORF) - the highest level on which the student's reading is fluent
- Silent Reading Comprehension (SRC) - scores depend upon basic word recognition and analysis as well as upon background knowledge and language and cognitive development
- Word Recognition (WR) - a test that assesses the student's ability to read words of increasing difficulty
- Word Meaning (WM) - a test of oral vocabulary

2007 End of the Year DAR Survey

Additional information from the participants was sought through a brief electronic survey developed by the R & D Center to gain insight into the context of their classroom instruction. A second purpose of the survey was to explore the teachers' perception of the links between the IMPACT training and changes in their instruction and between their instruction and their student DAR scores.

In late spring of 2007, all 26 participants who submitted both fall and spring DAR data were invited to complete a brief electronic survey designed to inquire about the context of their classroom instruction, their beliefs about the influence of the IMPACT training on their students'

DAR scores, and the degree to which they used the strategies taught in the IMPACT training.

Findings

The findings are organized into three parts: student DAR scores, individual student case studies, and the responses to an end of the year survey.

DAR data

For each student, DAR scores were analyzed to determine the difference in each student's grade equivalent (GE) subtest score compared to his/her current grade level in the fall and in the spring. In addition, each student's DAR scores were analyzed to determine the change in each subtest area as measured from fall to spring. A DAR subtest score is reported as a GE score, ranging from 1-1, equivalent to the first half of first grade, to 11/12, approximately equivalent to grades 11 and 12. See Table 2 for the coding of all GEs.

Table 2. DAR subtest GE scores and corresponding grade level code.

GE (subtest score)	Grade Level Code
1-1 (first half of first grade)	0
1-2 (second half of first grade)	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9/10	9
11/12	10

The difference between each student's current grade and his/her GE on the four DAR subtests and the change or stability in GE for each student in each of four subtests is reported. The color coded figures allow for tracking students' GE scores by grade level in each subtest. In addition, the 26 students were assigned an individual student identification number (ID); these are provided in each figure allowing the reader to track individual students. To provide context, the figures indicate each subtest in terms of a student's individual difference in GE from current grade level in the fall and in the spring, followed by the change in a student's individual scores from fall to spring in each subtest.

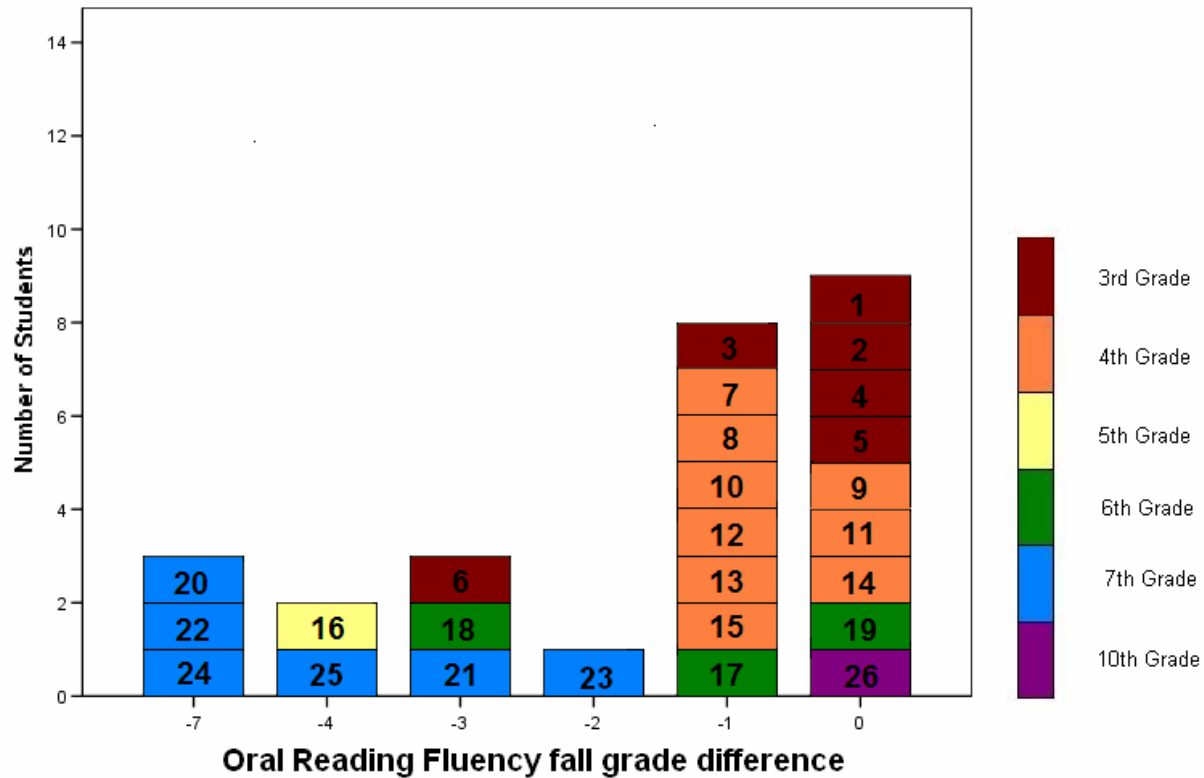


Figure 2. Difference between each student’s fall ORF GE score and his/her grade level.

To denote the discrepancy between each student’s current grade level and his/her fall ORF GE, Figure 2 shows this difference with each student represented by an ID number with current grade level indicated by color code. All 26 students had a fall ORF GE score. As can be seen in Figure 2, in the fall:

- All 7th grade students had an ORF GE score well below grade level, ranging from 2 to 7 GEs.
- Two (33%) 3rd grade students had an ORF GE score below grade level.
- Overall, no students had an ORF GE score above grade level; 17 students (65%) had an ORF GE below grade level.

In reviewing these student results, it becomes apparent there is great variability in terms of the difference between each student’s current grade and his/her GE on the fall ORF subtest; this discrepancy appears greater with older struggling readers.

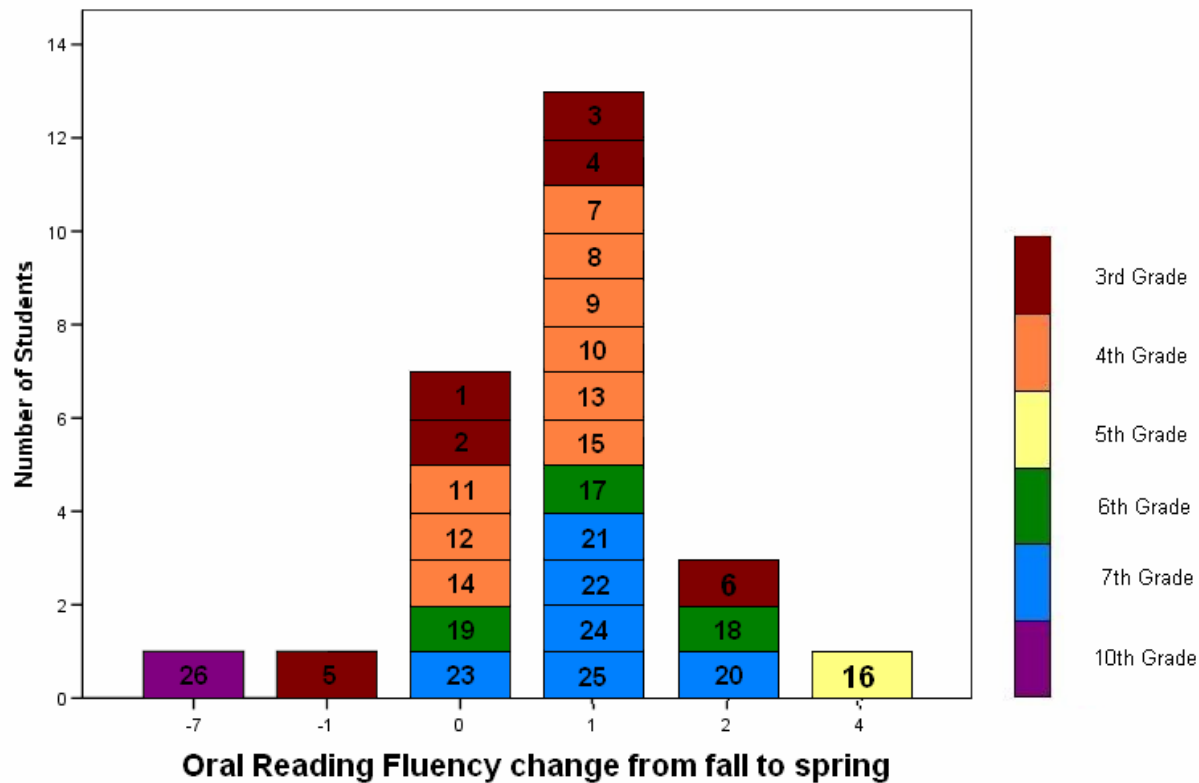


Figure 4. Change in each student’s ORF GE score from fall to spring.

All 26 students had a valid fall and spring ORF GE score. To denote the change from fall to spring in each student’s ORF GE score, Figure 4 shows this change with each student represented by an ID number with current grade level represented by color code. As can be seen in the Figure 4:

- The 5th grade student (student 16) had an ORF GE score that increased 4 GEs from fall to spring.
- Three students (students 6, 18, and 20) had an ORF GE score that increased 2 GEs from fall to spring.
- Six (67%) 4th grade students had an ORF GE score that increased from fall to spring and five (83%) 7th grade students had an ORF GE score that increased from fall to spring.
- Seven students (27%) had an ORF GE score that remained unchanged.
- Overall, 17 (65%) students had an ORF GE score that increased from fall to spring; 2 students had an ORF GE score that decreased.

In reviewing these student results, it becomes apparent there is great variability in the change from each student’s fall to spring ORF subtest score ranging from a decrease of 7 GEs to an increase of 4 GEs.

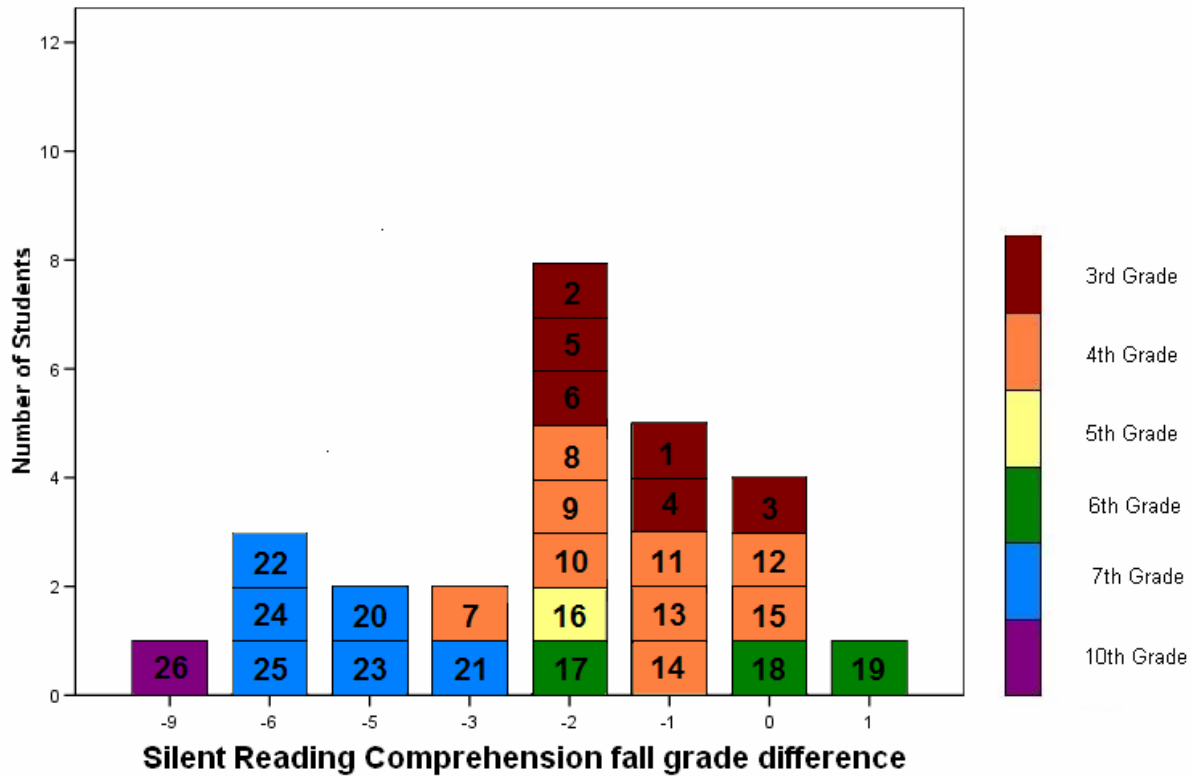


Figure 5. Difference between each student’s fall SRC GE score and his/her grade level.

To denote the discrepancy between each student’s current grade level and his/her fall SRC GE, Figure 5 shows this difference with each student represented by student number with current grade level represented by color code. All 26 students had a fall SRC GE score. As can be seen in Figure 5, in the fall:

- Each 7th grade student had a SRC GE score below grade level in the fall; the 10th grade student (student 26) had a SRC score 9 GE’s below grade level.
- Seven (78%) 4th grade students had a GE score below grade level; with one student’s score (student 7) well below grade level.
- Overall, 21 (81%) students had a SCR GE score below grade level.

