PREDICTING ACADEMIC BEHAVIOR OF SEVENTH-GRADE STUDENTS WITH AND WITHOUT LEARNING DISABILITIES USING CURRICULUM-BASED FORMATIVE ASSESSMENT TESTS ON A STATEWIDE READING ASSESSMENT

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Title: Predicting Academic Behavior of Seventh-Grade Students With and Without Learning Disabilities Using Curriculum-Based Formative Assessment Tests on a Statewide Reading Assessment

This study examined the relation and predictive validity of the three seventh-grade reading curriculum-based measurements (CBMs), (a) passage reading fluency, (b) vocabulary, and (c) comprehension, on student performance on the Oregon Assessment of Knowledge and Skills Reading (OAKS-R). This question was examined using extant data collected from 857 seventh-grade students in a Pacific Northwest school district during spring quarter. Of the total sample of 857, only 557 students' records were analyzed: 499 general education students and 58 students with learning disabilities who met the a priori participation criteria of having scores on all three spring easyCBM Reading measures (PRF, VOC and MCRC) and an OAKS-R score. Correlational analysis revealed different outcomes for the two groups. For the general education population, the highest correlation coefficient was between CBM vocabulary and OAKS-R (r = .65). Follow-up regression analysis also indicated that CBM Vocabulary (β = .44) was the best predictor for students in the general education population. However, for students with learning disabilities, CBM comprehension was the most strongly correlated to OAKS-R (r = .60), and regression analysis showed comprehension (β = .40) as the best predictor of students' OAKS-R performance. When

specific nonacademic variables were added to the regression model for general education, CBM vocabulary ($\beta = .41$) and CBM comprehension ($\beta = .43$) were still the best predictors for students in general education and students with learning disabilities, respectively. Practical implications of the predictive validity of the CBM reading measures for practitioners are discussed in relation to assessment, instruction, and resource allocations. Finally, suggestions for future research in the areas of improving CBM utility as a predictor of success on statewide assessments in reading at the middle school level are discussed.

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DEDICATION

Growing up in a small village in southern Albania, I never imagined I would come to the United States, become an educator and receive one of the highest degrees, a doctorate in Education.

To my parents in Albania, Shefikate and Lefter Haxhiraj for loving me, for allowing me to take a one-in-a-lifetime opportunity to leave thousands of miles away to seek better opportunities, and for instilling in me the importance and power of education. "Education is the most powerful weapon, which you can use to change the world" (Nelson Mandela). Kate and Lefi, I miss you dearly and love you very much!

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CHAPTER I

INTRODUCTION

During the last two decades, the political agenda in regards to education has been heavily focused on accountability and standards (Fowler, 2013). There have been drastic changes in federal legislation in regards to general and special education. States are required to develop academic standards, establish an assessment system based on the standards, and test students, including individual subgroups such as English Learners (ELs), students with disabilities, and students of diverse backgrounds in core content areas, to determine if they are proficient (Fowler, 2013; Wiley & Deno, 2005).

In order for school districts to improve student performance and prevent reading failure, they must begin early and assess dramatically (Good, Gruba, & Kaminski, 2002). To show growth over time, many schools and districts have turned to formative assessment systems, such as curriculum-based measures (CBMs). CBMs are evidence-based formative assessments comprised of different equivalent forms used to monitor students' growth in the basic skills areas of reading, math, spelling, and/or written expression (Fuchs, Marston, & Shin, 2001). In the area of reading, the CBMs discussed in this paper include (a) oral reading fluency (ORF), synonymously referred to as passage reading fluency (PRF); (b) vocabulary (VOC); and (c) multiple-choice reading comprehension (MCRC).

These CBMs are commonly used to identify students at risk of academic failure, with goals to improve teaching effectiveness for students with learning disabilities and develop school-wide accountability systems, among others (Deno, 1985, 2003). According to Wiley and Deno (2005) and Shapiro, Keller, Lutz, Santoro, and Hintze (2006), CBM

reading measures are efficient, sensitive to student growth, inexpensive and have shown to be good to excellent predictors of student outcomes on state achievement tests.

According to Tindal (2013), CBMs are used predominantly as screening and monitoring tools. Early identification of students who are at risk of failing the statewide assessment provides districts with the vital knowledge necessary to design programs and instructional interventions focused on areas in which students are lacking (Shapiro, Solari, & Petscher, 2008). CBMs have proven to have treatment validity, can be administered frequently during the school year, and have demonstrated proficiency at identifying and monitoring students who are at risk of failing statewide achievement tests (Hintze & Silberglitt, 2005; Wood, 2006).

