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Comparison of DIBELS and AIMSweb Fall Benchmarking and Their Identification of Students in Need of Tier II Service

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COMPARISON OF DIBELS AND AIMSWEB FALL
BENCHMARKING AND THEIR IDENTIFICATION OF
STUDENTS IN NEED OF TIER II SERVICE

RICKELMAN

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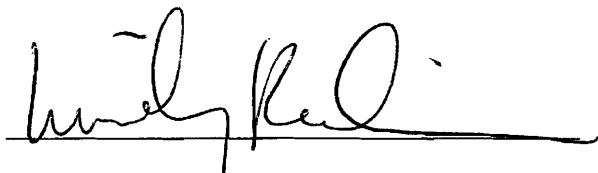
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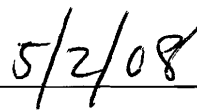
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**Comparison of DIBELS and AIMSweb Fall Benchmarking and
Their Identification of Students in Need of Tier II Service**

BY

Lindsay R. Rickelman

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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Running head: COMPARISON OF DIBELS AND AIMSWEB FALL
BENCHMARKING

A Comparison of DIBELS and AIMSweb Fall Benchmarking and Their Identification of
Students in Need of Tier II Service

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Abstract

This study investigated the DIBELS and AIMSweb systems of data collection for fall benchmarking and their identification of students in need of Tier II services. One hundred and five students in the second through fifth grade from a Midwestern suburb were administered probes from both assessment systems during the fall benchmarking time period (September – October). The median number of words read correctly and errors committed in a minute from each assessment system were recorded and analyzed. Results revealed that student performance differed significantly, in that they read more reads correctly on AIMSweb probes and committed more errors on DIBELS probes. The AIMSweb assessment system also identified more students as in need of Tier II services. Implications are discussed.

Introduction and Literature Review

By the time that children who have difficulty learning to read are identified, they may have already “slipped” through the hands of educators and it may be too late for them to learn the basic skills that enable them to read (Good, Kaminski, Simmons, & Kame’enui, 2001). It is important that these children learn to read by the end of third grade, when the brain is still elastic for learning essential skills and making the necessary neural connections involved in reading. There is a window of time in a child’s life when these needs are best met, and that window is early in life. In particular, first grade represents a pivotal time in reading development (Steege & Ritchey, 2005). According to Chard & Kame’enui (2000), children who display poor reading skills in the first grade have a 90% chance of continuing to have poor reading skills three years later (as cited in Kamps et al., 2003). Even more startling is the fact that children who are poor readers at the end of first grade almost never acquire average-level reading skills by the end of elementary school, let alone third grade (Torgeson, 2001). Dickson and Bursuck (1999) report that as many as 25% of our nation’s school children are having difficulty learning to read.

Not only is it important for children in today’s society to possess the ability to read, but according to Adams (1990), children who are good readers are also more likely to succeed at school and become productive members of our society (as cited in Good, Gruba, & Kaminski, 2002). Early identification of children who are at risk for developing a specific reading disability is crucial, and immediate intervention related to their weaknesses is indispensable for maximizing the benefit for the child (Fielding-Barnsley & Purdie, 2003). A major aspect of change in the way we work to teach

reading to all children must involve allocation of resources for early identification and preventive instruction (Torgeson, 2001; Hintze, Ryan, & Stoner, 2003) before the gap between expected outcomes and observed skills broadens (Cusumano, 2007). For this reason, it is necessary that schools administer screening assessments to identify which children are at risk for encountering reading difficulty. And, in order to reach the goal of adequate reading achievement, Good et al. (2001) suggest that screening assessment in schools must at a minimum reliably (a) measure growth on foundational reading skills on a frequent and ongoing basis, (b) predict success or failure on criterion measures of performance (i.e., high-stakes tests), and (c) provide an instructional goal that, if met, will prevent reading failure and promote reading success.

Because of the prevalence of reading problems and the centrality of reading to overall academic success, reading will be the academic subject of focus for this study. Dickson and Bursuck (1999) estimated that in the 1995-1996 school year, at least 80% of the 2.6 million students reported as having a learning disability encountered reading difficulties. This is an alarming fact considering remediation and special education, the two most common ways of reacting to reading problems for students with learning disabilities, have fallen short of successful in the past (Good, Gruba, & Kaminski, 2002; Dickson & Bursuck, 1999). With literacy skills being a must in today's society, it is imperative that reading is achieved by those with the cognitive ability and that research identifies the most appropriate and effective way to teach this skill when a student does encounter difficulties as early as possible. One proposed method of identifying students in need of additional support is through a service-delivery model called Response to Intervention (RTI).

Response to Intervention

Today's educational policies such as No Child Left Behind (NCLB, 2001) and Individuals with Disabilities Education Improvement Act (IDEIA, 2004) are driving the force behind school practices and education. These policies are in effect to promote optimal educational growth among all students, including those who may be thought of as non-traditional students. The end goal is that all students regardless of their race, gender, socioeconomic status, or identified disabilities must reach academic proficiency, notably in reading (Cusumano, 2007). These policies possess a concentrated focus on scientifically or evidence-based practices and strategies. According to Brown-Chidsey and Steege (2005), scientifically-based instruction includes those methods shown to result in better outcomes for students in multiple research studies. They also identify certain components and practices that should be included in scientific-based instruction. First of all, the content of what is being taught is critical. Teachers should be aware of students' mastery and instructional levels and instruction should be matched to that. Secondly, delivery of instruction should be explicit and teachers should provide time for rehearsal, guided practice, and immediate feedback. The pace of instruction is also a key component. Knowledge should be presented in a cyclical approach, where material is reviewed often. Next, student responses should be immediately reinforced along with corrective feedback. Incorrect responses should be addressed immediately followed by rehearsal of correct responses. And finally, assessment should be conducted throughout the lesson with data recorded daily and summative data reviewed weekly to determine if instructional changes are needed. Instructional practices and assessment should heavily rely on findings based in the extensive body of literature available today. In addition to

scientifically-based instruction, both NCLB and IDEIA mention procedures inherent in a model of instruction called Response to Intervention (RTI).

RTI is a systematic and data-based method for identifying, defining, and resolving students' academic and/or behavioral difficulties in a prevention-based model (Brown-Chidsey & Steege, 2005). It is designed to prevent long-term academic and social failure (Fuchs & Fuchs, 2006). There are three key components of RTI. The first component is the use of effective, scientifically validated instruction, as defined earlier. The second component is a process of monitoring student progress by collecting and recording data. And finally, the third component involves a systematic review of data-based decision making to inform instruction. Furthermore, there are three levels of prevention: primary, secondary, and tertiary. Primary intervention is utilized as the first step and is applied to all students. The primary intervention attempts to prevent the emergence of an academic or behavioral problem. In other words, primary prevention is typically conceptualized as instruction in the general education classroom (Fuchs & Fuchs, 2006). Then, secondary intervention is provided at the first sign of problems and is targeted toward a select set of individuals who have demonstrated some type of delay. Therefore, secondary intervention consists of more specialized or small group instruction and monitors progress of those students more often than during primary intervention. Tertiary intervention is the third step and focuses on the reduction of the problem. At this level, intervention consists of intensive and highly individualized interventions. Only students who demonstrate a poor response to the secondary prevention technique are exposed to tertiary intervention.

The most common conceptualization of RTI is based on the three-tier model (Brown-Chidsey & Steege, 2005). The purpose of the tiers is to provide a continuum of instruction from the general education curriculum for most students to intensive instruction for students with the most diverse learning needs (Dickson & Bursuck, 1999). This model recognizes that not all students learn with the same ease or instruction. The three tiers are consistent with the levels of intervention previously mentioned. Tier I is the primary intervention, or general instruction in the classroom, which reaches all students. Tier II is supplementary instruction in addition in the regular classroom instruction, which is provided to approximately 15-20% of students (Brown-Chidsey & Steege, 2005). Tier II services are typically provided in small-group settings, which would be associated with secondary prevention. The third tier is applied to around only 5% of students, and is specialized instruction at the individual level and is typically followed by assessment with a comprehensive evaluation for special education services using a problem-solving model. It is necessary to find out why a student has not responded to interventions and if they are in need of continued supported services, and likewise, eligible for special education. The collection of data and progress monitoring are necessary and vital components at each tier.

As mentioned above, all students receive Tier I services. The question then becomes "What students are identified as needing Tier II services?" One of the activities involved in the first tier of services is called benchmarking. Benchmarking consists of the administration of short and quick probes to determine if a child has met the benchmark goal. A benchmark goal is set to where a normally achieving peer would perform at one of the benchmarking periods, and is an indicator of predicted success with

reading. If a child does not meet the benchmark goal, or is below average, they may be identified as “at risk” for experiencing learning difficulties. Benchmarking is completed three times a year: in the beginning of the school year, in the middle of the school year, and near the end of the school year. It is necessary to complete this task three times a year to enable the earliest identification to prevent students from struggling with academic development (Coyne & Harn, 2006). All children are included in this assessment all three times a year because there is no guarantee that a child who performs adequately at the fall benchmark will continue to grow and learn the skills being taught throughout the year. In other words, a student who is performing as expected at the beginning of the year by meeting the benchmark goal may not be performing adequately in the middle or at the end of the year, where they wouldn’t meet the next benchmarks. So, it is imperative that all students be assessed at a minimum of three times annually.