In reviewing these student results, it becomes apparent there is great variability in the difference between each student’s current grade and his/her GE on the SRC subtest ranging from 9 GEs below grade level to 1 GE above grade level in the fall. Again, this discrepancy appears greater with older struggling readers.

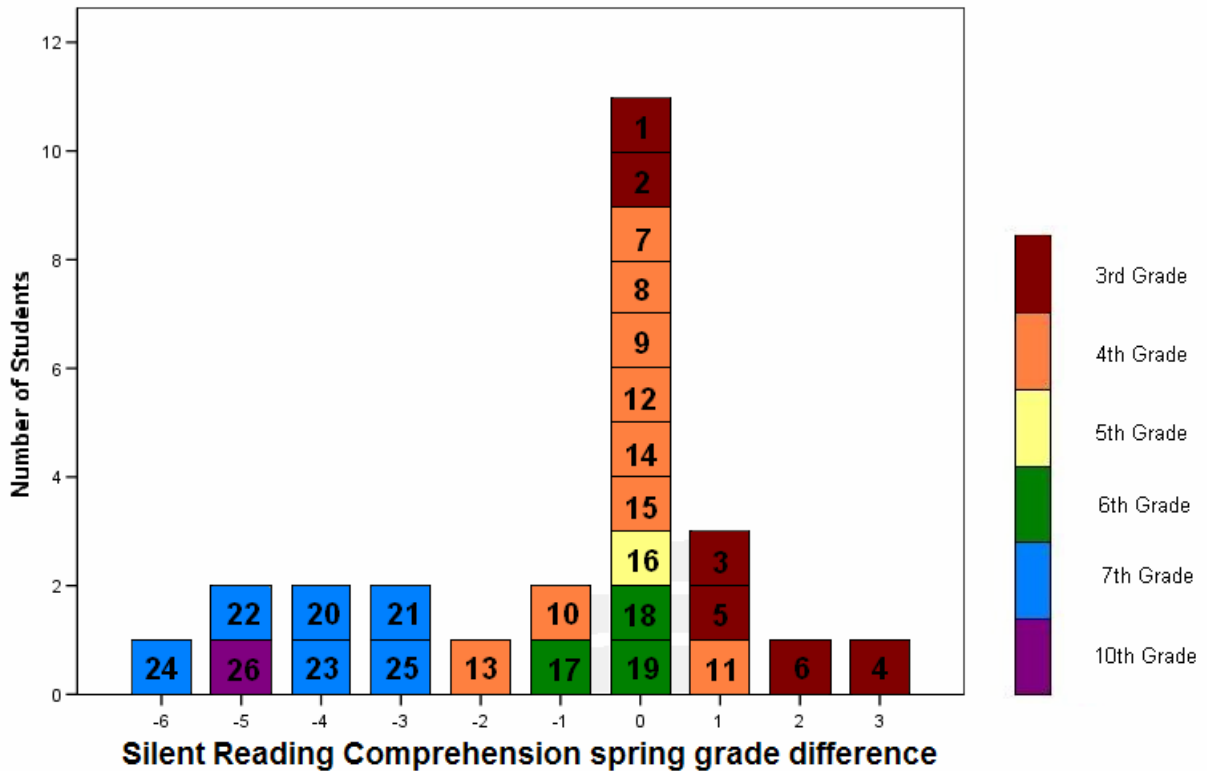


Figure 6. Difference between each student's spring SRC GE score and his/her grade level.

To denote the discrepancy between each student's current grade level and his/her spring SRC GE, Figure 6 shows this difference with each student represented by student number with current grade level indicated by color code. All 26 students had a spring SRC GE score. As can be seen in Figure 6, in the spring:

- 11 (42%) students had a SRC GE score on grade level.
- Each 3rd grade student had a SRC GE score on or above grade level.
- Each 7th grade student had a SRC GE score well below grade level.

In reviewing these student results, it becomes apparent there is great variability in the difference between each student's current grade and his/her GE on the SRC subtest ranging from 6 GEs below grade level to 3 GE above grade level in the spring. Again, this discrepancy appears greater with older struggling readers.

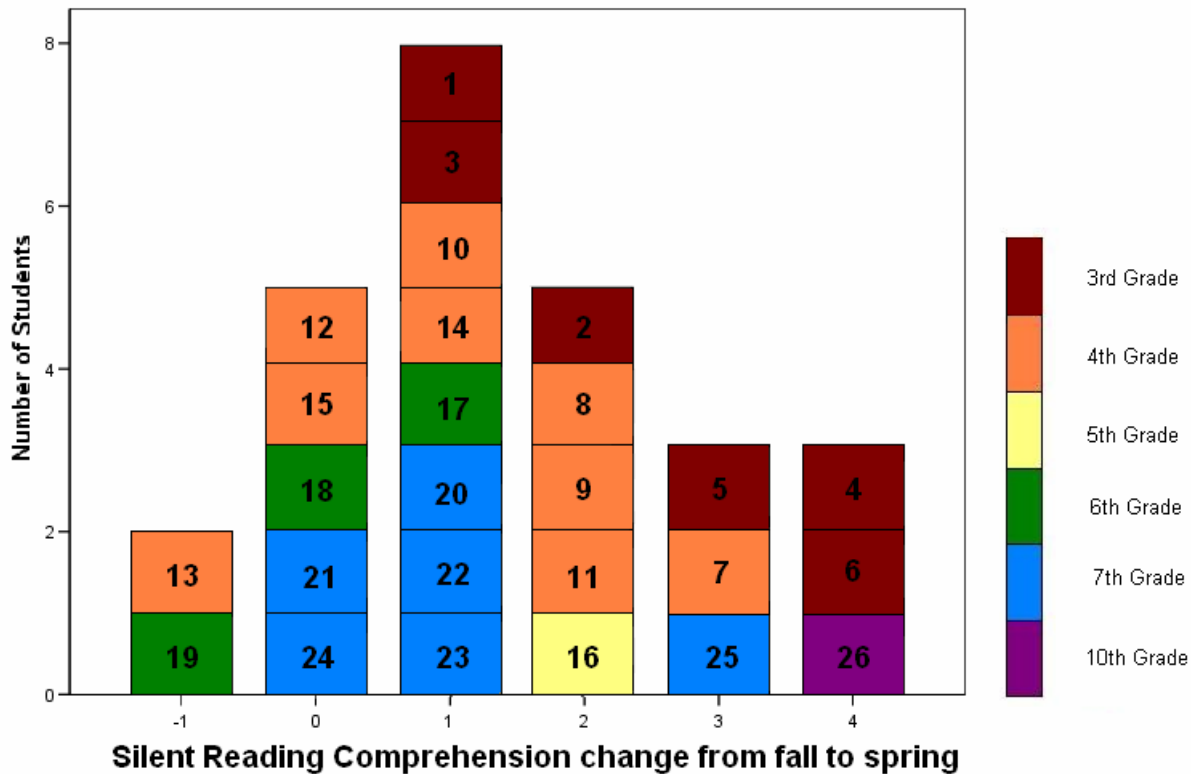


Figure 7. Change in each student’s SRC GE score from fall to spring.

All 26 students had a valid fall and spring SRC GE score. To denote the change from fall to spring in each student’s SRC GE score, Figure 7 shows this change with each student represented by an ID number with current grade level represented by color code. Although five students had a SRC GE score that remained unchanged and the SRC GE score of two students decreased, overall, much progress can be noted. As can be seen in the Figure 7:

- In the spring, the 10th grade student (student 26) had a SRC GE score that increased 4 GE’s.
- Each 7th grade student had a SRC GE score that remained unchanged or increased in the spring; one 7th grade student (student 25) had a SRC GE score that increased 3 GEs.
- Overall, 18 (69%) students had a SRC GE score that increased from fall to spring, while two student’s SRC GE score decreased.

In reviewing these student results, it becomes apparent there is great variability in the change from each student’s fall to spring SRC subtest score, from a decrease of 1 GE to an increase of 4 GEs.

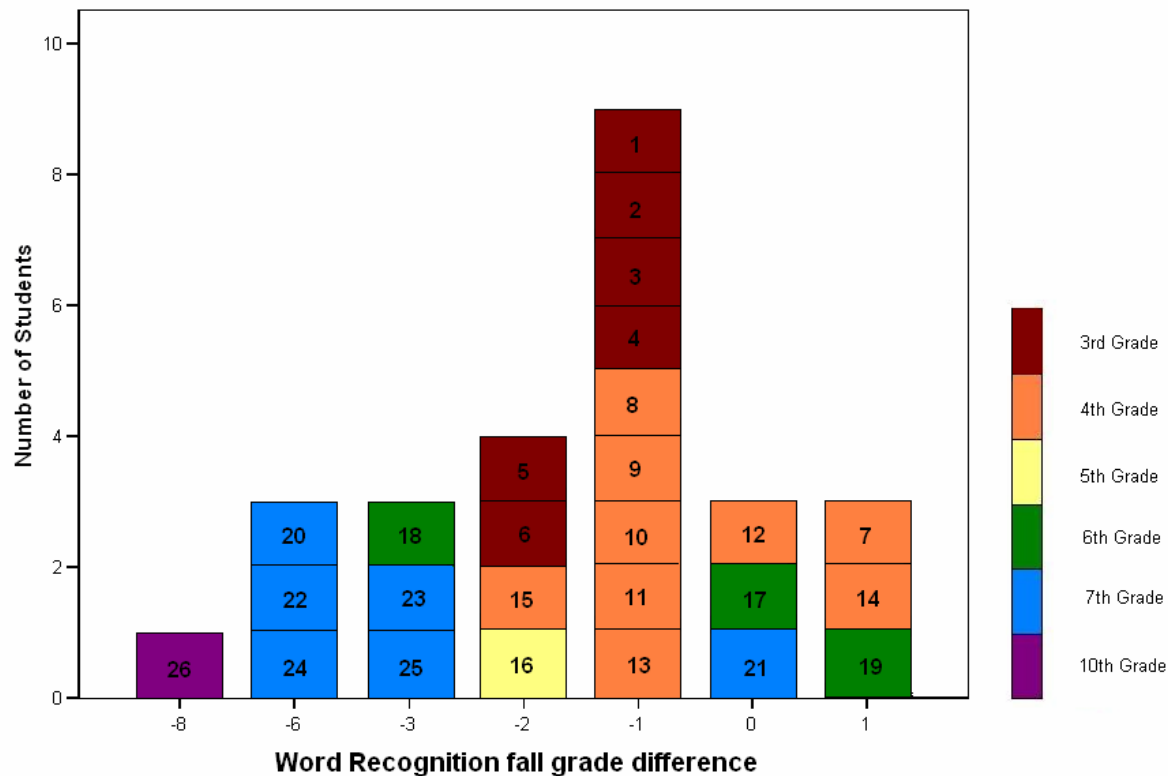


Figure 8. Difference between each student's fall WR GE score and his/her grade level.

To denote the discrepancy between each student's current grade level and his/her fall WR GE, Figure 8 shows this difference with each student represented by student number and each student's current grade level indicated by color code. All 26 students had a fall WR GE score. As can be seen in Figure 8, in the fall:

- Three (12%) students had a WR GE score 6 GEs below grade level; another three students had a WR GE score 3 GEs below.
- The 10th grade student's WR GE score was 8 GEs below grade level (student 26).
- Overall, 20 (77%) students had a WR GE score below grade level.

In reviewing these student results, it becomes apparent there is a great variability in the difference between each student's current grade and his/her GE on the WR subtest ranging from 8 GEs below grade level to 1 GE above grade level in the fall. Again, this discrepancy appears greater with older struggling readers.

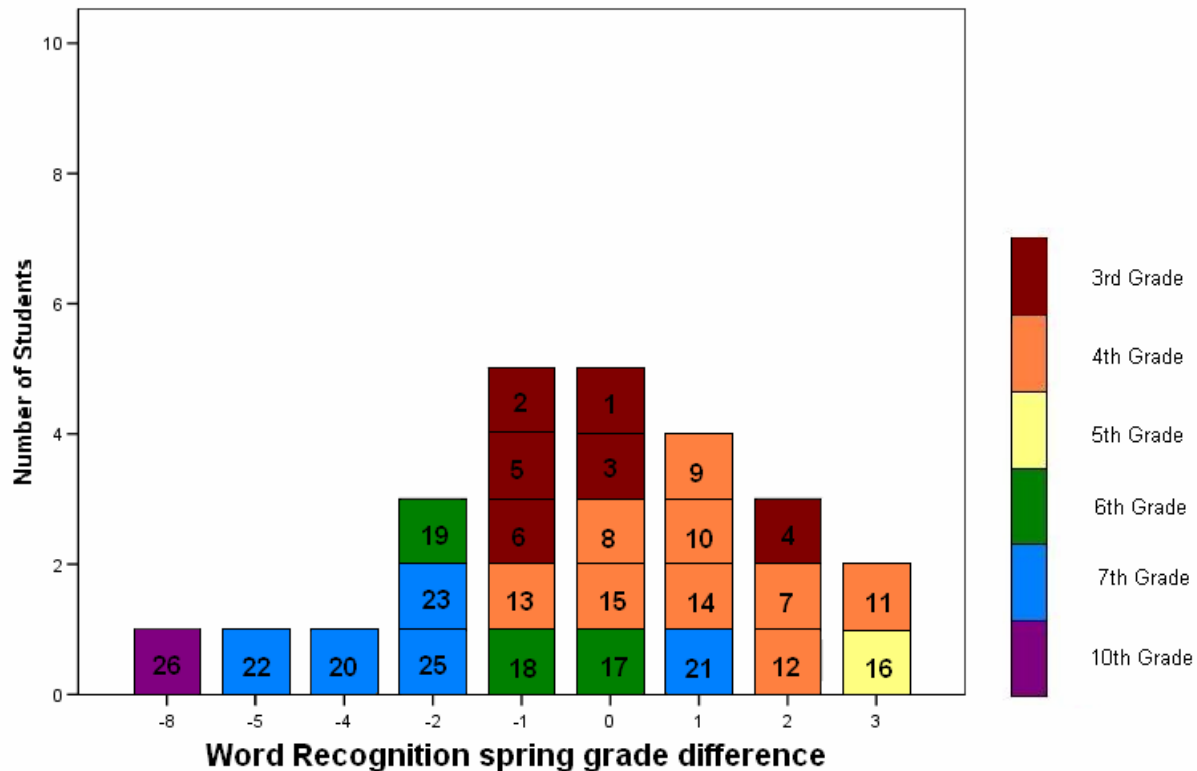


Figure 9. Spring WR difference between each student’s GE score and his/her grade level.

To denote the discrepancy between each student’s current grade level and his/her spring WR GE, Figure 9 shows this difference with each student represented by student number and each student’s current grade level indicated by color code. There were 25 of 26 students who had a spring WR score. As can be seen in Figure 9, in the spring:

- Over half of the students had a WR GE score on or above grade level.
- Eight (89%) 4th grade students had a WR GE score on or above grade level.
- The 5th grade student’s WR GE score was 3 GEs above grade level (student 16).

In reviewing these student results, it becomes apparent there is a great variability in the difference between each student’s current grade and his/her GE on the WR subtest ranging from 8 GEs below grade level to 3 GE above grade level in the spring. Again, this discrepancy appears greater with older struggling readers.

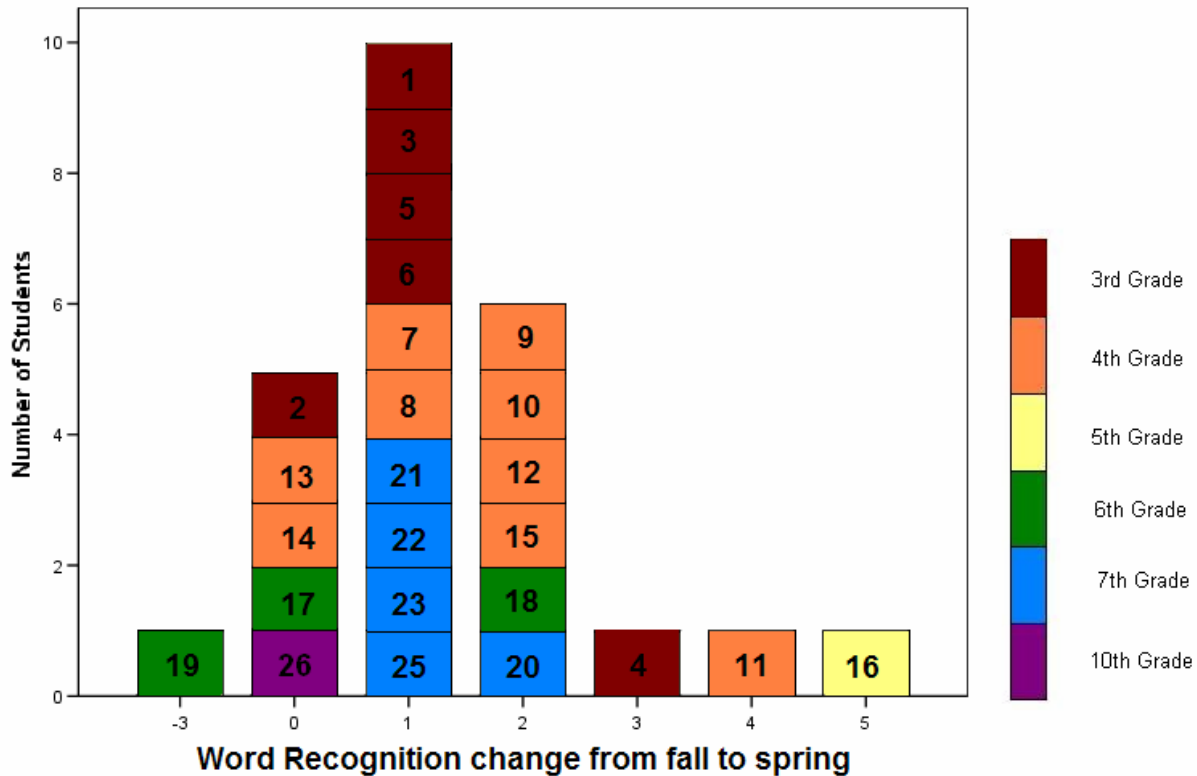


Figure 10. Change in each student’s WR GE score from fall to spring.

There were 25 students who had a valid fall and spring WR GE score. To denote the change from fall to spring in each student’s WR GE score, Figure 10 shows this change with each student represented by an ID number with current grade level represented by color code. As can be seen in the Figure 10:

- 10 (40%) students had a WR GE score that increased by 1 GE.
- 24 (96%) students had a WR GE score that either remained unchanged or increased.
- Seven (78 %) 4th grade students had a WR GE score that increased; four (44%) 4th grade students had a WR GE score that increased 2 GEs, and one 4th grade student’s WR GE score increased 4 GEs (student 11).
- Overall, 19 (76%) students had a WR GE score that increased from fall to spring, while one student’s score decreased.

In reviewing these student results, it becomes apparent there is great variability in the change in each student’s fall to spring WR subtest score with one 6th grade student’s score decreasing 3 GEs (student 19) and one 5th grade student’s WR GE score increasing 5 GEs (student 16).

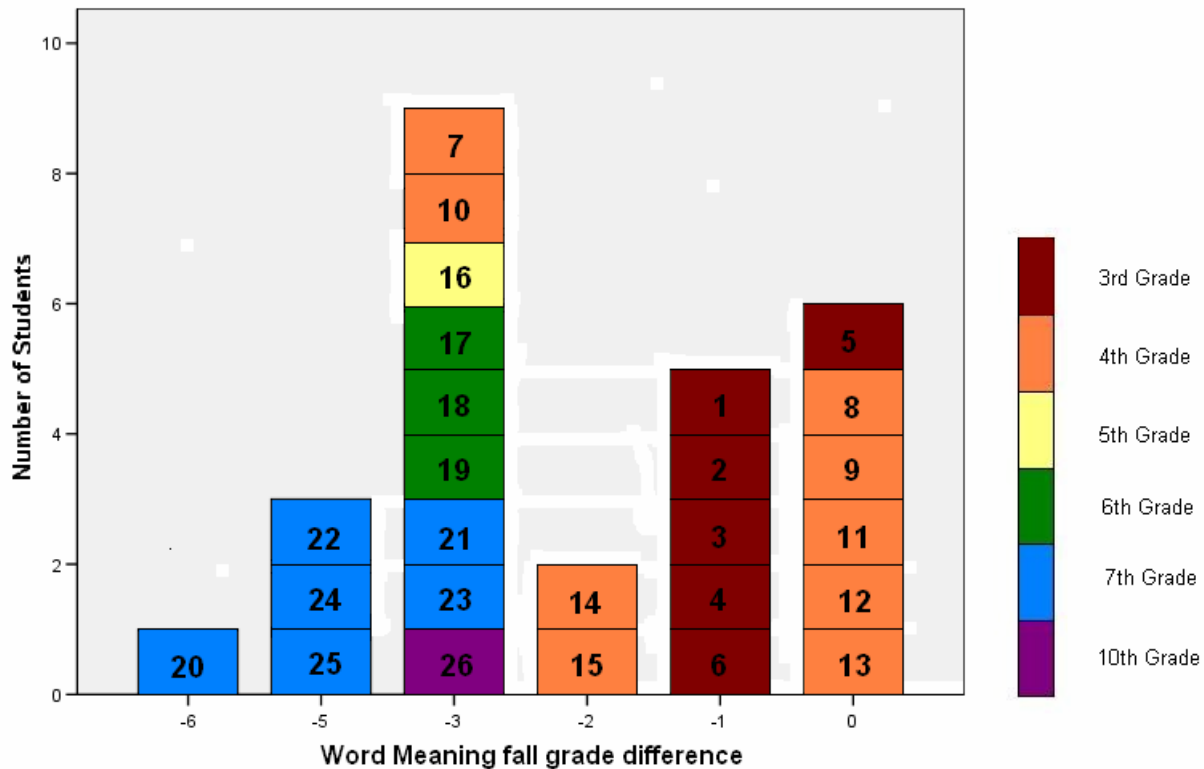


Figure 11. Difference between each student's fall WM GE score and his/her current grade level.

To denote the discrepancy between each student's current grade level and his/her fall WM GE, Figure 11 shows this difference with each student represented by student number and each student's current grade level indicated by color code. There were 26 students with a fall WM GE score. From Figure 11 it can be seen that in the fall:

- One 7th grade student (student 20) had a WM GE score that was 6 GE's below grade level.
- The 10th grade student's WM GE score (student 26) was 3 GEs below grade level, as was the 5th grade student's score (student 16).
- Nine (35%) students had a WM GE score 3 GEs below grade level and three (12%) students had a WM GE score 5 GEs below grade level.
- Overall, no student had a WM GE score above grade level; 20 (77 %) students had a WM GE score below grade level.

In reviewing these student results, it becomes apparent there is a great variability in the difference between each student's current grade and his/her GE on the WM subtest ranging from 6 GEs below grade level (student 20) to on grade level in the fall. Again, this discrepancy appears greater with older struggling readers.

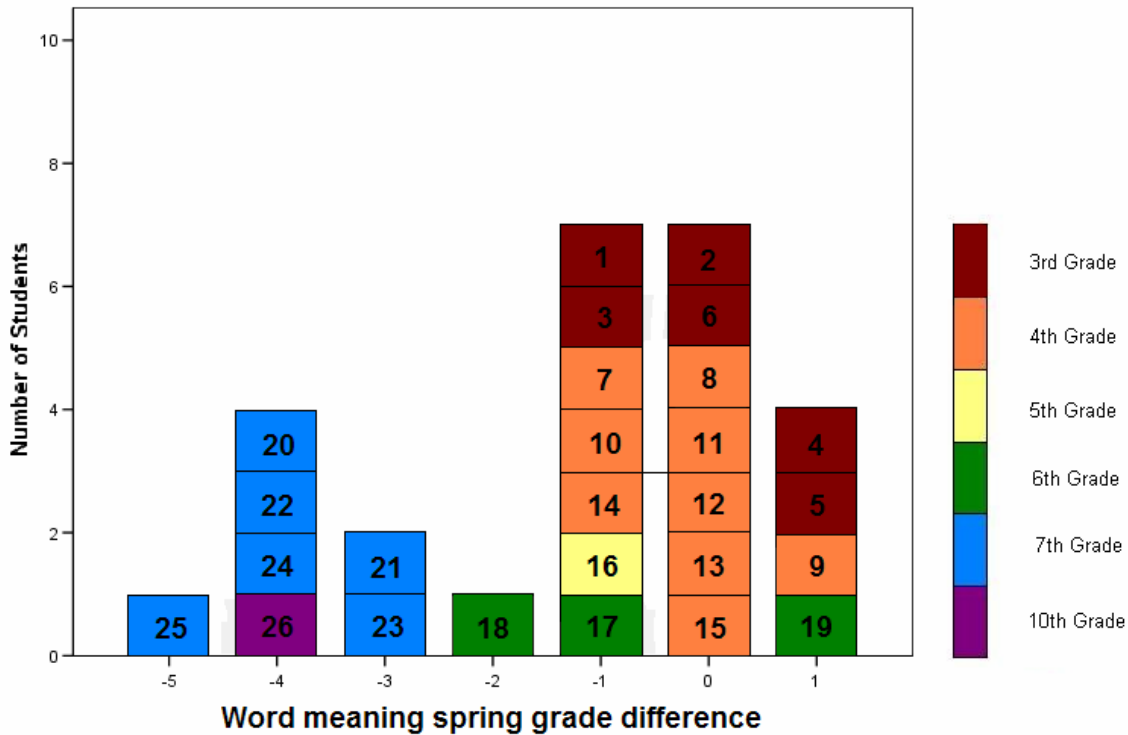


Figure 12. Difference between each student’s spring WM GE score and his/her grade level.

To denote the discrepancy between each student’s current grade level and his/her spring WM subtest GE, Figure 12 shows this difference with each student represented by student number with student’s current grade level indicated by color code. There were 26 students with a spring WM score. As can be seen in Figure 12, in the spring:

- 11 (42%) students had a spring WM GE score on or above grade level
- 15 (58%) students had a spring WM GE score below grade level.
- One 6th grade student (student 19) had a spring WM GE score 1 GE above grade level.

In reviewing these student results, it becomes apparent there is a great variability in the difference between each student’s current grade and his/her GE on the WM subtest ranging from 5 GEs below grade level (student 25) to 1 GE above grade level in the spring. Again, this discrepancy appears greater with older struggling readers.