Within the area of reading and for students in the first grade and above, benchmarking is typically an assessment of oral reading fluency and can be accomplished through curriculum-based measurement (CBM). The National Reading Panel’s 2000 report provides evidence to support that the degree to which students read fluently strongly predicts later reading success. Large differences in reading fluency between at-risk and typically developing children have been evidenced as early as first grade (Speece & Ritchey, 2005), when fluency is first measured. Therefore, this research will focus on the measurement of oral reading fluency (ORF). ORF can be defined as the speed and accuracy with which connected text is read orally (Speece & Ritchey, 2005). ORF provides essential predictive power in a screening assessment, as it accurately and reliably identifies those students who will be most likely to experience reading difficulty

in the future based on their current performance on this indicator. When a student performs below the benchmark, or cut off score, they may be considered "at risk" for poor reading outcomes or reading failure. These are the students identified in need of further educational support, in order for them to achieve the next benchmark goal. In other words, they are candidates for Tier II services. The purpose of the second tier is twofold: to prevent reading difficulty by delivering a more intensive, and presumably effective, intervention, and to assess the child's responsiveness to instructional intensity from which the vast majority of children should profit (Compton et al., 2006).

What is CBM?

There are several ways to identify children who have difficulty learning to read. Traditionally, the most common approach has been through psychometric evaluations. However, more recently, alternative assessment methods in the schools have been promoted due to the lack of instructionally relevant information provided by traditional psychometric tests (Elliot, Lee, & Tollefson, 2001) and the initiative to provide scientifically-based instruction (NCLB, 2001). Alternative assessment strategies include performance-based assessment, play-based assessment, functional assessment, and curriculum-based measurement (CBM) (Dykeman, 2006). Probably the most widely researched method within the category of alternative assessments is CBM. CBM has an expansive body of research supporting the technical adequacy and the practical application of these techniques in the assessment of children for late first through sixth grades (Fuchs, 1994, as cited in Elliot et al., 2001). CBM is a set of standardized and validated short duration tests, known as probes, which are used by special education and regular education teachers for the purpose of evaluating the effects of their instructional

programs (Deno, 1985; as cited in Shinn, 2002). CBM was developed almost thirty years ago by Stanley Deno at the University of Minnesota through the Institute for Research on Learning Disabilities during the years of 1977-83 (Deno, 1993). Deno found the need to empirically assess the impact of various interventions used in a special education classroom by his graduate students. Essentially, the goal in developing CBM was to provide teachers with a system in which they could effectively (a) obtain accurate, meaningful information with which to index standing and growth, (b) answer questions about the effectiveness of programs in producing academic learning, and (c) plan better instructional programs (Deno, 1985, as cited in Fuchs & Fuchs, 2002). Since then, CBM has expanded its initial focus on special education and been incorporated in the RTI process by including universal screening, general education progress monitoring, and learning disability classification within a response to intervention eligibility framework (Fuchs, 2004). CBM provides a method of assessment that allows teachers to adjust their instruction to student's needs. Research has demonstrated that when teachers use CBM to guide instructional decision making, students learn more, teacher decision making improves, and students are more aware of their own performance (Fuchs, Deno, & Mirkin, 1984). More specifically, reading CBM has been established as a worthwhile indicator for determining the overall effectiveness of reading instruction and intervention support (Graney & Shinn, 2005).

One advantage of CBM is that it is sensitive to short-term gains in education and skill acquisition because of the frequent monitoring and multiple forms that are available. Probes are quick and easy to use, making it possible to administer on a monthly, bi-weekly, or even weekly basis. The increased frequency of monitoring performance

provides sensitivity to the improvement of student's achievement over time. Another advantage of traditional CBM is the direct link to intervention and instruction. In the past, materials have been used from the child's curriculum, which makes academic or instructional accommodations quite simple and clear. In reading for example, a teacher will know where the child's mastery, instructional, and frustration levels are. This in turn will inform the teacher of what the appropriate material for that particular child is. In addition, it will also identify students not performing as well as their normally achieving peers and also monitor student growth after making instructional accommodations.

Furthermore, CBM can provide the basis for decisions regarding referrals, individualized education planning (IEPs), and determining the least restrictive environment for a child by identifying the amount of support needed. One of the major problems with many IEP goals today is that they are not written in a clear or measurable manner; and the link between assessment data, IEP objectives, and instruction has been weak and a cause for concern (Coddling, Skowron, & Pace, 2005). CBM provides objective data that a multidisciplinary team can easily use to create measurable goals. Progress toward those goals can also be monitored using CBM probes. In a recent study, Coddling, Skowron, & Pace (2005) demonstrated how important it is to train teachers on data-based decision making and on how to incorporate CBM information into the IEP.

One of the characteristics of CBM is that it is based on the general curriculum. Educators can develop classroom or school-wide norms as a basis for making student comparisons. By using classroom or school-wide norms as a means of comparing a child's performance to others, there is the advantage of knowing where that child fits in in relation to the local performance. A disadvantage of this is not knowing where this

child fits in nationally. Only knowing how the student compares to the local performance could be problematic. For example, a child may be performing at a poor level or below average in a local curriculum as measured by CBM, but when compared to normal achieving peers in the nation, that child may be average or even above average. The opposite could be just as true as well. A child who is performing in the above average range locally, may be performing in the below average range when compared to a national sample.

Another advantage of using CBM in the classroom is that goals can be set and progress toward the goal can be monitored by simply plotting scores on a graph. Then, evaluation of the progress can be conducted to determine whether or not to change an intervention that is being implemented, set higher goals, or continue to implement the same intervention. As time progresses the growth toward the end of the year goal can be measured by comparing an aim line and trend line on the graph. The aim line is calculated by connecting the first measure on the graph to the last point (end of year goal). The trend line is calculated by examining the students performance over time. It represents a prediction of where the student will be at the end of the year if they continue to progress at their current rate of growth. Then, if the trend line is not approximating the aim line in the case that it is below target, then a change in intervention would be warranted based on the ineffective results.

Over time, however, researchers realized that when schools created passages from their own reading series, it was possible to achieve high integrity administering probes and measuring oral reading; but not in ensuring standardized tests or passages of about equal difficulty (Howe & Shinn, 2002). These authors demonstrated that stories within

basal series books often vary in difficulty more than stories between books. Problems like these led to the development of "CBM-like" measures that allow for more standardized administration.

The most popular resources for obtaining "CBM-like" materials are two programs or systems known as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Manzo, 2005) and AIMSweb (Shinn & Shinn, 2002). DIBELS and AIMSweb are not true CBM materials, yet they were both designed to provide supplemental formative information to the summative (high stakes) assessment that is already completed at the end of the year. Both DIBELS and AIMSweb supply data throughout the duration of the school year to identify students at risk of learning difficulties as early as possible.

DIBELS and AIMSweb do not meet the criteria for curriculum-based measurement because they were not created based on the local curriculum. Research conducted by Powell-Smith and Bradley-Klug (2001) provides evidence that testing material used for performance assessment does not necessarily have to be drawn from the local curriculum. DIBELS and AIMSweb are prepackaged probes that are commonly used across the country. Web-based data management systems enable the formation of national norms. The aforementioned research suggests that the use of "generic" probes such as DIBELS and AIMSweb can also provide the needed information to monitor student performance and progress in reading over time. Madelaine & Wheldall (2004) provide further evidence for this position by arguing that generic CBM materials are just as reliable and valid and have a number of advantages over passages taken directly from the curriculum. One of the advantages of measures that are curriculum independent is

that they ensure that student achievement is assessed equitably regardless of curriculum differences among teachers and schools, and/or changes in curriculum over time.

A shift to standardized probes and administration also ensures that all test takers are given a fair and comparable opportunity to perform in the areas being tested by utilizing consistency, accuracy, meaningfulness, and fairness (Dykeman, 2006). Using curriculum independent measures is based on the assumption that the probes are of the appropriate reading difficulty level. This level can be determined through a readability formula analysis. There are hundreds of readability formulas available in the literature. A common problem among readability formulas is that they are fairly rough guides to text difficulty, with most formulas having large standard errors of measurement of a full grade level or more (Stahl, 2003). Readability formulas differ as to what elements they include in determining the difficulty level of a book or passage such as sentence length, the number of syllables in a sentence, or difficulty of vocabulary. While it may be problematic to find a book's reading difficulty level, it is important to match the readability of a book with the student's mastery and instructional levels in order to promote reading success (Burns, 2006).

ORF probes require the student to read aloud from a grade or instructional level appropriate word passage for one minute. As the student reads, the examiner records any words read incorrectly. Then, the total number of words read correctly serves as the ORF score. Both DIBELS and AIMSweb provide probes that measure ORF.