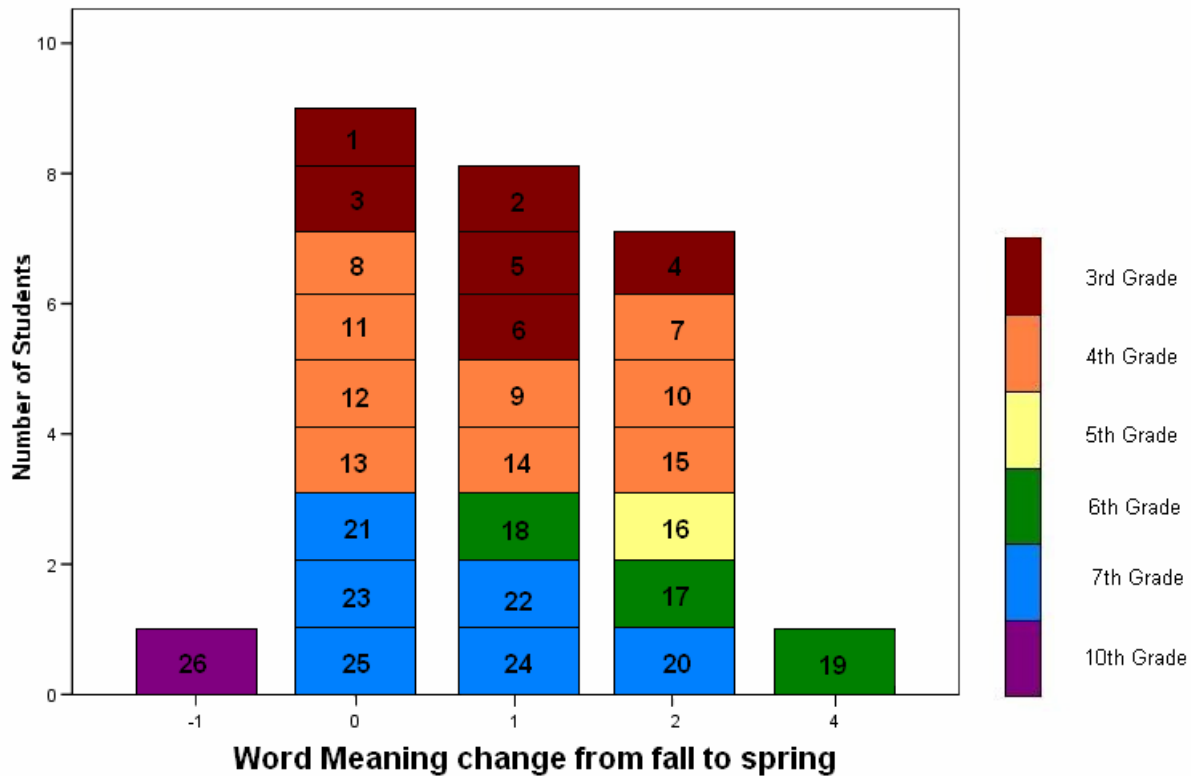


Figure 13. Change in each student's WM GE score from fall to spring.

To denote the change from fall to spring in each student's WM GE score, Figure 13 shows this change with each student represented by an ID number with current grade level represented by color code. A total of 26 students had a valid fall and spring WM subtest score. From Figure 13, it can be seen:

- Three 6th grade students had a WM GE score that increased; one student's WM GE score increased 1 GE (student 18), one student's WM GE score increased 2 GEs (student 17), and one student's WM GE score increased 4 GEs (student 19).
- Nine (35 %) students had a WM GE score that remained unchanged.
- Overall, 16 (62 %) students had a WM GE score that increased from fall to spring while one student's WM GE score decreased.

In reviewing these student results, it becomes apparent there is great variability within the group in the change from each student's fall to spring WM subtest score with one 10th grade student's score decreasing 1 GE from fall to spring (student 26) and one 6th grade student's score increasing 4 GEs (student 19).

Summary of the DAR Findings

There are two overarching factors that were considered in interpreting these DAR results. The first is the variability among the students in all subtests; the second is the differences in reading components as measured on the DAR subtests. Overall, it becomes apparent there is great variability among the students in all DAR subtests. For many students, there are profound discrepancies between the student's current grade and his/her GEs. Often this variability is considerable and because of this variability, group scores (i.e. average grade level GEs, average subtest scores) in the aggregate in the fall and/or the spring are not reported. Further, in reviewing all DAR scores, the degree of change seen among the various subtest scores of each student should be considered on an individual basis.

Second, since reading encompasses a combination of several interrelated processes, each subtest on the DAR can and should be examined separately. For example, growth in ORF is different than growth in each of the other subtests of SRC, WR, and WM. For this reason, reporting average gains by combining groups are neither relevant nor appropriate. However, when examining each subtest separately, it can be seen that more students' GE scores increased from fall to spring than decreased.

Case Studies

It is important to consider the difference in each student's GE score and his/her current grade level as well as the differences among each DAR subtest score(s) when interpreting the findings. To highlight the unique and highly individual abilities of the students in the study, four case study students are depicted here. In the following figures, in order to better represent the data; the student's current grade is noted with a broken line. In addition, case study students' 2006 DSTP reading PL score, month and year of birth, and accommodation code(s) as reported by the teachers in the fall are included here. Also, all 26 students' valid fall and spring DAR subtest scores can be found in Appendix A.

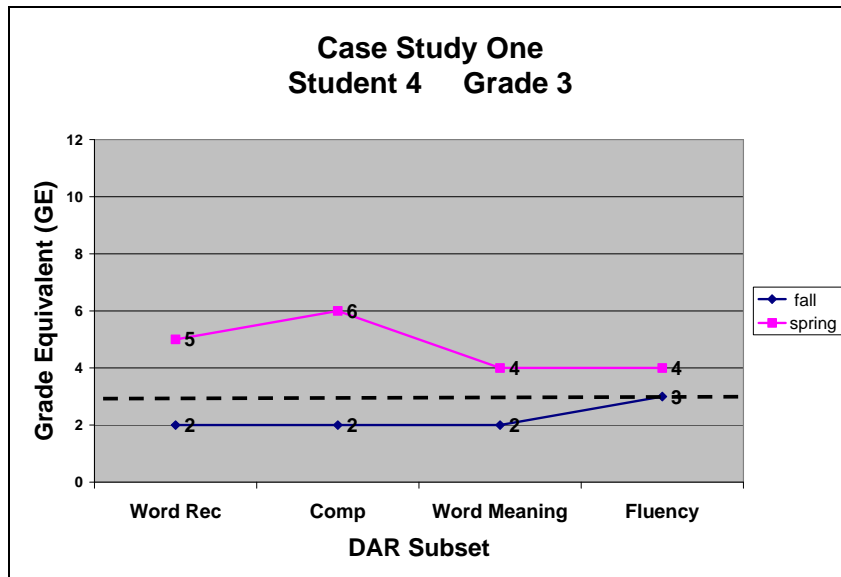


Figure 14. DAR subtest scores for student 4 chosen as case study one.

Case Study One

This case study was selected to demonstrate the DAR test results for a third grade student whose scores increased in all subtests. This student, who had a reading PL score of 2, (below standard) on the 2006 DSTP, was 1 GE below current grade level in all subtests in the fall, except Fluency, in which the student’s GE score was on grade level, GE = 3. In examining these DAR results, one can see gains in Word Recognition and Word Meaning and growth (4 GEs) in Comprehension. These findings show:

- This student, whose subtest scores were below grade level in three out of four subtests in the fall, scored above grade level in *all* subtests in the spring, with the most growth, 4 GEs, in Comprehension.
- Increases in all subtests were seen, ranging from an increase of 1 to 4 GEs.

Table 3. Demographics of student 4, case study one.

DAR Case Study One, Student 4				
Current Grade	Date of Birth	Special Education Status	DSTP Reading PL	Accommodation(s)
3	3/98	No	2	None reported

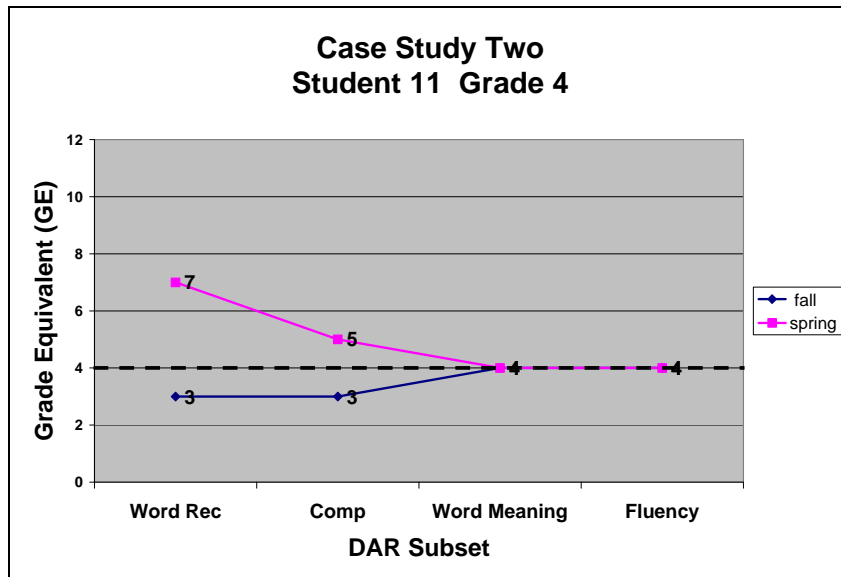


Figure 15. DAR subtest scores for student 11 chosen as case study two.

Case Study Two

This case study was chosen because this 4th grade student had a PL score of 1 (well below standard) in reading on the 2006 DSTP, yet in the fall, he/she scored on grade level in two DAR subtests (Word Meaning and Fluency) and only 1 GE below grade level in the two other DAR subtests (Word Recognition and Comprehension). The two subtests where this student scored 1 GE below current grade level in the fall are same two subtests where the most growth is seen in the spring. This student’s scores increased an impressive 4 GEs in Word Recognition and 2 GEs in Comprehension, interestingly placing the scores in these two subtests above the student’s current grade level in the spring.

These findings generate the following questions:

Why did a student with DAR scores near grade level score well below standard in reading on the DSTP? To what can the gains of 4 GEs in Word Recognition and 2 GEs in Comprehension be attributed?

Table 4. Demographics of student 11, case study two.

DAR Case Study Two Student 11				
Current Grade	Date of Birth	Special Education Status	DSTP Reading PL	Accommodation(s)
4	1/97	No	1	None reported

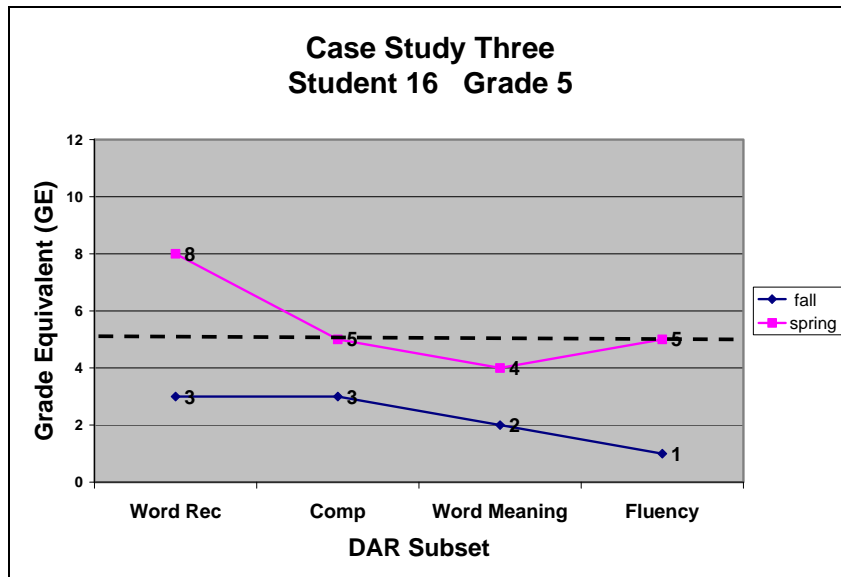


Figure 16. DAR subtest scores for student 16 chosen as case study three.

Case Study Three

This student scored a PL 2 (below standard) in reading on the 2006 DSTP which is consistent with the fall DAR subtest scores, all below grade level. However, this 5th grade student made considerable growth in all DAR subtests; a gain of 5 GEs in Word Recognition is impressive and is the greatest gain on a single DAR subtest reported among all students' DAR scores in this report. Also impressive is gain in Fluency, 4 GEs. This student's GE scores were on or above grade level in 3 out of 4 subtests, with Word Meaning being the only subtest in which this student scored 1 GE below grade level.

Table 5. Demographics of student 16, case study three.