What is DIBELS?

DIBELS was developed by the University of Oregon to monitor growth in the acquisition of critical early literacy skills and to (a) identify children in need of

intervention and (b) evaluate the effectiveness of intervention strategies (Good, Gruba, & Kaminski, 2002). According to Manzo (2005) DIBELS has become a catchphrase in the schoolhouse and the statehouse as officials look to test data to inform instruction, to identify children at risk of failure in reading, and to hold schools accountable for student achievement. DIBELS were originally available for assessment from kindergarten through the third grade. However, downward and upward extensions are now available that expand the use to preschool all the way through sixth grade.

DIBELS measures were developed to assess the foundational skills, or big ideas, of reading. The big ideas of reading are skills and strategies that are prerequisite and fundamental to later success of reading (Good et al., 2001). These ideas are measured by tests of onset recognition fluency (OnRF), phoneme segmentation fluency (PSF), nonsense word fluency (NWF), letter naming fluency (LNF), and oral reading fluency (ORF). The first four measures (OnRF, PSF, NWF, and LNF) are administered in kindergarten and part of the first grade. ORF measures are not administered until the winter period in the first grade. The assessments provide a quick indicator of normative expectations in early literacy skills and correct words read per minute that reflect a student's progress in learning to read (Kamps et al., 2003).

DIBELS was designed to assist with five decisions: (a) identifying need for support, (b) validating need for support, (c) planning support, (d) evaluating and modifying support, and (e) reviewing outcomes (Good, Gruba, & Kaminski, 2002). The goal of this outcomes-driven model is to match students with the instructional support necessary to achieve each step to reading before a pattern of reading difficulty and failure has been established (Good, Gruba, & Kaminski, 2002). The DIBELS assessment system

has been documented as a psychometrically sound instrument (Kamps et al., 2003). Each measure has been thoroughly researched and demonstrated to be a reliable and valid indicator of early literacy development (Good & Kaminski, n.d.).

What is AIMSweb?

AIMSweb is a formative assessment system that provides student performance data to teachers, parents, and administrators based on evidence-based evaluation and data-driven instruction. The AIMSweb system offers measures of oral reading fluency and reading comprehension in English and Spanish, tests of early literacy in English and Spanish, math computation, tests of early numeracy, spelling, and writing. Materials are available for students in the first through eighth grade. According to Howe & Shinn (2002), the standard reading assessment passages for Grades 1 through 8 are technically adequate and of sufficient equal difficulty to make decisions about students' general reading skills and progress. AIMSweb benchmark reading assessments have been found to have high correlations of reading difficulty level, ranging from .83 to .97, with a median of .95 (Howe & Shinn, 2002). In addition, alternate-form reliability ranges from .80 to .90, thereby meeting technical adequacy (Howe & Shinn, 2002). Furthermore, AIMSweb R-CBM assessments are research-based and meet professional standards for reliability validity, and sensitivity to improvement (<http://aimsweb.com/measures/reading/>).

Rationale & Research Questions

CBM is a worthwhile indicator for judging the effectiveness of overall reading instruction and intervention support because of its efficiency, low cost, and validity with respect to important educational outcomes (Graney & Shinn, 2005). CBM also provides

the critical link between assessment and instruction, thereby enabling schools to dramatically increase the number of students who become successful readers in the primary grades (Coyne & Harn, 2006). While CBM is not a new concept to the field of education, the wide-spread use of supplementary "CBM-like" materials, such as DIBELS and AIMSweb, is. Due to the increased use of these systems, it is important to know how these two popular measures compare to each other. Results from this study will investigate if they are producing the same results.

This study addresses the following research questions: (a) do students perform similarly on DIBELS and AIMSweb measures of oral reading fluency, and (b) do DIBELS and AIMSweb identify the same children as failing to meet benchmarks and, therefore, in need of Tier II services at the fall benchmarking period? Finally, in the event that a difference is found, the reading difficulty level of passages from both DIBELS and AIMSweb will be compared using two different readability formulas, the Spache and Dale-Chall.

Method

Participants

Participants included students enrolled in an elementary school (K-5) from the public school system in a Midwestern suburb. There were a total of 105 participants (54 boys, 51 girls) from the second through fifth grade. The largest percentage of students was in second grade (32%), with 19% in third grade, 27% in fourth grade, and 22% in fifth grade. The age range was from 7 to 10 years. A majority of the students were identified by their parents as White/Non-Hispanic (88%). Other racial/ethnic groups included Black/Non-Hispanic (7%), Asian or Pacific Islander (3%), Hispanic (1%), and

Multi-racial (1%). This was slightly different from the district's overall racial/ethnic background (White/Non-Hispanic 77.7%, Black/Non-Hispanic 6.4%, Hispanic 9.6%, Asian or Pacific Islander 4.1%, Multi-racial 2.3%). Fifteen of the participants (14%) were previously identified as eligible for special education services, which was slightly lower than the overall district's incidence rate of 18%. Of those 15 students, eight (53%) were found eligible with a speech or language disability only. Furthermore, 16 (15%) students were eligible for free or reduced fees and lunch, which was close to the district's rate of 16.9% of all the students.

Materials

Two programs of "CBM-like" materials were used in this study: DIBELS and AIMSweb. Oral reading fluency (ORF) probes for the fall benchmarking period were administered to each student using the respective grade-level probes from DIBELS (see Appendix A) and AIMSweb (see Appendix B). For fall benchmarking three probes from each program were administered to each student, a total of six passages over two sessions. The participants read each passage aloud to an examiner and the number of words read correctly in one minute was recorded as well as the number of errors committed in that same minute for each probe. Then the median number of words read correctly and the median number of errors committed of the three probes from both DIBELS and AIMSweb were used for data analysis. A word was counted as correct when it was correctly pronounced within context or when the student self-corrected incorrect words within about three seconds. An error was committed when the student mispronounced the word, provided a substitution, omitted a word, or struggled with a word for more than three seconds. To be consistent with district practices, when a

student skipped a whole line, each word in that line was counted as an omitted word, and therefore an error. This practice was also consistent with AIMSweb recommendations. Finally, there were a few instances where something was not incorrect, where it is neither an error nor word read correctly. These situations were when a word was repeated, there were dialect differences, or the student provided insertions.

Procedure

Prior to data collection, I obtained informed consent from a school building administrator and district level administrator to conduct this study within an elementary building in their district. Then a training session was held among the practicing school psychologist from that building, a volunteer, and myself to ensure that standardized administration and scoring procedures were followed during data collection. Both DIBELS and AIMSweb ORF probes were administered during the fall benchmarking period (September - October). DIBELS passages were administered by the school psychologist, the volunteer, and myself. As per district practices AIMSweb ORF probes were administered by the school psychologist, reading specialist teachers, a team of volunteers, and myself during this same time period. An additional training session was held for the additional examiners to guarantee standardized administration and scoring of the AIMSweb probes. Administration of the DIBELS and AIMSweb probes were counterbalanced to minimize the impact of practice effects. In accordance with district policies, the AIMSweb probes were administered the second week of September. In order to counterbalance, half of the participants were administered DIBELS probes the week before AIMSweb probes, and the other half was administered the DIBELS probes the week following the administration of AIMSweb probes.

Results

For the total sample, a paired samples t-test for independent means was conducted on the number of words read correctly (WRC) on DIBELS and AIMSweb. At an alpha level of .01, results show that significantly more words were read correctly on the AIMSweb probes ($M = 109.92$, $SD = 30.89$) than on the DIBELS probes ($M = 101.89$, $SD = 36.74$), $t(104) = 6.07$, $p = .000$ (two-tailed). Another paired samples t-test for independent means was conducted on the number of errors per minute (EPM) committed on DIBELS and AIMSweb. At an alpha level of .01, results indicate that significantly more EPM were committed on DIBELS probes ($M = 3.39$, $SD = 2.40$) than on AIMSweb probes ($M = 2.54$, $SD = 2.55$), $t(104) = 3.25$, $p = .002$ (two-tailed).

Furthermore, at an alpha level of .01, significant correlations were found between WRC on DIBELS and AIMSweb, $r = .94$, $p = .000$ (two-tailed), and EPM, $r = .42$, $p = .000$ (two-tailed). Next, the overall sample was broken down by grade level and several more paired samples t-tests for independent means of WRC and EPM were conducted for each grade. Results were consistent with the results of the overall sample (see Table 1).

Table 1

Grade	AIMSweb WRC	DIBELS WRC	<i>T</i>	AIMSweb EPM	DIBELS EPM	<i>t</i>
2	78.68	71.59	3.74**	2.24	3.94	4.07**
3	119.10	109.90	2.16*	3.90	3.05	-.97
4	124.64	115.46	3.73**	2.32	3.61	3.69**
5	130.22	123.17	2.67*	2.09	2.61	1.43

* significant at the .05 level

** significant at the .01 level

To determine which students were to be identified as being in need of Tier II services, the respective cut-off criteria from AIMSweb (see Appendix C) and DIBELS (see Appendix D) were used. For example, according to AIMSweb guidelines, the target benchmark for students in the second grade at the fall benchmarking period is 61 WRC. Therefore, students who did not read at least 61 words correctly on the AIMSweb probes were identified as below average and in need of Tier II services. On the other hand, the DIBELS guidelines are typically lower. So, according to DIBELS criteria, second grade students who read less than 44 WRC at the fall benchmarking period are identified as having “some risk” for failure to meet the end of year target that predicts successful literacy skills, and therefore in need of supported services. The discrepancy between targets, or cut-off scores, makes it possible for a student to be identified by one program and not the other. When the least restrictive cut-off criteria are used, where AIMSweb criteria are at the 50th percentile and DIBELS criteria at the 40th percentile, the largest amount of students will be identified to be in need of Tier II services. Using those criteria, twenty eight students were identified in total. Of those 28, 21 were identified by both assessment systems, six by AIMSweb only, and one by DIBELS only. Twice as many males were identified as females (see Table 2).

Table 2 *Students Identified as in Need of Tier II Services (50th & 40th percentiles)*

	AIMSweb only	DIBELS only	AIMSweb & DIBELS
Males	3	0	15
Females	3	1	6
Total	6	1	21

Likewise, when more restrictive criteria were used, twice as many males were identified as females (see Table 3). The more restrictive criteria condition included cut-off scores on the AIMSweb system that fell below or at the 25th percentile and a cut-off score corresponding with the 20th percentile on the DIBELS system.

Table 3 *Students Identified as in Need of Tier II Services (25th & 20th percentiles)*

	AIMSweb only	DIBELS only	AIMSweb & DIBELS
Males	2	0	4
Females	2	0	2
Total	4	0	6

It was hypothesized that a difference in readability levels of the passages between the two systems may have accounted for the difference in performance and therefore the difference in identification of students. Results have indicated that students read significantly less words on DIBELS passages compared to AIMSweb passages. This would lead one to believe that the DIBELS passages have a higher level of difficulty than the AIMSweb passages.

Second and third grade passages were calculated using the Spache readability formula. Fourth and fifth grade passages were calculated using the Dale-Chall readability formula and are reported as “raw” scores, which do not indicate grade level. Both the formulas were available and retrieved from the intervention central website. It is important to note that both formulas were created several decades ago and that reading expectations may have changed over the years. Also noteworthy, is that standard error of measurements are typically large for readability formulas. The readability levels are

presented in Table 4. The scores that are in bold were calculated to be above the grade level in which they are intended for. Overall, 10 out of the 12 DIBELS passages were above grade level, and only seven out of the 12 passages were above the intended grade level on AIMSweb, which is still over half of the passages. DIBELS passages tended to be of a little higher difficulty at each grade level. However, these differences do not appear to be significant. On the other hand, the discrepancies between DIBELS and AIMSweb passages in both the fourth and fifth grade appear to be a little greater. For example, in the fourth grade the Dale-Chall raw scores for AIMSweb, from lowest to highest, are 6.39, 6.45, and 6.46, while the DIBELS raw scores are higher and a grade above at 6.40, 7.33, and 7.46.

Table 4

Grade Level	AIMSweb			DIBELS		
	Passage 1	Passage 2	Passage 3	Passage 1	Passage 2	Passage 3
2	2.79	3.12	3.22	3.53	3.22	3.80
3	3.51	3.45	3.69	4.04	3.69	3.95
4	6.46	6.45	6.39	7.09	6.39	7.22
5	5.90	6.60	6.40	7.46	6.40	7.33

Readability levels in bold are above grade level

Discussion

As schools adopt the service delivery model known as response to intervention (RTI), it is imperative that the fundamentals of the system are research-based, just as the interventions are required to be. One of the fundamentals of RTI is the use of curriculum-based measurement as a screening tool to identify students who are not responding to the general instruction. Because there has been an increase in the use of

programs such as DIBELS and AIMSweb for curriculum-based measurement, particularly in the area of reading, this study investigated whether students perform similarly on DIBELS and AIMSweb measures of oral reading fluency and if they identify the same children as failing to meet the fall benchmark, and therefore in need of Tier II services. Overall, students read significantly more words per minute on AIMSweb measures of oral reading fluency compared to the DIBELS measures. While there was a strong correlation between the two systems, results revealed that the discrepancy of performance was significant at each grade level in addition to the overall sample. Naturally, one may attribute these findings to a difference in difficulty level of the passages. It would be assumed that the DIBELS passages are more difficult, thereby resulting in fewer words read correct in a minute. Upon completion of a readability analysis, it appeared that this is not the situation. Although passages from DIBELS appeared to be slightly have slightly higher readability levels, many passages from both DIBELS and AIMSweb were estimated to be above the grade level in which they were intended for.

While students read more words correctly on the AIMSweb probes, the aggregate norms that are used as guidelines for their cut-off criteria are higher than the DIBELS guidelines. So, while students read fewer words on the DIBELS probes, the cut-off criteria for identification of students in need of further support are also lower according to their data management system. Because of the high correlation between words read correctly on the two systems, one would believe that the same students should be identified by AIMSweb and DIBELS. However, when using the least restrictive cut-off scores, six more students were identified by AIMSweb than DIBELS. Consequently,

when using Brown-Chidsey and Steege's (2005) percentage guidelines of how many students should be at each tier of service, AIMSweb, unlike DIBELS, identified an appropriate percentage of students. Brown-Chidsey and Steege (2005) suggest that 75 – 80% of students should fall into Tier I services, 15 – 20% in Tier II services, and 5 – 10% in Tier III services. Assuming that some of the students identified in this study would not respond to Tier II services, and would be in need of Tier III services, AIMSweb identified the correct proportion and DIBELS under identified students.

To ensure the greatest likelihood of identifying all the students who are at risk for not having reading success, the results from this study would suggest using the AIMSweb system of data collection and management as opposed to the DIBELS system if the goal is to identify more students. Because the goal of response to intervention and the school district's desire is to prevent long-term academic failure (Fuchs & Fuchs, 2006), identifying as many students as possible would seem to be in the best interest of the students.

One of the limitations of this study was the fact that only one elementary school was utilized in data collection. The sample from this elementary school was a predominantly homogeneous group of students. The restriction of geographic range and small size of the school contributed to the homogeneity of the study. Therefore, the ability to generalize the results from this sample to the population would be limited. Furthermore, the elementary school that was used is a high academic achieving school. As a result, not as many students were identified as at-risk for reading failure as would be identified from a sample from a lower achieving school.

Another complication with the study was the way in which errors were scored. As noted earlier, the determination of how to score errors for the purpose of this study was based on the current practices of the district in which the data was collected. In particular, when a whole line was skipped by the reader each word was counted as an error. Another possible way of counting the errors was to count the skipped line as only one error and just subtract the number of words in that line from the total number of words read. The second option would reduce the number of errors committed and thereby the variability of errors committed between the two systems. Finally, another limitation was the use of only one readability formula per grade. There are hundreds of possible formulas used to determine the grade level of reading passages. Using multiple formulas would provide a more in depth examination of the passages.

While this study compared only DIBELS and AIMSweb systems of data collection and management, there are still other options out there for the same purposes. For example, a school building or district may decide to create their own probes from the curriculum that is used there. This would be a case of true curriculum-based measurement. Even though research has documented that creating passages from a school's reading series does not ensure standardized tests or passages of about equal difficulty (Howe & Shinn, 2002), it would be beneficial to compare the two programs used in this study to real curriculum samples in terms of identification purposes and difficulty level.

Additionally, future research should include a more diverse sample that is more representative of the population. Urban and rural schools should be included as an expansion of geographic locations too. Research done in the future should also

investigate whether the students who are identified are consistent with teacher perception and prediction. Even though CBM provides a critical link between assessment and instruction, which in turn enables schools to significantly increase the number of students who become successful readers (Coyne & Harn, 2006), it is also important to be aware that a screening system is not the only method of identifying students who struggle. So, there is a need to consider how the screening systems work in conjunction with teacher perception and prediction, along with other reading assessments. As educators, identifying a combination of the most effective practices to identify students who are at risk of not meeting reading standards is vital in ensuring the optimal quality of education to all students. Not only is the identification process crucial in long-term success, but so are the interventions that are used once students are identified. Again, research-based and evidence-based practices are vital in ensuring appropriate education to all students.

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Appendix A

(pages 36a – 36r)

Figure 1 caption. DIBELS Oral Reading Fluency Fall Benchmark Probes (Grades 2 -5)

Mom's New Job

Yesterday my mom started her new job. Her job is to drive a school bus every morning. She took driving classes to get ready for her new job. She had to get a special license, too. She wears a dark blue uniform with a yellow vest.

Now that she is driving a school bus, my mom has to get up even earlier than we do. She has to be at work on time or the children won't get to school on time. She does her best to get everyone to school on time.