DAR Case Study Three Student 16				
Current Grade	Date of Birth	Special Education Status	DSTP Reading PL	Accommodation(s)
5	12/95	No	2	None reported

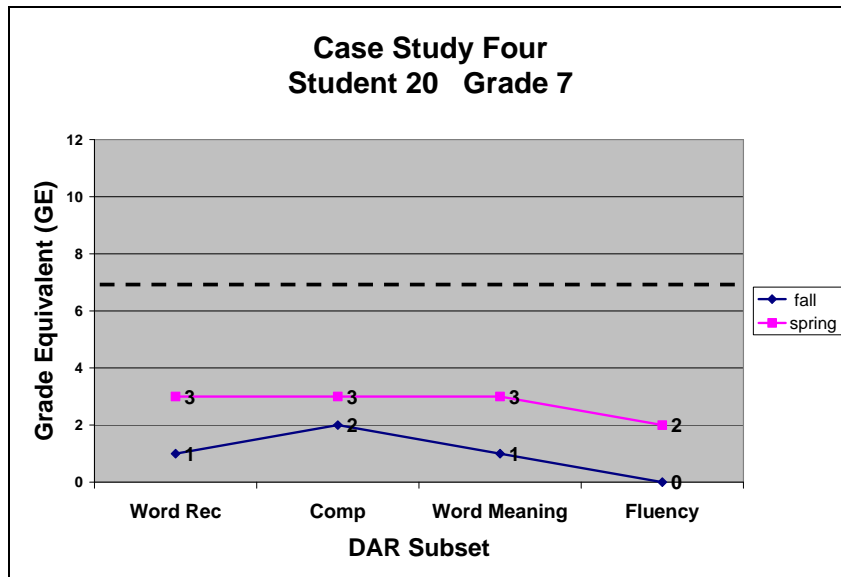


Figure 17. DAR subtest scores for student 20 chosen as case study four.

Case Study Four

Case study four was chosen to examine the scores of a student with a wide range of abilities and accommodations. This student scored a PL 1 (below standard) in reading on the 2006 DSTP consistent with his/her fall DAR subtest scores, all below grade level. Despite a 5 to 7 year discrepancy between this student’s grade level and the DAR subtest GE scores in the fall, an increase in all subtest scores of 1 or more GEs is seen in the spring.

Table 6. Demographics of student 20, case study four.

DAR Case Study Four Student 20				
Current grade	Date of Birth	Special education status	DSTP Reading PL	Accommodations
7	10/93	No	1	68: Using a bilingual dictionary...word-for-word only (writing, math, science, and social studies) 78: Side-by-side written tests, native language and English (social studies, science, and math) 82: Simplifying or paraphrasing test directions or questions 86: Giving extra breaks

DAR/IMPACT Survey Protocol

To gain insight into the context of the participants' classroom instruction, participants were invited to complete a voluntary electronic survey. Additionally, the survey was used to explore the teachers' perceptions of the links between the training and changes in their instruction as well as changes between instruction and reading scores. Each of the 26 teachers who submitted fall and spring DAR scores were invited to take the electronic survey. These participants represented four districts within two counties in the state. Of these, six (23%) participants completed the electronic survey. Although, there were only six respondents to the survey, their responses are included to provide a voice to participants who participated in training(s) and accepted all invitations to submit data including submitting scores in both fall and spring, and responding to the voluntary survey. The brief survey had nine yes/no items, two open-ended questions, two multiple choice, and one demographic that identified the participants' school district. Two open-ended items provide for individual responses which are reported. Responses to the survey items are shown in the following tables.

Table 7. Survey responses to instructional influences.

Survey Question	Yes	No
2. Has your instruction changed based on your students' DAR scores?	100%	0%
12. Overall, did the IMPACT training influence your instruction with your DAR students?	100%	0%
13. Overall, for those students that improved, do you believe your instruction influenced growth in their reading achievement?	100%	0%

Responses to questions 2, 12, and 13, which were related to influences on instruction, are shown in Table 7.

Question three directed respondents to name the most important change made in their instruction to the struggling readers (if they perceived a change in their instruction). These responses included:

- “more details to phonics”
- “diagnostic changes”
- “concentrating on fluency and vocabulary”
- “more fluency practice, spelling practice, more decoding skills, different ways to discover vocabulary”
- “instruction based on individual needs and lots more fluency practice”

- “I have adjusted the readings and have used a lot of the strategies I have learned in class.”

Question four on the teacher survey, “To what do you attribute the change or stability in your students’ test scores from fall to spring?” gave respondents four choices: IMPACT training, targeted instruction, both IMPACT training and targeted instruction, or other. Half of the survey respondents chose targeted instruction and half chose both IMPACT training and targeted instruction as their response.

The responses to survey question five, “In retrospect, what would be the one most important change you would make based on your students’ DAR scores?” are shown below:

- “using more graphic organizers”
- “vocabulary instruction” (2 respondents)
- “I would work on decoding skills-word identification”
- “More independent reading in the classroom, we did a lot of reading as a whole group and in small groups, but not a lot of independent reading”
- “continue to instruct at their level and push them to the next level”

Question six asked teachers to select the most significant barrier to instruction they noticed when instructing their students based on their DAR scores. Choices were lack of materials, lack of time, lack of administrative support, class size, and other. The responses to each item are shown in Table 8.

Table 8. Reported barriers to instruction.

Item	Lack of time	Class size	Lack of material	Other (unspecified)	Did not respond
Percent	33%	16.7%	33.3%	16.7%	0%

Questions seven through 11 referred to the influence of each IMPACT training module on instruction. Each question asked if the participants found [name of module] helpful in instructing their DAR students. Results show that the respondents perceived a very strong influence from each IMPACT training module in their instruction, particularly for Vocabulary, Word ID and Fluency, and Comprehension in which 100% of the respondents perceived the training to be helpful in their instruction. Results for these five questions are shown in Table 9.

Table 9. Influence of the IMPACT training modules on instruction.

Module	Vocabulary	Word ID and Fluency	Comprehension	Assessment for Teaching and Learning	Motivation and Instructional Design
Yes	100%	100%	100%	67%	67%
No	0%	0%	0%	33%	33%

Overall, the survey responses regarding teachers’ perception of the influence of the IMPACT training on their instruction and its influence of their instruction on their students’ growth in reading achievement, are noteworthy. Teachers reported using IMPACT training and the DAR to attend to the details of phonics, to base their instruction on individual needs, and to attend to diagnostic changes.

Discussion

DAR

Several factors should be taken into consideration when interpreting the results of this study. First, the DAR is intended to provide an in-depth analysis of a student’s reading proficiency and to provide teachers with diagnostic information to plan individual or small group reading instruction. Although every student in this study was not meeting the standard according to their 2006 DSTP reading PL, the students’ fall DAR scores revealed that some students’ GE scores were above current grade level in certain subtests, and others were below current grade level by as much as 9 GEs. Additionally, the students’ current grade ranged from grade 3 through grade 10. These individual differences should be taken into account when interpreting the findings.

Second, reading is composed of different processes which should be considered separately. The differences in the reading processes, the degree of change, and the discrepancy between a student’s GE subtest score and the grade current level should all be noted. For example, one GE increase in a subtest score such as ORF for a student who is one GE below current grade should be interpreted differently than one GE increase in a student whose subtest score is two or more GEs below current grade (well below grade level) in ORF. The same is true for each of the other subtests. These changes may not be equivalent. For these reasons, aggregate scores were not considered appropriate and were not reported.

And finally, the notion that as students advance in grade, their achievement gap becomes even greater is well documented. According to Torgesen (1998), “The consequences of a slow start in reading become monumental as they accumulate exponentially over time” (p.32). Reading

problems tend to worsen as children progress through school. Stanovich (1986) attributes this decline to what he calls the *Matthews effects*, based on Stanovich's observations that the gap between proficient and struggling readers widens over time (McKenna and Stahl, 2003). In all of the subtests in this study, profound differences between grade level and GE scores were seen in older struggling readers. If an average student's growth is one GE in one year's time, then many of these students made noteworthy increases in their GE subtests scores from fall to spring.

2007 End of the Year Survey

A survey was used to collect teachers' perceptions of various aspects of their classroom context and the IMPACT training on their student's DAR scores. Of the participants who responded, their perception of the IMPACT training and the DAR were positive. All of the respondents perceived the Vocabulary, Word Id and Fluency, and Comprehension trainings to be helpful in instructing their struggling readers while four of six respondents perceived the other two trainings, Assessment for Teaching and Learning and the Motivation and Instructional Design, to be helpful in instructing their struggling readers. Participants listed lack of time and materials as barriers and cited many of the strategies supported in the training such as more practice in fluency, spelling and decoding as most important. Regarding the change or stability in their students' DAR scores from fall to spring, half attributed it to targeted instruction and half attributed it to both the IMPACT training and targeted instruction. The survey responses regarding participants' perception of the influence of the training on their instruction, and the influence of their instruction on their students' reading growth, are noteworthy. Further, all respondents reported their instruction changed based on their students' DAR scores; and all perceived the IMPACT training influenced their instruction.

Limitations

Limitations encountered which may have influenced the results are included below. One limitation was that a random selection was not considered due to the limited number of valid matched scores that were submitted. A second limitation was the use of multiple test administrators (i.e. IMPACT participants) to provide data for this report. It is possible that test protocol procedures could have varied and thus could have affected the results. In addition, some SSSR and/or IMPACT participants did not:

- ❖ submit data
- ❖ submit both fall and spring data
- ❖ include all of the required data (e.g. a match between fall and spring student ID numbers)
- ❖ submit scores of students who were below the standard according to their 2006 DSTP reading PL
- ❖ remember which students' scores were submitted in the fall
- ❖ complete the end of the year survey

In the spring the R&D Center had to provide student ID numbers to several participants who did not know which students' scores were submitted in the fall. This raises questions about their use of student data to drive instruction.

Additionally, the following factors may have affected the results of the study:

- ❖ Data reported in the aggregate would not be meaningful due to:
 - the highly individual nature of struggling readers' difficulties
 - the differences within subtests and among students' various DAR subtest GE scores in comparison to their current grade level
 - the wide range of differences among students in grades 3 through 10

Further, an important factor that should be taken into consideration when reporting DAR data is the use of grade equivalencies; the use of a test that compares students by grade equivalent, "an estimate of a grade level corresponding to a given student's raw score" (McKenna and Stahl, 2004, p. 25), is considered problematic by some. "Without question, the worst norm typically reported on group achievement tests is the grade-equivalent score" (p. 30). Although the DAR is not a group test, according to McKenna and Stahl, the use of grade equivalents appears to be even less desirable when viewed in the opinion of the International Reading Association (IRA), which in a 1980 Board of Directors position statement that is still in effect officially condemned the use of grade-equivalent scores (p. 30). Traditional schools, however, divide students according to grade levels and most educators are quite familiar with the concept; the reason these types of norms

continue to persist is because teachers demand them (2004).

Conclusions

In order for an individual student's reading achievement to increase, teachers should have a clear picture of student's reading abilities as well as the content knowledge to apply their instruction to address their students' area(s) of need(s). The survey responses suggest that both of these aspects are being addressed through the IMPACT training. The teachers' survey responses indicated the teachers perceived the IMPACT training influenced their instruction. Teachers reported using the IMPACT training and the DAR to provide instruction based on individualized needs and to concentrate on fluency, phonics, spelling and vocabulary.

The DAR is intended to provide an in-depth analysis of a student's reading proficiency and to provide teachers with diagnostic information to plan individual or small group reading instruction. It is used to assess students' relative strengths and weaknesses in key areas of student learning in reading. The IMPACT training and the use of the DAR appear to have focused attention to the important aspects and processes involved in the teaching and assessment of reading.

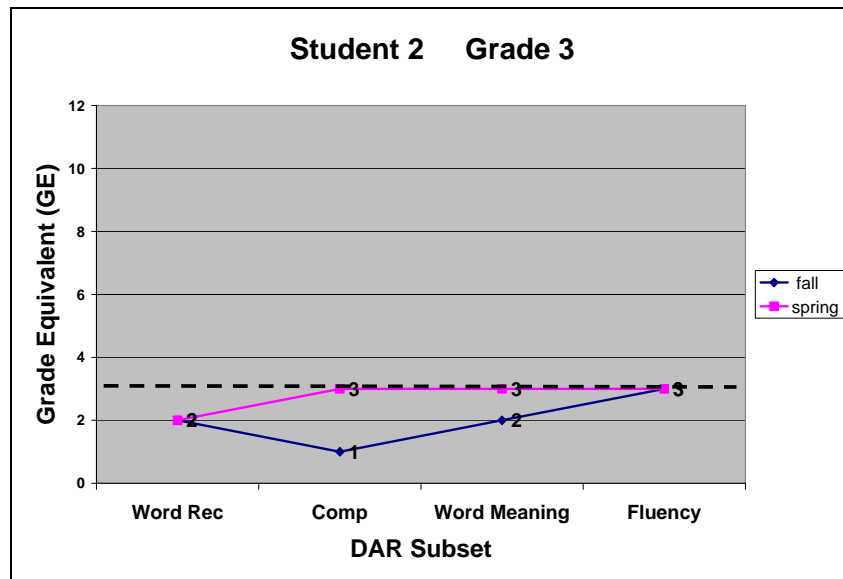
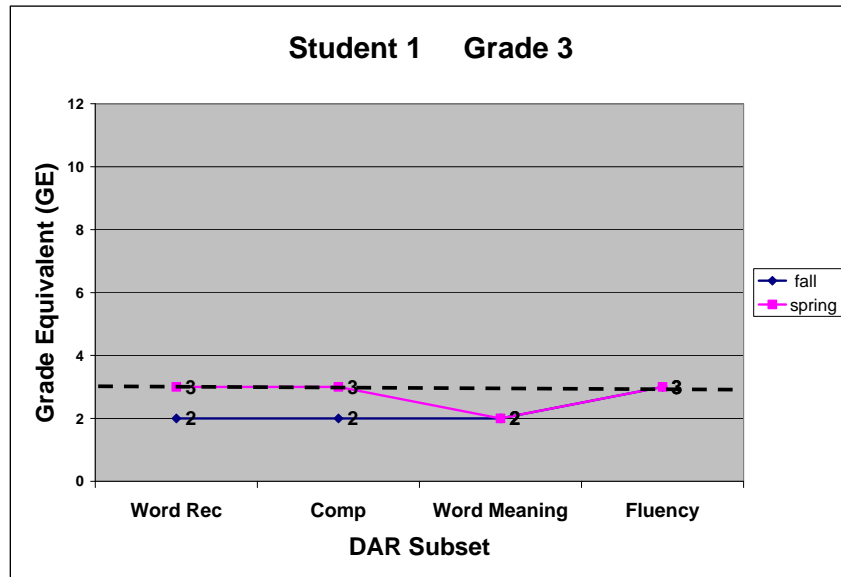
Implications