When I came down to the kitchen for breakfast yesterday, Dad and Mom were eating cereal and drinking coffee together. Since Mom has to leave early, I knew she wouldn't have time to make my breakfast anymore. I sat down and fixed myself a bowl of cereal.

"Did you make my lunch, Mom?" I asked.

"I made it for you," said Dad. "I made mom's and mine, too."

"We're all going to take turns making lunches," Mom said. "Next week you'll get to make all three lunches."

That afternoon when I came home from school, I smelled something good. There was mom in the kitchen, taking chocolate chip cookies out of the oven.

"I made a treat for our lunches tomorrow," she said. "Here, you may have one."

"How was your second day on the job, Mom?" I asked.

"Just great, honey. I love my new job," she said.

My Handprints

We have our handprints hanging on the wall at our house. When my brother and I were little we made them for Mother's Day. We each pushed our hands into the wet clay. After the clay dried, our teacher wrote our names on them. She made holes to hang the handprints up. After they were finished, we gave them to our mom. Mom said they were beautiful works of art.

Once we took a vacation to the Southwest. We saw how the Zunis used their handprints to tell stories. We visited caves where there were handprints all over the walls. The prints were very, very old. Some were little and some were big. The Zunis dipped their hands in colored clay that looked like paint. Then they pressed their hands on the walls of the cave.

Each handprint was like writing a name on the wall. Today the handprints are like history books. They tell the stories of the people who used to live there. We didn't touch the handprints because even one fingerprint could ruin them.

We wanted to bring home reminders of our visit. We went to the Zuni gift shop. My mother bought a pin that is shaped like a handprint. I bought a book about a boy my age. He lived in one of the caves many years ago. The book told about how he lived and how he helped his family.

Meals on Wheels

Last Friday I didn't have to go to school so my mom asked me to go with her to deliver Meals on Wheels. Meals on Wheels is for elderly people who have difficulty cooking for themselves. Some of them don't have any children or family to look after them. Volunteers bring meals to their homes. My mom volunteers every Friday.

My mom and I went to the Meals on Wheels office and picked up the dinners. The dinners had meat loaf, potatoes, gravy, bread, salad, a piece of cake, juice, and milk. It made me hungry to smell them. We set off in the car to deliver the dinners. We were careful to wear our seat belts.

Mom let me carry the food up to the door. She introduced me to each person. I put the food down on the table and opened the milk and juice cartons. Some people were in wheelchairs and some used walkers. Some could answer the door but not walk very well. Everyone was nice. One lady was extra nice. She asked my mom if I could have a piece of candy for helping. Mom said I could.

Besides bringing a hot dinner, my mother checks to make sure that each person is all right. Mom says sometimes the Meals on Wheels volunteer is the only visitor who comes to their house all week. I asked Mom if I could help again some time. I really liked the people, and it made me feel proud to help. She smiled and said yes.

My Friend

I have a new friend at school. She can't walk so she uses a wheelchair to get around. She comes to school in a special van that can transport four people who use wheelchairs. The van brings my friend and another boy to school. My friend is in third grade with me, and the boy is a fourth grader.

I like to watch my friend get in and out of the van. The driver pushes a button and part of the van floor lowers to the driveway to form a ramp. My friend just wheels up the ramp and goes inside. After she is inside, the driver pushes the button and the ramp puts itself away. When it is time to get out of the van, they do the same thing again. Sometimes I help open the door so she can roll right inside.

My friend and I do everything together. Our teacher lets us sit together in the front row, and we always go to lunch together. My friend moves so fast down the hall that she always gets the best seats in the cafeteria. Sometimes we trade sandwiches. At recess, we always play on the same team. My friend sure has strong arms. She hardly ever misses a shot when we play basketball, and she can throw the farthest of anyone in third grade.

Going to Family Camp

My favorite part of family camp is the campfire program at the lake. We wait until the stars and moon are out. We walk down to the edge of the water where a big bonfire is going. We all snuggle together watching the flames because it's cold after dark.

The camp director leads everyone in songs. He plays the banjo. We sing "You are My Sunshine" and "She'll be Coming Around the Mountain." Then he divides the group in two and we sing rounds like "Row, Row, Row Your Boat" and "Are You Sleeping?"

Then we have stories and skits. The stories are usually tales about campers at family camp in previous years and a funny or brave thing that they did. One story was about my older brother rescuing a cat. The skits are always silly.

When the campfire burns down to coals, it's time to toast marshmallows. Some people like their marshmallows golden brown. Other people like theirs crispy. Some kids can't wait to toast them and eat their marshmallows right out of the bag. We toast marshmallows to make 'Some Mores.' 'Some Mores' are graham crackers with chocolate that is topped with a hot marshmallow. They taste so good you want some more, but they are really sticky! Everyone has to wash up before bed.

Now we are all sleepy and ready to go back to our cabin. We stand together and sing a song called "Taps." My mom and dad say they have been singing "Taps" at campfires since they were little kids like me.

Planting a Garden

We eat lots of fresh vegetables at our house. Mom is an excellent cook, and she has lots of recipes for making them taste delicious. Sometimes they are expensive to buy at the store so Dad suggested we grow our own.

Dad asked all the members of my family what our favorite vegetables were. I said carrots, broccoli, and beans. My mother likes tomatoes the best. Dad said he wanted to grow green onions, spinach, potatoes, and corn.

We went to the hardware store and bought seeds and little broccoli and tomato plants. We all helped prepare the garden in our backyard. We turned over the dirt with shovels. Then we used a hoe to make little ditches for planting the vegetable seeds. We dug deeper holes for the broccoli and tomatoes. We watered everything and sprinkled some fertilizer around.

I checked the garden every day to see if any vegetables were coming up. After about a week I saw tiny green leaves where the carrots were planted. Then each day more seeds sprouted.

In two months we could eat the spinach, onions, and broccoli. It was almost the end of summer before we could harvest the other vegetables. Everything we grew in our garden was delicious. It was worth the wait, especially for the fresh green beans that my mother cooked with bacon and onion. My dad said the corn was the best he ever tasted.

The Water Cycle

It is amazing to think that a dinosaur might have stepped in the water you drank last night. That is because the water you use to drink, shower, or swim in is very old. The earth has a fixed amount of water that keeps going around and around in what is known as the water cycle.

The water cycle has four main phases. The first phase is called evaporation. This occurs when the sun heats up the water in rivers, lakes, and oceans. The heat turns some of the water into vapor, or steam. At that point, the water is said to evaporate, as it becomes part of the air.

The next phase of the water cycle is called condensation. Water vapor in the air becomes cold, which causes it to change back into liquid form. The drops of water come together and form clouds. When the water becomes so heavy that the air cannot hold it any more, the next phase occurs.

In the phase of the water cycle called precipitation, dark clouds release their water, and it falls back to the earth. In warm weather, clouds release water in the form of rain or hail. When it is cold, water falls as snow or sleet. The rain, hail, snow, or sleet falls on land as well as on rivers, lakes, and oceans. This begins the final phase of the water cycle, called collection.

When water falls on land, the earth collects it. The water might run along the ground, where plants and animals may drink it. It might flow into rivers, streams, or lakes. Or the water might soak deep into the earth and become groundwater. Groundwater supports plants, which sink their roots down to find it. Human

beings dig wells or use water from underground springs to provide for their needs.

Water that falls on rivers and streams flows, sometimes for thousands of miles, into the oceans. When the sun shines on rivers, lakes, or oceans, some of the water turns into vapor. This vapor goes into the air, and the water cycle begins again.

The Land at the Top of the World

When you hear the word desert, you probably think of a hot, sandy place. There is another kind of desert, though. This desert is very cold, and for part of the year, it is wet and soggy. It is called the arctic tundra.

The arctic tundra is a barren and treeless land just below the North Pole. For up to ten months each year, this land is bitterly cold. Dry, icy winds strip moisture from everything they touch. The earth lies frozen under a thin layer of snow during the long, dark winter.

Then, for a short time, the sun shines brightly. Temperatures rise. The snow melts, and a thin layer of topsoil begins to thaw. Hardy plants spring into growth. Only fast-growing plants can survive here, since the growing season lasts a short six to ten weeks. Cotton grass, cushion plants, mosses, and lichens are plants found in the tundra during summer. These plants grow low to the ground. They can stand up to gusting winds as well as great changes in temperature.

The water from melting snow cannot soak into the frozen subsoil. It runs off into shallow streams or stands in pools and bogs. The standing water provides a perfect breeding ground for many insects. Mosquitoes and flies swarm busily, looking for an animal on which to feast.

The insects do not have to look very far. During summer, many animals move onto the tundra in search of food. Polar bears, arctic foxes, and wolves are among the predators who

roam there. They feed on plant eaters, such as caribou, snowshoe rabbits, and lemmings.

All too soon, the days shorten and temperatures begin to drop. Animals begin to move to the south. The long arctic winter will soon cover the tundra once again in snow and darkness.

Georgia O'Keeffe

"My first memory is of the brightness of light." These are the words of Georgia O'Keeffe, a well-loved artist. She was describing a day many years earlier, before she was even a year old. Her mother had carried Georgia outdoors and placed her on a brightly colored quilt on the ground. Georgia recalled the patterns on the quilt amid the brightness of the white pillows surrounding her. Clearly, from the start, Georgia was drawn to the beauty around her.

Georgia was born over one hundred years ago and grew up on a dairy farm in Wisconsin. At that time, girls often were not educated. That was not the case in Georgia's family, though. Georgia began school when she was only four years old. She attended the same one-room school her parents had attended. Georgia's mother noticed her child's interest in art. Back then, art was not taught in school, so Georgia's mother paid for private art lessons.

After high school, Georgia studied art in Chicago and New York. Then, leaving art school behind, she began to work. One of her first jobs after graduating was teaching art at a college in the Texas Panhandle. She loved the land there. In fact, she made fifty paintings of the nearby canyons and prairies.

Although she loved the West, Georgia decided to go back to New York. There, she painted pictures of large flowers and tall buildings. Many people admired her art. One admirer was a famous gallery owner. The two spent a lot of time working together and became close. After a while, they married. They

were a happy couple, but Georgia was drawn back to the West. She tried to spend a few months each year visiting and painting in the West.

When Georgia's husband died and she was no longer tied to New York, she moved to New Mexico. Her paintings of the mountains and desert show the artist's respect for the beauty of the land. She lived there, continuing to work and paint, until she was quite old.

Something's Missing!

Missy couldn't believe that the day she had been looking forward to had arrived at last. She and her father were leaving on a bus to visit Aunt Martha's farm. Missy looked forward to seeing her aunt, but she was especially excited about seeing her favorite cousin, Ralph.

Although the bus was crowded, Missy and her father found seats together near the front. Her father suggested that Missy sit next to the window, and she eagerly scrambled into her seat. She put her backpack on the floor in front of her and began looking out the window. Right below her, workers were busy unloading suitcases from a large pushcart and tossing them into the bus.

As soon as the bus jerked into motion, Missy reached for her backpack and got out her science book. She knew that if she didn't do her homework before they arrived at the farm, she would have less time to spend with Ralph. She got out a sheet of paper and began busily writing the answers to the questions at the end of the chapter. As she worked, the hum of the motor and the gentle rocking motion of the bus made her feel very drowsy. "I'm going to splash some water on my face," she said to her father as she put her book on the floor.

A few minutes later, Missy returned to her seat, refreshed and ready to work. However, when she reached for her science book, she discovered that it was gone. Alarmed, she began looking all around for it. The book wasn't under the seat in front

of her or in her backpack. Then Missy looked at her father, who was reading a newspaper, and noticed that the corners of his mouth were turned slightly upward.

“All right, Dad, hand it over,” she said. Smiling, her father reached under his newspaper, slowly pulled out Missy’s science book, and handed it to her with a smile.

“I just want to make sure that you have an exciting trip to the farm,” he said, laughing.

A New Habitat

Last month, my teacher suggested that my class choose a project to help our community in some way. My classmates suggested many different ways we could help. I suggested that we help with a beach cleanup, and my best friend suggested that we set up a recycling program at school. We finally decided to participate in a national program that helps protect wildlife. The program is called the Backyard Wildlife Habitat Program. Its purpose is to help people create habitats that shelter wildlife.

My class decided to create a rock wall in a corner of our playground. The wall will provide shelter for animals such as frogs, toads, and chipmunks. It will even protect the spiders, bees, and beetles that live there.

Building the rock pile was lots of fun. We used rocks that had been dug up at the front of the school. First, we carried the rocks to the playground and laid them out so we could see their shapes. Then we began stacking the rocks, fitting them together like a puzzle. My teacher explained that the wall should be sturdy so that it will not topple over and trap small animals. The animals can use every little opening between the rocks in the wall for their homes.

We learned that all habitats must have a way for animals to get both food and water, so we planted a garden on top of the wall, using native plants. We selected plants that provide food such as fruits, seeds, and nectar. When the plants are grown, they will also provide shade for the animals. To provide water, we created shallow pools in several places in the wall, and we also added a birdbath.

Everyone in the school is enjoying the new addition to the playground. Teachers and students both have said that it is an interesting place to visit and that it adds to the beauty of our school. I just hope the animals like the new addition as much as everyone else seems to.

Mount Rainier

Near the western coast of our country stands a stately mountain called Mount Rainier. People below the mountain often watch the mountain's ever-changing face as shadows and light pass over it. However, many are not aware that constant changes are also taking place within the mountain.

Mount Rainier began to form about twelve million years ago. At that time, magma, or melted rock, from the earth's core began to build up under the earth's surface. This created a great amount of pressure. Finally, one million years ago, this pressure was released when a weak spot in the earth's crust gave way. Lava poured out of this opening and rock and ash exploded into the air. The volcanic cone that resulted grew into a huge mountain. However, the story does not end there. Today, Mount Rainier looks like a mountain that has had its top blown off. That is exactly what happened about six thousand years ago when the volcano erupted once again. Smaller eruptions have occurred in the years since.

Today, some scientists consider Mount Rainier to be the most dangerous volcano in the United States. If it should erupt, a flood of hot rock, ash, and lava will gush over its top and sweep down its sides. Adding to this danger are earthquakes that occur in the area. A few years ago, an earthquake in the area caused more than two hundred injuries. Scientists worry that such events may cause huge rocks inside the volcano to shift, causing another eruption.

Several towns lie in the path of a possible eruption. Fortunately for those towns, the volcano would likely send up danger signals before it erupts. These signals would appear in the form of steam rising from the mountain. This would give people in the towns below plenty of time to escape before the eruption.

Appendix B

(pages 37a – 37l)

Figure 2 caption. AIMSweb Oral Reading Fluency Fall Benchmark Probes (Grades 2 -5)

Dad and Rob went fishing.

"We will catch fish to eat for lunch," said Dad.

They loaded their fishing things into the boat: poles, bait, life jackets, and a net.

"Let's catch a fish!" said Rob.

Dad made the boat go fast over the water. Rob liked feeling the wind in his hair. He liked feeling the cold water splash his face.

Soon they arrived at Dad's secret fishing spot. Dad took a minnow to put it on the hook.

"The big fish will try to eat this little fish. Then we will catch him," Dad told Rob.

Rob said, "What! We will let a big fish eat this little fish?" Rob looked at Dad with sad eyes.

He took the minnow from Dad. He held the little minnow in his hands.

"Dad, this little minnow has a family in our bait bucket! He has a mom who will miss him! He has a dad who will be mad at you for taking his baby! All the brother and sister fish will cry!" said Rob.

Dad shook his head. He started the motor and steered the boat toward home. Rob smiled. He was happy now because he had saved the little minnow.

Dad frowned and said, "I guess we will just have to eat hot dogs for lunch."

Peg watched her mom get ready for work.

"Mom, you have an important bag. You have important papers and important cards. I want important things too," said Peg.

Mom smiled and said, "My bag holds everything I need to do my job. My papers tell me what I need to know to do my job. My cards help me get things I need for my job."

All afternoon at daycare Peg pretended that she was at work. She put on a blue dress. She carried a suitcase.

Mom returned from work.

"Peg, now we can get important things for you," said Mom.

Together they drove downtown. They stopped at a huge brick building. The building looked very important.

"The library is where you will find important things," said Mom.

Peg walked with Mom into the library. There were so many books! There were magazines, computers, and even an area for children. Peg chose some picture books about animals.

Peg and Mom stood in line to check out their books. Soon they met the library worker.

He said, "Here is your library card and a library book bag. Here is the paper that tells you when to return the books."

Peg walked out of the library proudly. Now she had an important bag, important papers, and an important card—just like Mom.

Meg, Anna, and Kate were best friends. They always ate lunch together, and they always played at recess. They always called each other on the phone.

One day Anna came to school with very sad news. She was moving far, far away.

Kate and Meg felt very bad. The three girls had been friends forever. They had gone to the same church, daycare, and preschool.

Anna told her friends that her dad had a new job. He said it was a step up in the company he worked for. Anna didn't care about all of that. She only knew that she was going to a new town. She wouldn't know anyone. She was scared, but no one seemed to care what Anna thought. At least no one except Meg and Kate.

The girls had only three weeks to prepare for Anna's move. They spent every free minute with each other. The girls made plans to be friends forever. They traded addresses and agreed to write every week.

The girls cried the morning Anna left. As she pulled out of her driveway, she saw tears running down their faces.

Meg and Kate were sad, but they knew they still had each other. They decided to send a letter to Anna that very day. They knew she would smile when she received the first piece of mail at her new house.

It rained all day long. The wind and rain knocked the remaining leaves to the ground where they were swept into the street. Today was a typical fall day.

Just two days ago, the sun was out and the temperatures were very pleasant. Raking leaves into large playful piles was very relaxing.