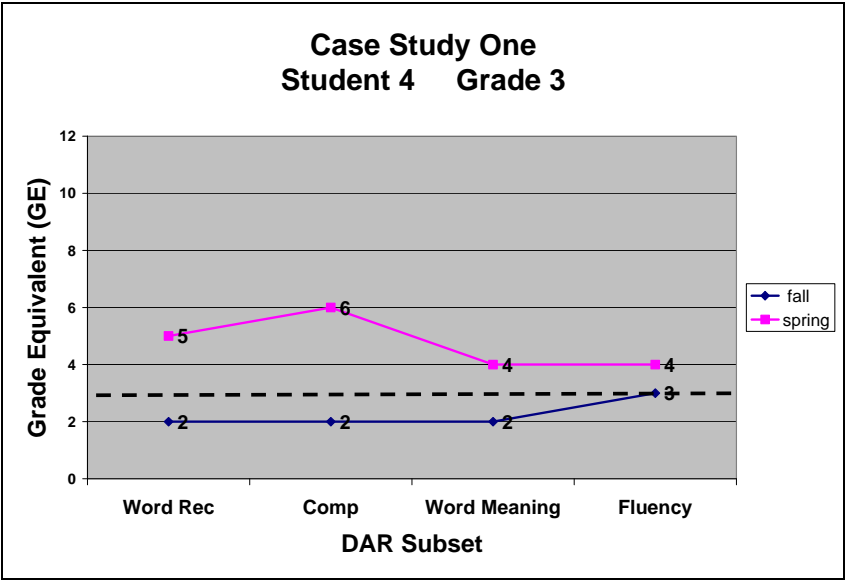
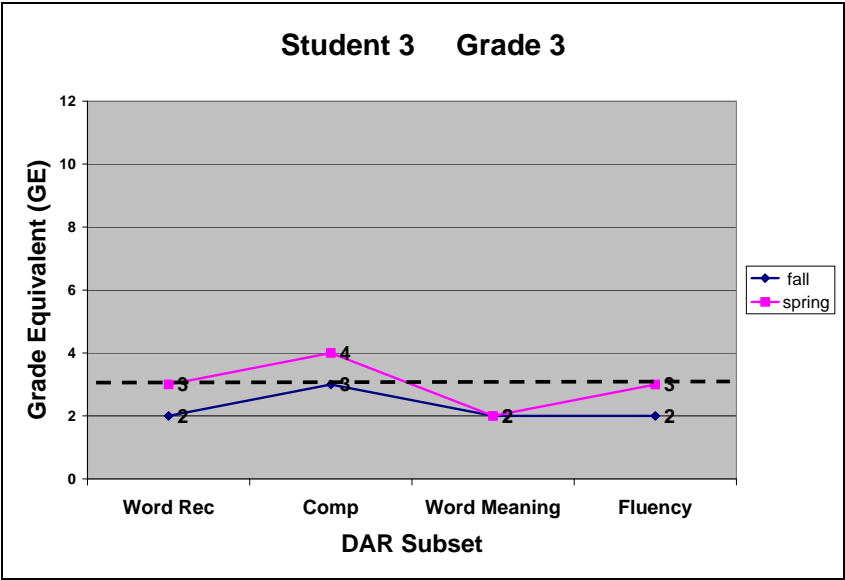
The trend of teachers of struggling readers to recognize and assess their students' reading as a series of interrelated processes that include word recognition, word meaning, comprehension, and fluency, and to target instruction to each of these areas, is critical. Reading instruction at the secondary level has not always been emphasized. Responses to the survey suggest that after the IMPACT training, teachers implemented changes in their reading instruction. Survey respondents believed that their instruction influenced student achievement as measured on the DAR. Not only did the teachers report that their instruction influenced their students' reading achievement, they also reported they believed they could do more to help their struggling readers. These findings suggest that teachers perceived a thread among the IMPACT training, targeted instruction, and an increase in students' reading achievement. These findings have implications for decisions regarding continued and expanded professional development for teachers of struggling readers in grades 4-12.

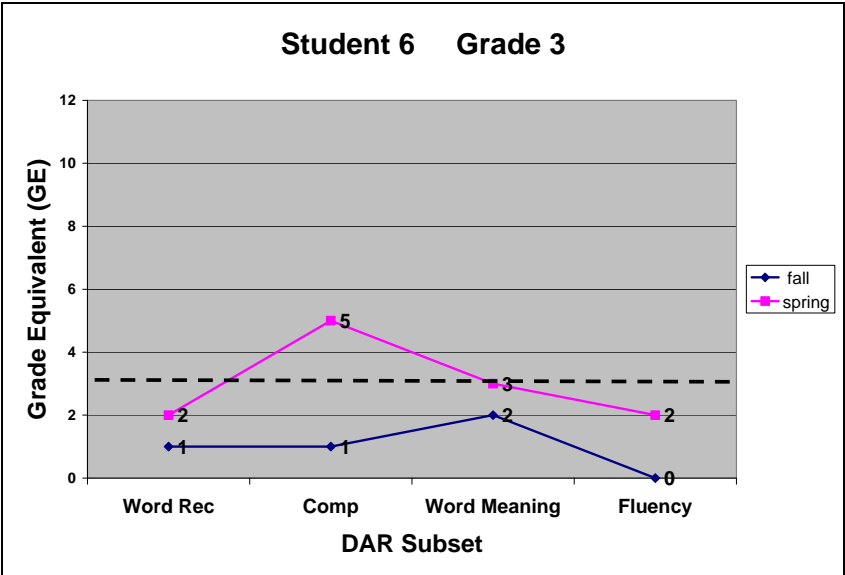
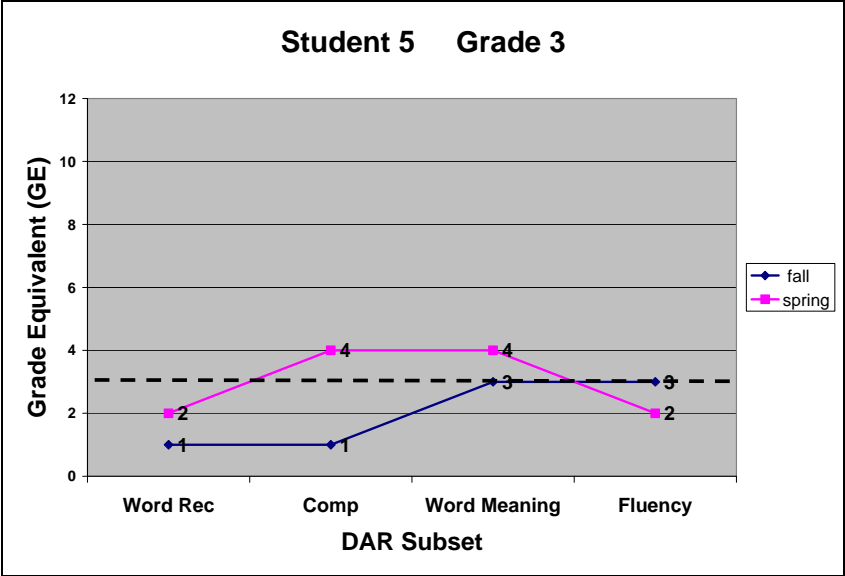
Recommendations

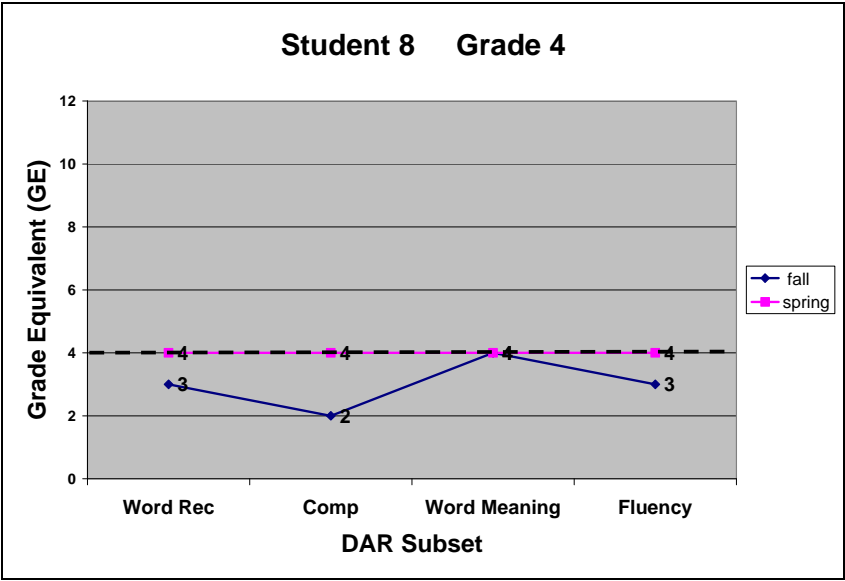
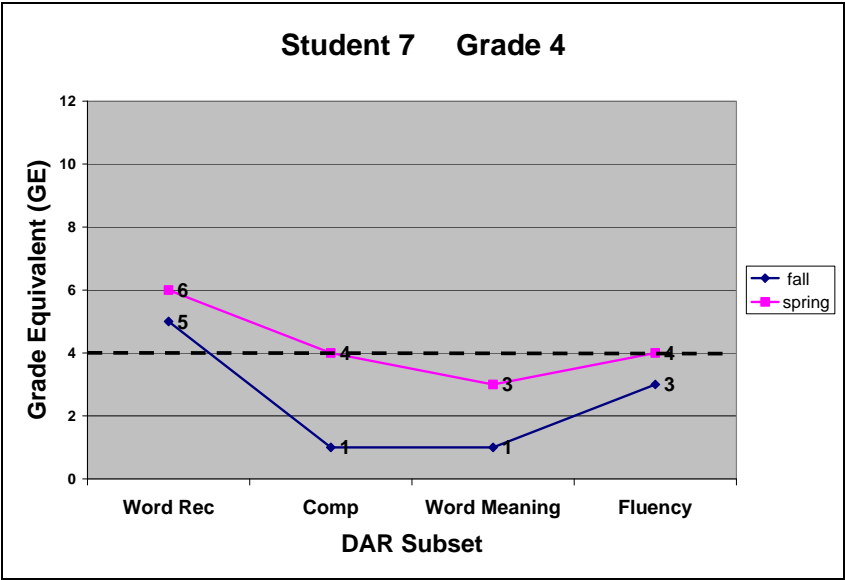
- Educate more teachers to view reading in terms of the various processes of word recognition, word meaning, fluency, and comprehension, and to use assessments in each subtest to target reading instruction.
- Educate more teachers to collect, analyze and apply student assessment data to drive instruction.
- Increase teacher professional development that emphasizes individual instruction for struggling readers based on reading assessment(s) that measure the critical areas of reading.

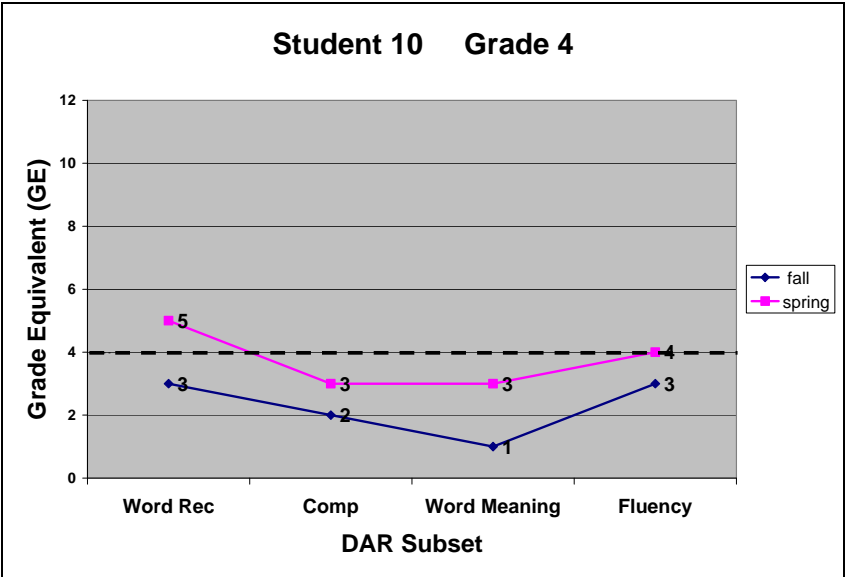
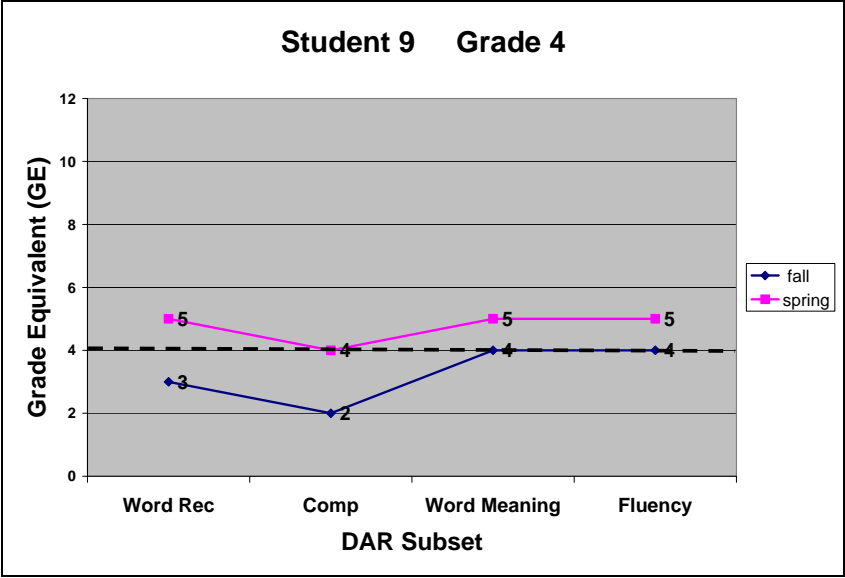
Appendix A: Individual Student's DAR scores

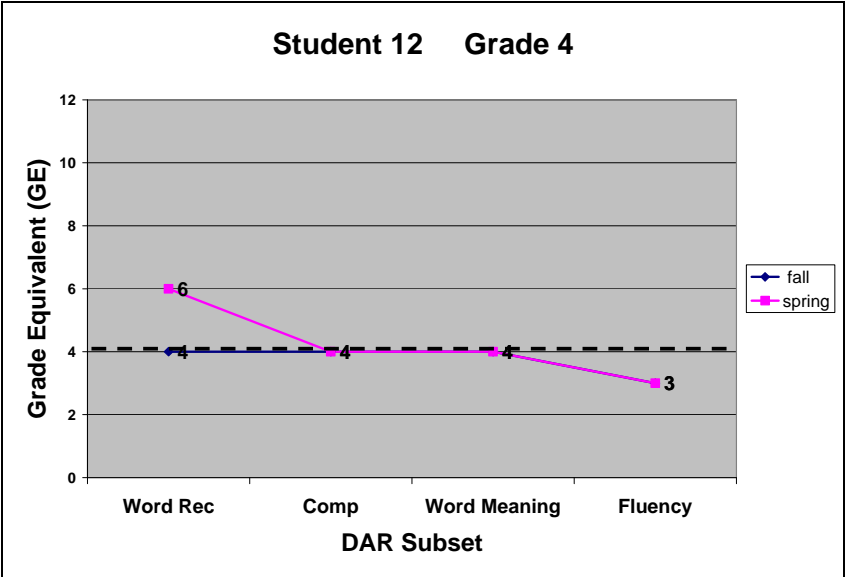
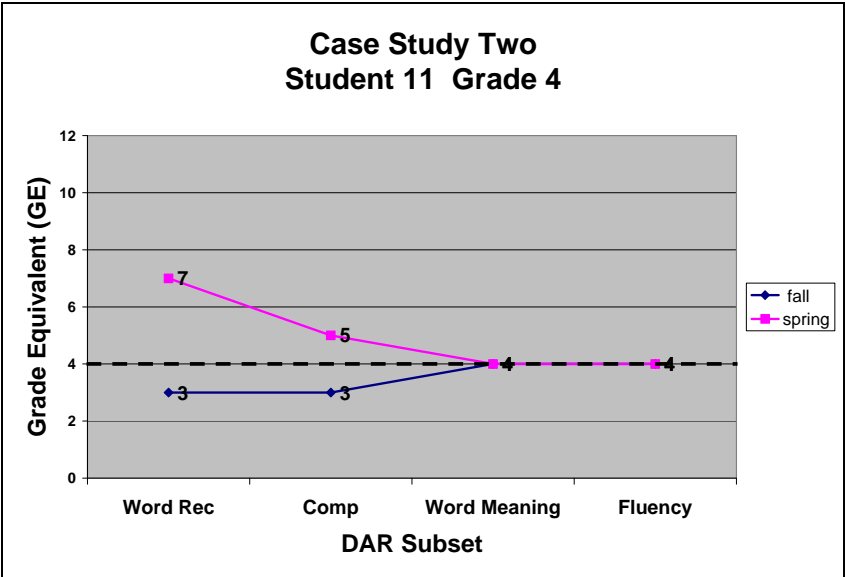


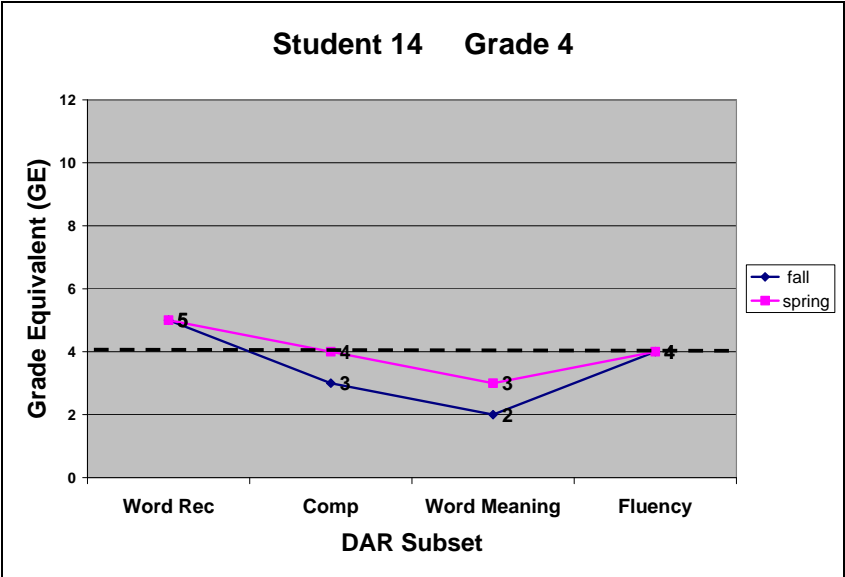
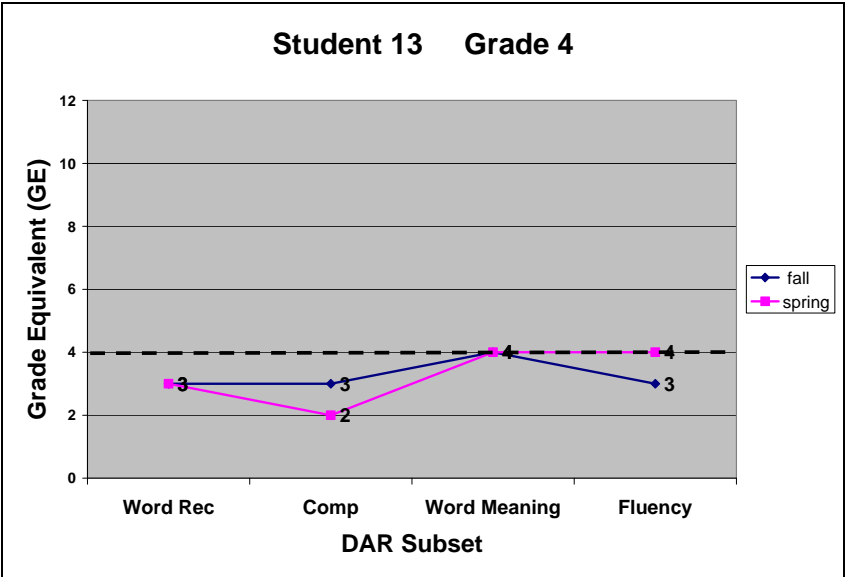


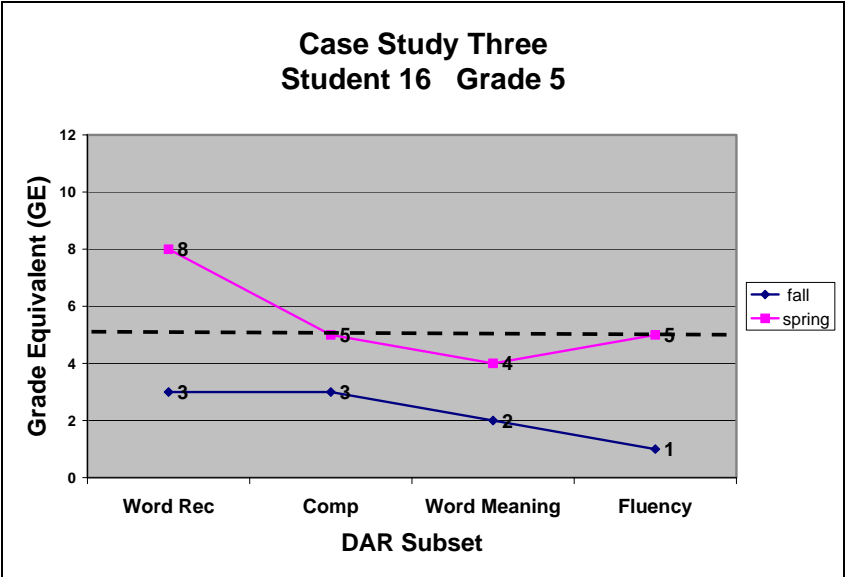
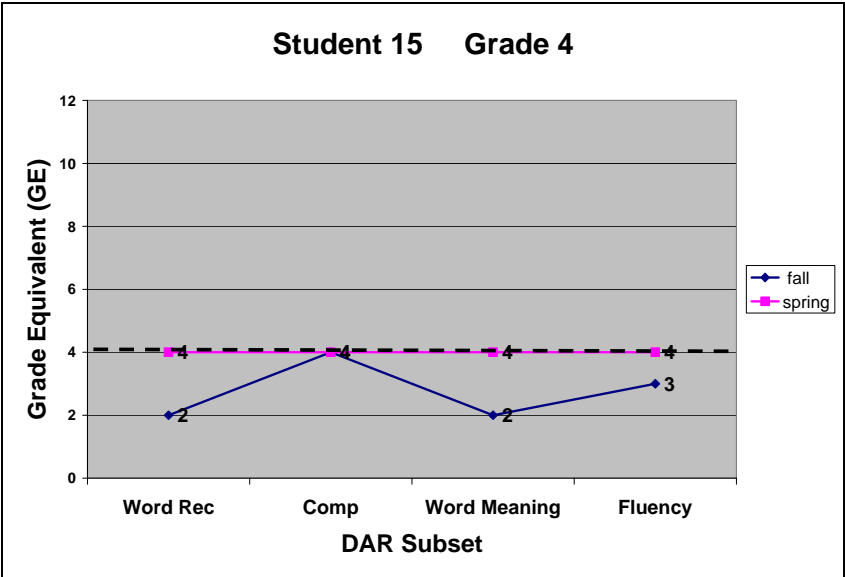


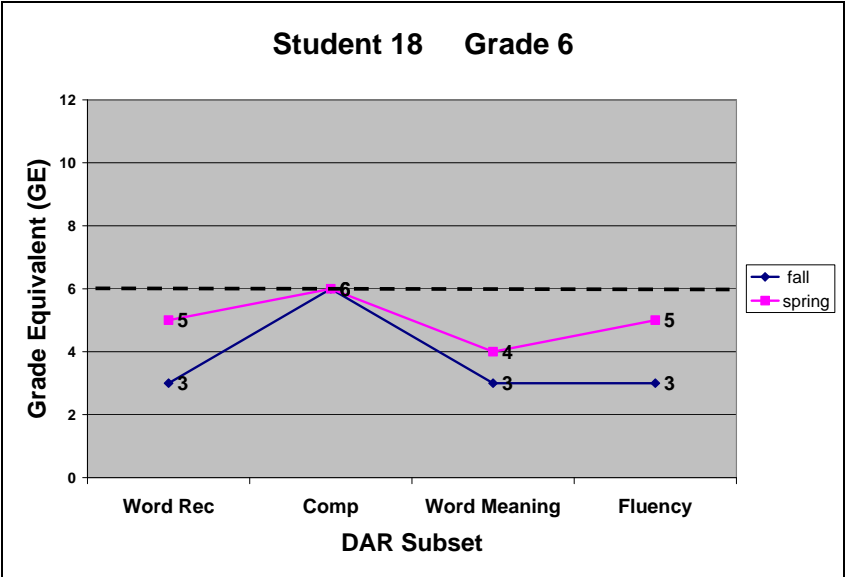
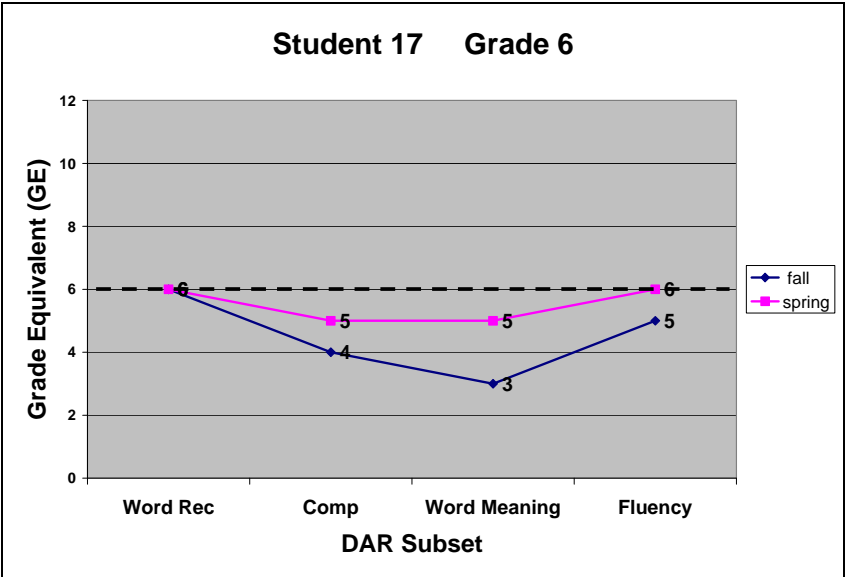