The family worked together gathering the maple leaves into piles. Kids will be kids, and they loved jumping and hiding in the leaves. Even their dog liked to romp around in the leaves. It was fun for everyone.

The next day, the weather changed slightly. Clouds began to roll into the area and darken the sky. It did not rain then, but it was clear that winter was near. The family thought that the ground would be covered in no time. Winter was approaching fast.

They awoke to the rain hitting the roof of their home. It was a light rain, so they figured it would rain all day. They were right. Now the kids would not be able to play in the leaves. The leaves were all wet and brown. They were no longer dry and colorful.

The winds picked up speed and sent the piles of leaves blowing across the yard and into the street. The kids thought they were pretty lucky to have been able to play in the leaves yesterday.

Later in the day, the street sweeper came into their neighborhood and, with its mighty vacuum, gobbled up the leaves that had found their way into the street. The leaves were gone.

That night the kids were tucked into bed for the evening. As they slept, the rain turned to snow.

The kids dreamed of sledding and snowmen. The next morning their dreams came true. Snow!

Billy was sitting on the sidewalk curb holding his favorite old baseball glove.

"Hey, Billy!" he heard. "Weren't you supposed to meet me half an hour ago at the park? Why are you sitting here instead of moving?"

"I'm waiting," Billy replied.

"Waiting for what?" I asked.

"I'm waiting for Mr. Sanchez to leave for work. It shouldn't be much longer."

"Billy, your Mom said it was all right for you to play ball with me at the park. I don't understand why you're waiting for Mr. Sanchez."

Billy sighed as he explained, "Well, Mr. Sanchez's car is parked in the driveway, right across the street. See? And the park is across the street and down the block."

I shook my head because I didn't understand what Billy was talking about. This morning he was excited about playing baseball with the guys. He was a pretty good shortstop, even though he wasn't quite five years old.

"I know where the park is and so do you. So explain to me again why you are sitting here?"

"I already told you. I'm waiting for Mr. Sanchez," replied Billy. I looked across the street. There was no sign of Mr. Sanchez coming out of his house.

"Mom said I can't cross the street if I see any cars," Billy continued, "and I see Mr. Sanchez's car. It's right there in his driveway!"

"Oh, Billy!" I laughed. "I'm sure your mom meant you should not cross the street if you see any cars driving on the road! She just wants to make sure that a moving car doesn't hit you. She's not worried about the parked cars! Come on. You can walk with me to the park!"

"Oh, Sam. You're so smart. Thanks for being my friend. Let's go play ball."

Mama frog carried her babies upon her back. They rode there as she swam in the water and hopped along the edge of the creek. In fact, the only time they jumped off her back was when Mama frog caught them something to eat.

Those baby frogs just loved to eat black bugs. Green flies, though, were their favorites. "Mama, Mama," they would holler from her back. "Please catch us something to eat. We are very hungry. Growing babies need lots of insects to get big and strong."

"That's true, but I am very tired," said the mama frog. "I have been carrying you around all day. I must rest now."

Mama frog swam beneath a lily pad and closed her eyes. She tried to sleep, but she couldn't because her baby frogs continued hopping around on the lily pad above.

"Will you three settle down?" the mama frog demanded of her babies. "Your mama is very tired."

"Okay, Mama," the baby frogs said. "We'll be quiet."

Just then, one of the baby frogs saw a green fly buzz by. It zoomed low over the water and right by their eyes. That was too tempting for them to ignore.

"I'm going to catch that green fly," one of the baby frogs told his brother and sister. "Since Mama is going to take a nap, I'll catch our lunch. Someone has to take care of us!"

The baby frog waited for the green fly to buzz over again, and then she jumped with all her might and opened her tiny mouth. The green fly flew right in.

The mama frog watched. "My babies are growing up," she said. "Maybe it is best if I just relax. They are doing well by themselves."

As soon as the temperature drops, people start getting excited up in Nome, Alaska. They never go to bed at night without peeking out their windows first. They want to see what the weather is doing. If a light snow is falling, they know that by morning the roads will be dangerous. That's where the sled dogs come into play.

Sled dogs are fun, peppy, medium-sized dogs. Their colors are different, but they all have thick, downy coats of fur. The dogs' tails curl up when they are excited.

There's nothing a sled dog loves more than the cold, fierce winds of winter. Even though most owners build shelters for their sled dogs, the dogs prefer to sleep outside. They tuck their noses into their tails. They snuggle their bodies deep in the snow.

Sled dogs are playful, intelligent, and very vocal. They do not bark. Instead, they howl like wolves. It's not uncommon for a pack of sled dogs to have a group howl at sunset and sunrise.

A person who owns sled dogs can be sure that their sleep will be disturbed on the mornings after a deep snow has fallen. The dogs will be up on the roofs of their doghouses, welcoming the snow with their long yowls of anticipation. "Wake up, wake up, WAKE UP!" They seem to be howling. "We want to play in the snow!"

The two most important things in a sled dog's life are running and pulling. Quite simply, that is what they are born to do.

A sled dog will like nothing better than to trot in front of a person on skis or a sled filled with supplies. They've been known to race with their owners on bikes or rollerblades. Pulling is a good way for them to get exercise and stay in shape all summer long. It's also great for the dogs' owners.

Together the dog and person team can romp and play in many ways during the snowless months. Nothing beats the thrill, however, of winter's return and a dog sled run through the snow.

Charlie Clark had been a mailman for thirty years. He was used to delivering mail in all types of weather. He'd delivered letters on delightful days, and he'd delivered letters on dreadful days.

Charlie was proud of his work and happy with his job. Never, in all his years as a mailman, had Charlie ever had a problem with a mailbox. Other mailmen complained about mailboxes on their routes, but not Charlie.

He didn't have any worries until one day when he noticed there was a new box on his route. The mailbox was nailed to a branch of a dead tree. It was battered, dented, and badly rusted. The flag at its side was crooked and bent.

Charlie felt bad about it. "People should treat their mailboxes with more respect," he muttered as he dug through his bag.

He had letters addressed to the box, so he pulled it open and set them inside. He was about to pull his hand out when the box bit him. It had a grip on his hand and wouldn't let go.

Charlie looked up and down the street for someone to help him, but there was no one in sight. He wrestled with the box for an hour, until the box spit out his hand.

The next day he had more letters addressed to that box. With the letters in his hand, he stopped in front of it. He waited for something to happen, but the box was quiet today.

Charlie quickly slipped the letters inside and almost got his hand out before the box latched onto him again.

This time Charlie and the mailbox had a fierce battle. Charlie hit and kicked the box, but still the box wouldn't let go. Finally, Charlie was out of breath, and he had to stop. He rested his head on the mailbox.

Suddenly, he had an idea. "There, there," he told the mailbox, patting it gently. "Why don't you let me go so I can deliver the rest of my mail?"

The mailbox began to purr and let him go nicely.

It was difficult moving to a new house. When I was eight, we left our old neighborhood and moved to a new one. We packed my dresser, my bunk bed, my computer, and my scooter. In every room of the house, boxes were piled high like building blocks.

The house felt still. I walked from room to room trying to remember what each one used to be like. As I walked through the living room, I noticed orange scribble marks on the wallpaper. My younger brother made those marks when we used to play art museum. Entering my bedroom, I noticed a large scratch on the hardwood floor. That was where my puppy, Clyde, and I used to play fetch with his toy kitten. Wandering down the hallway, I noticed pencil marks near the bathroom door. That was where my father used to measure me to see how tall I had grown each birthday. I already began to miss the wallpaper on the walls and the light fixtures on the ceilings.

"This has always been my house," I thought. "I don't want to leave." There had to be some way I could keep my house.

Looking out my bedroom window, I noticed the tree house Dad and I constructed years before. I hurried to the backyard, climbed up to my tree house, and decided not to go unless my tree house went too. I would keep the tree house to myself, and then I would be happy.

Just then my neighbor Logan arrived to say goodbye. "I wish you could stay, but I know you'll have even more fun at your new house," he said sadly.

Suddenly, I began to think of someone beside myself. I thought about my house, my yard, and my neighbors. I would miss everything, but I was going to get a new house, a new yard, and new neighbors. Logan, though, was just losing a friend. I realized then that Logan needed the tree house more than I did.

"Goodbye, Logan. Take care of the tree house," I said. "It's all yours."

The smile on Logan's face made me feel much better.

The fox wasn't wise like the owl, thrifty like the squirrel, hard working like the beaver, or determined like the robin. The fox was sly and secretive.

She slept most of the days away in her den with her kits curled around her. She went out to hunt only on nights when the moon was hidden by clouds. Not many of the other animals saw her during the day or met up with her at night.

"I know that nasty fox is stealing hens from the henhouse," the squirrel told the owl one afternoon as they sat on a branch and gossiped.

"That's why she doesn't show her red nose around here during the day. That thieving fox makes me angry."

The owl didn't say anything. She thought about the rabbit she'd caught that morning and held her tongue. What would the squirrel have to say about her after she'd heard that she ate rabbits for breakfast?