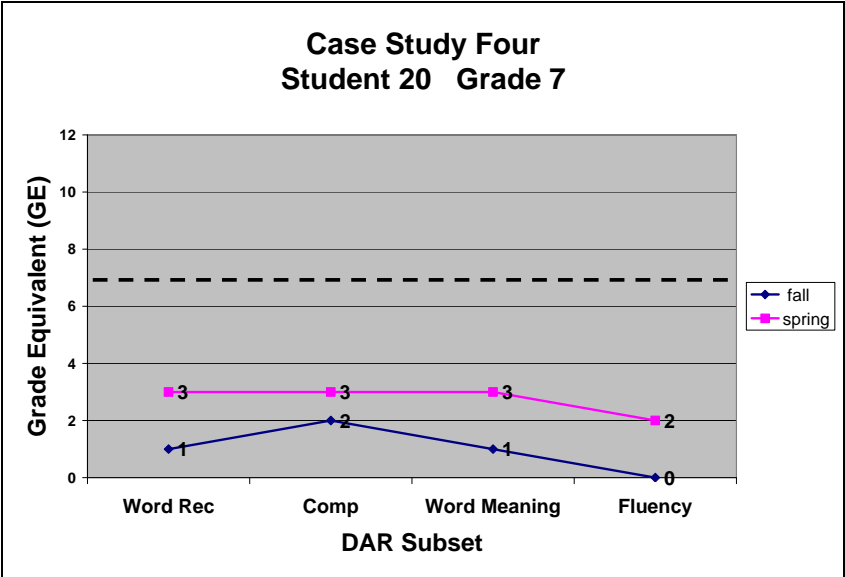
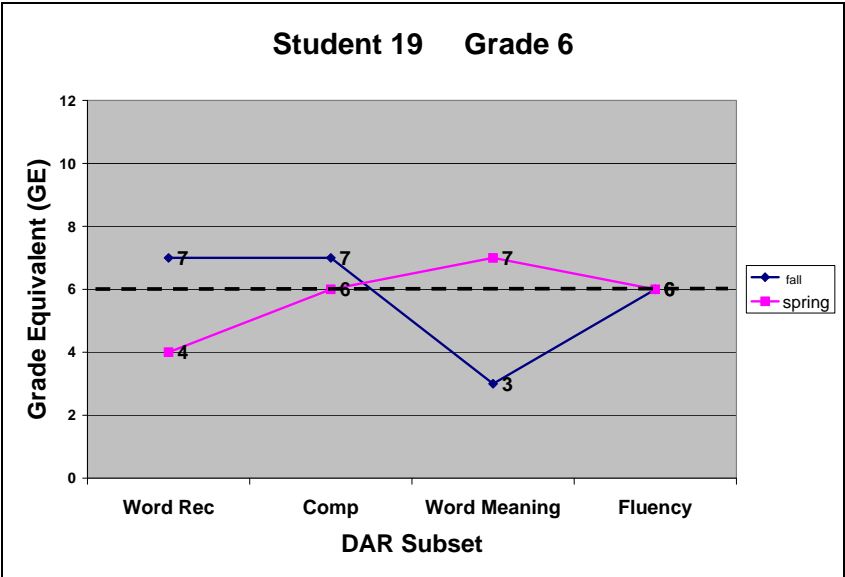


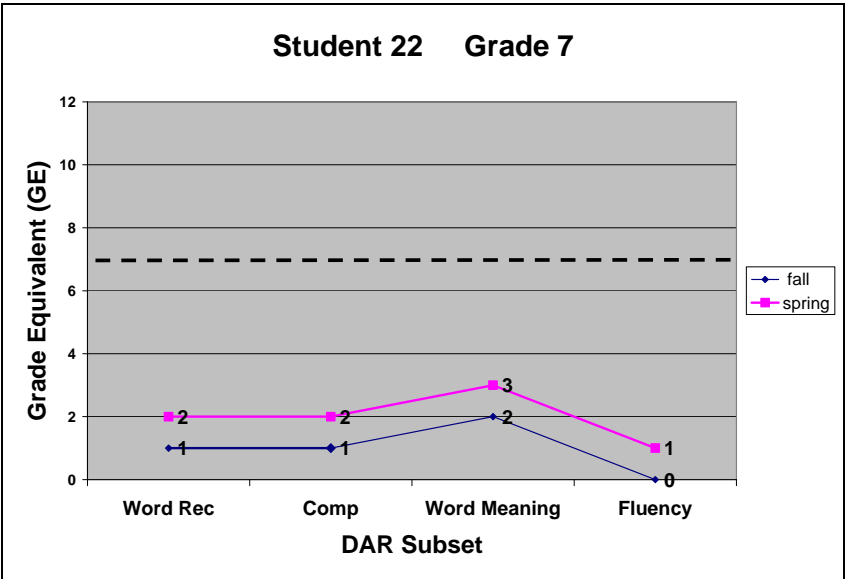
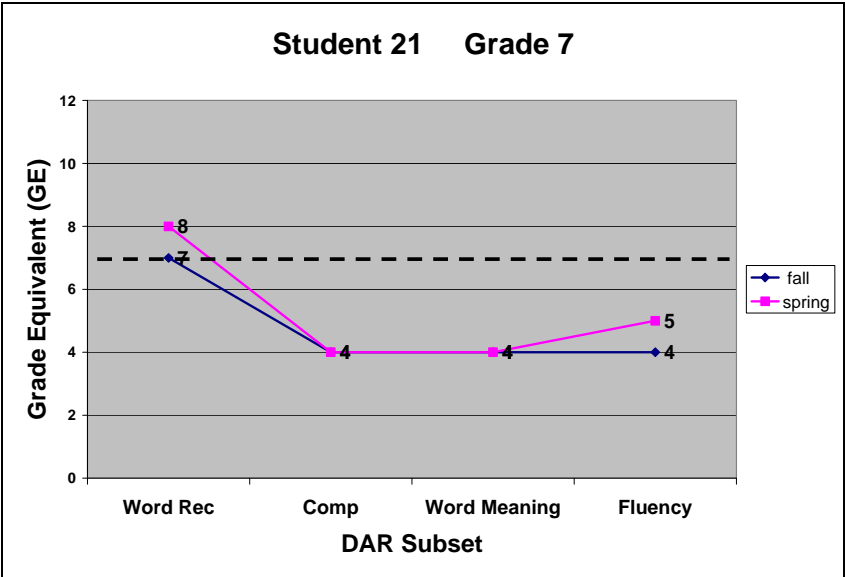


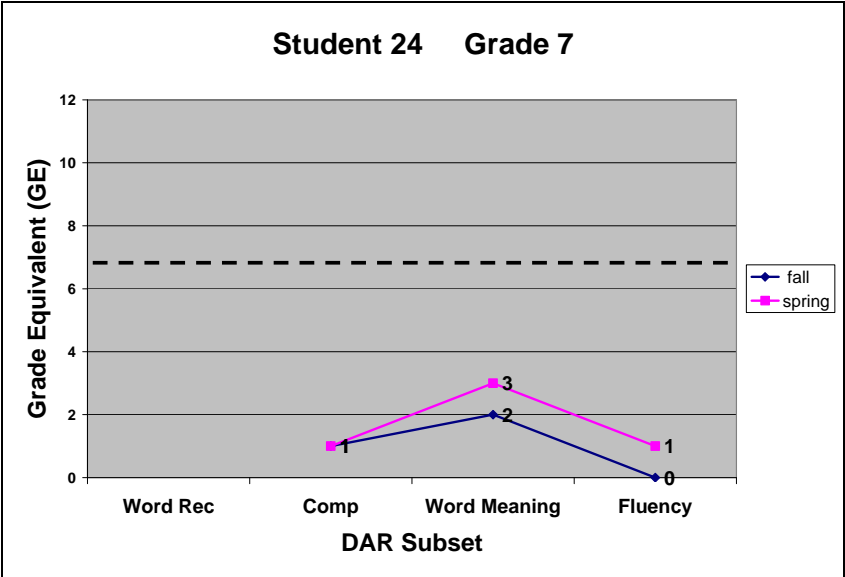
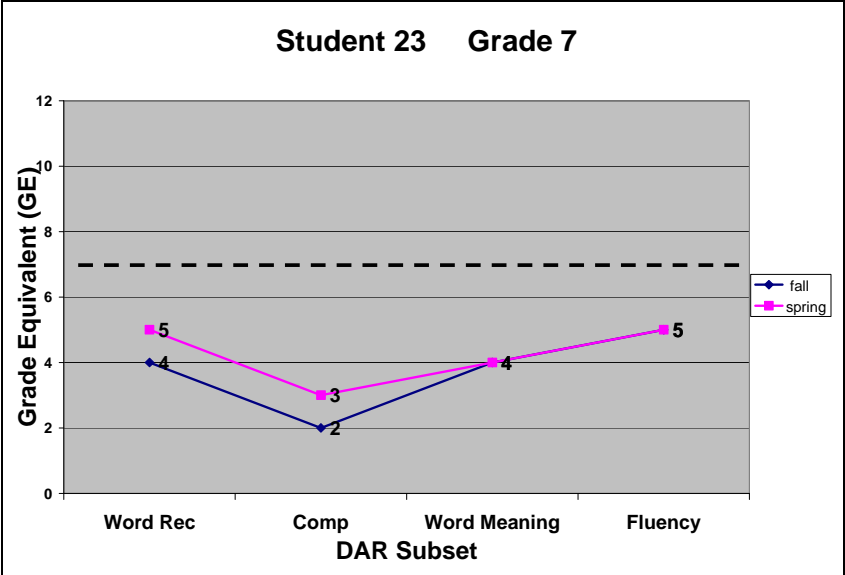


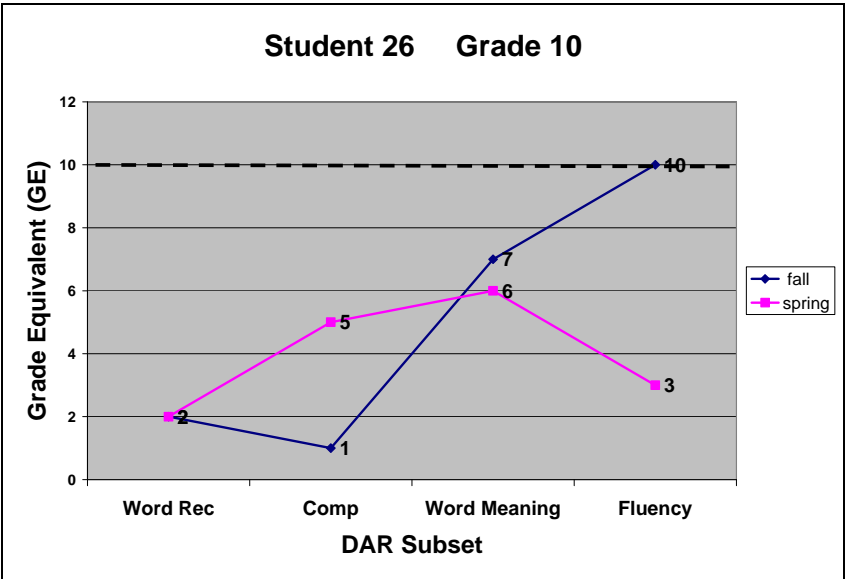
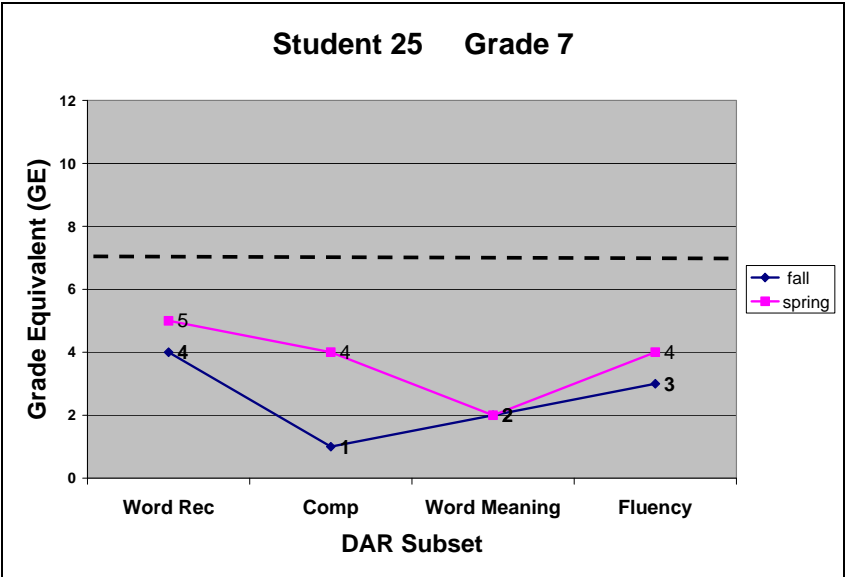












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