That evening at sunset as the fox slipped out of her den, her fur was a fiery red in the light of the setting sun and her eyes were black and clever. She was just about to slip under the farmer's fence when she heard someone snicker at her from a tree branch above.

It was the robin. "Good evening, fox," she said. "Where are you off to this fine night? There was a ruckus at the farm yesterday morning. I heard it when I flew over in search of worms. It seems some creature has been sneaking into the henhouse and stealing hens. You wouldn't know anything about that, would you?"

The fox ignored the rude robin and slipped under the fence, but instead of heading toward the farm as she did most nights, she cut down to the river.

Beaver was working on his dam, and he watched with awe as the fox caught three fish in a row and tossed them on the shore. He'd always known the fox was as smart as she was sly.

Leo went to the forest every day to gather firewood. He would collect the wood, tie it into small bundles, and carry the bundles home each day. He would pack his lunch and stay in the forest until sunset. At noon he would have his lunch, and at noon a bird would visit him. It was white with ash-colored wings and was larger than a dove but smaller than an eagle. Leo always shared a morsel of his food with the bird. Leo called it Jayto and would talk to it from time to time.

One very hot summer day, Leo began to eat his lunch and Jayto arrived right on time. Leo gave him some of his lunch, and the bird eagerly pecked at it. It was so hot, Leo decided to take a nap. As he lay down, the bird began to peck and caw at him. The bird was able to convince Leo to follow him. Jayto kept flying small distances waiting for Leo to catch up. Finally they came upon a broken stone wall.

Leo had once heard that a rich businessman used to live here long ago. One day he left for a foreign country and never returned. His wife lived alone for a long time, and it was said that she buried her jewelry box and that a strange bird stood guard over it attacking anyone that got near.

Was it possible that Jayto was this bird? Suddenly the bird flew from the wall to the ground and started pecking. Leo helped the bird, and sure enough, they uncovered a jewelry box. It was filled with gold, diamonds, rubies, and other precious stones.

Leo decided not to go back to town for fear that his treasure would be taken from him. With Jayto on his shoulder, he traveled to a large city far away. He became a rich man and built a beautiful mansion. The mansion had a large garden filled with ponds and flowers. Jayto had all the mangoes that he could eat, and Leo lived a long and happy life.

It's like a jungle in my grandmother's house because she has so many plants. Even though she has enough plants out in her front yard, she still insists on having more. There are rows of tulips near her house, big clumps of ferns, and hedges of roses in the back. There are also pots of houseplants inside.

She brings as many of her outdoor plants inside as she can for the winter.

"I don't want the poor dears to freeze," she tells me, as I stare in awe at her rooms filled with greenery. "Besides," she likes to say, "a house full of plants is much cozier than a house without. And mark my words, there's more magic in a house filled with plants."

"Okay, Grandma," I say because I don't want to argue with her.

One night I slept in a sleeping bag on the floor of my grandma's front parlor. The front parlor by far has the most plants in the house. My two older brothers call it the jungle room because we can no longer see the wallpaper. All we see when we walk in the door are leaves and colorful flowers. It actually smells quite nice.

I was secretly excited to be camping out there because it would almost be like sleeping in a real forest minus the hard ground. Grandma made a fire in the fireplace that night so I could roast marshmallows and read books. I read until around midnight. At about that time, the fire went out and my aching eyes dropped shut. I closed my book and laid my head on the pillow.

It was then that I heard the rustling and the whispers.

"Hey," a tiny voice called out in the darkness, "do you think they're all asleep yet?"

"Be quiet," another one hissed. "We've got one right in the room with us."

I heard more rustling of leaves and whispers, more hissing and scolding, and then I saw them. Gnomes, I guess, is what they're called. They were short and skinny with pointed ears and glowing green eyes.

They thought I was asleep, so they didn't bother me much.

Appendix C

Figure 3 caption. AIMSweb Cut-off Criteria



Multi-Year Aggregate
AIMSweb[®] Growth Table
Reading - Curriculum Based Measurement
Multi-Year Aggregate

Grade	%ile	Fall		Winter		Spring		ROI
		Num	WRC	Num	WRC	Num	WRC	
1	90	40522	56	146185	85	149892	113	1.6
	75		25		52		85	1.7
	50		9		26		56	1.3
	25		3		14		31	0.8
	10		0		7		17	0.5
	Mean		20		37		61	
	StdDev		27		33		38	
2	90	135850	107	128181	133	142766	148	1.1
	75		82		108		123	1.1
	50		57		81		97	1.1
	25		29		56		71	1.2
	10		14		27		46	0.9
	Mean		59		82		97	
	StdDev		36		39		40	
3	90	126433	135	118032	153	133766	167	0.9
	75		107		130		143	1.0
	50		80		100		115	1.0
	25		51		72		86	1.0
	10		31		44		56	0.7
	Mean		81		100		114	
	StdDev		40		42		43	
4	90	94733	153	97555	170	100174	186	0.9
	75		126		143		159	0.9
	50		101		116		129	0.8
	25		75		91		102	0.8
	10		49		63		75	0.7
	Mean		101		117		130	
	StdDev		40		42		44	
5	90	89119	171	92637	185	93110	199	0.8
	75		146		160		174	0.8
	50		114		130		145	0.9
	25		87		100		112	0.7
	10		61		74		85	0.7
	Mean		115		129		142	
	StdDev		43		44		45	

Num = Number of Students WRC = Words Read Correct ROI = Rate Of Improvement
ROI is Spring Score minus Fall Score (or Winter minus Fall) divided by 36 weeks (or 18 weeks)

Appendix D

Figure 4 caption. DIBELS Cut-Off Criteria

DIBELS Benchmark Goals and Indicators of Risk
Three Assessment Periods Per Year

Second Grade

DIBELS Measure	Beginning of Year Month 1 - 3		Middle of Year Month 4 - 6		End of Year Month 7 - 10	
	Scores	Status	Scores	Status	Scores	Status
DIBELS Nonsense Word Fluency	NWF < 30 30 ≤ NWF < 50 NWF ≥ 50	Deficit Emerging Established				
DIBELS Oral Reading Fluency	ORF < 26 26 ≤ ORF < 44 ORF ≥ 44	At risk Some risk Low risk	ORF < 52 52 ≤ ORF < 68 ORF ≥ 68	At risk Some risk Low risk	ORF < 70 70 ≤ ORF < 90 ORF ≥ 90	At risk Some risk Low risk

Third Grade

DIBELS Measure	Beginning of Year Month 1 - 3		Middle of Year Month 4 - 6		End of Year Month 7 - 10	
	Scores	Status	Scores	Status	Scores	Status
DIBELS Oral Reading Fluency	ORF < 53 53 ≤ ORF < 77 ORF ≥ 77	At risk Some risk Low risk	ORF < 67 67 ≤ ORF < 92 ORF ≥ 92	At risk Some risk Low risk	ORF < 80 80 ≤ ORF < 110 ORF ≥ 110	At risk Some risk Low risk

DIBELS Benchmark Goals and Indicators of Risk **Three Assessment Periods Per Year**

Fourth Grade – Preliminary estimates based on Fuchs et al. (1993) and Hasbrouck & Tindal (1992). Odds not avail.

DIBELS Measure	Beginning of Year Month 1 - 3		Middle of Year Month 4 - 6		End of Year Month 7 - 10	
	Scores	Status	Scores	Status	Scores	Status
DIBELS Oral Reading Fluency	ORF < 71 71 <= ORF < 93 ORF >= 93	At risk Some risk Low risk	ORF < 83 83 <= ORF < 105 ORF >= 105	At risk Some risk Low risk	ORF < 96 96 <= ORF < 118 ORF >= 118	At risk Some risk Low risk

Fifth Grade – Preliminary estimates based on Fuchs et al. (1993) and Hasbrouck & Tindal (1992). Odds not avail.

DIBELS Measure	Beginning of Year Month 1 - 3		Middle of Year Month 4 - 6		End of Year Month 7 - 10	
	Scores	Status	Scores	Status	Scores	Status
DIBELS Oral Reading Fluency	ORF < 81 81 <= ORF < 104 ORF >= 104	At risk Some risk Low risk	ORF < 94 94 <= ORF < 115 ORF >= 115	At risk Some risk Low risk	ORF < 103 103 <= ORF < 124 ORF >= 124	At risk Some risk Low risk

Sixth Grade – Preliminary estimates based on Fuchs et al. (1993) and Hasbrouck & Tindal (1992). Odds not avail.

DIBELS Measure	Beginning of Year Month 1 - 3		Middle of Year Month 4 - 6		End of Year Month 7 - 10	
	Scores	Status	Scores	Status	Scores	Status
DIBELS Oral Reading Fluency	ORF < 83 83 <= ORF < 109 ORF >= 109	At risk Some risk Low risk	ORF < 99 99 <= ORF < 120 ORF >= 120	At risk Some risk Low risk	ORF < 104 104 <= ORF < 125 ORF >= 125	At risk Some risk Low risk