A large body of research conducted mostly at the elementary school level has demonstrated a moderate to strong predictive validity between CBMs, in particular oral reading fluency (ORF), and statewide assessments (Buck & Torgeson, 2003; Castillo, Torgeson, Powell-Smith, & Al Otaiba, 2003; Crawford, Tindal, & Stieber, 2001; Stage & Jacobsen, 2001). Establishing a strong relationship between CBM and statewide achievement tests would assist in better decision-making on student progress prior to administration of statewide testing (Cartright, 2006).

In addition, predicting how students will perform in statewide assessments is important because large-scale assessments are expensive and are typically used once per year, and do not provide teachers with knowledge on how to adjust instruction (Helwig, Anderson, & Tindal, 2002; Shepard, 2000; Tindal, 2002). CBMs can be very valuable to teachers in identifying students who are at risk in reading, students who need to receive special education services and students who need to receive intervention classes in basic

areas. In addition, CBMs are administered at least three times per year can offer advance notice of students who may fail statewide assessments, thus providing teachers with ample time to design necessary interventions (Hintze & Silberglitt, 2005; Shapiro et al., 2006; Wood, 2006).

Unlike CBMs, statewide assessments are summative measures, expensive to administer and usually administered once during the school year (Helwig et al., 2002). They are typically given at the end of the school year with the purpose of determining if the instruction during the year was effective, but they do not allow enough time for teachers to adjust instruction (McGlinchey & Hixson, 2004). These summative assessments do not provide information on student growth over short periods of time and are not really intended to provide information to guide instruction for students who are at risk (Shepard, 2000). According to Crawford, Tindal, and Stieber (2001), large-scale assessments lack instructional validity and are not useful for adjusting instructional practices in the classroom (Tindal, 2002). However, they have serious educational implications that impact a district's decision-making, such as terminating teachers, placing schools on probations, and removing funding, among other nondesirable consequences (Menesses, 2011).

Problem Statement

Based on the implications that large-scale assessments have upon districts, schools, teachers and students, knowing in advance students who may be at risk of failing the statewide assessment would increase achievement and prevent failure. Although research supports the technical adequacy of CBM reading measures and statewide assessments, the majority of the research has been done at the elementary school level (Wayman, Wallace, Wiley, Tichá, & Espin, 2007), and there have been limited resources dedicated to improving

reading proficiencies from Grades 5-12 (Allington, 2002; Espin & Tindal, 1998; Espin, Wallace, Lembke, Campbell, & Long, 2010; McMaster & Espin, 2007; Wayman et al., 2007). Furthermore, while there are a few limited studies regarding the predictive validity of CBM reading measures and statewide assessments for students in special education (Fore, Boon, Burke, & Martin, 2009; Fuchs, Fuchs, & Maxwell, 1988), there is lack of research reporting on the predictive validity of CBM reading measures and statewide assessments with students with learning disabilities at the middle school level.

The Purpose of This Study

Because most of the CBM studies do not address the utility of CBM reading as a predictor of success for students with learning disabilities and students participating in the regular education at the middle school level, there is a need to expand on this area of research. Thus, this study expands on the existing research of examining the predictive relation between CBM reading measures and statewide assessments. In particular it explores the predictive relationship between CBMs and the reading portion of the Oregon statewide assessment, OAKS-R, for seventh-grade students categorized as general education students and students with learning disabilities. In addition, this study goes beyond previous research conducted in this area because it includes not just ORF/PRF, but all CBMs (PRF, VOC and MCRC) and students with learning disabilities at the middle school level. In my study, I address the following questions:

1. What is the relation between the curriculum-based measures of oral passage reading fluency, vocabulary, and reading comprehension measures, and performance on the reading portion of the Oregon Assessment of Knowledge and Skills (OAKS-Reading) for

seventh-grade students receiving general education services as well as for students with learning disabilities?

2. Which CBM subtest (fluency, vocabulary, or multiple-choice reading comprehension) best predicts performance on the Oregon Assessment of Knowledge and Skills [OAKS] English Language Arts (Reading) for seventh-grade students receiving general education services as well as for students with learning disabilities?

3. How does adding specific nonacademic variables (a) attendance percentage, (b) gender, (c) race and ethnicity, (d) residence changes, (e) cumulative grade point average (GPA), and (f) school changes to the analysis contribute to the ability of measures of oral passage reading fluency; vocabulary; and reading comprehension to predict performance on the statewide assessment for seventh-grade students?

CHAPTER II

LITERATURE REVIEW

In this section, I discuss the utility of CBM reading measures as progress-monitoring tools of student learning, informing instruction, and predicting success on large-scale assessments. I describe the construct of each CBM reading measure (fluency, vocabulary and comprehension), its importance, and its statistical relation to statewide assessments. Finally, I discuss the efficacy of CBM reading measures for students with learning disabilities (LD) as well as these measures' statistical relation to statewide assessments.

CBMs and Instructional Achievement

CBMs' utility as a measure of reading skills has been established over the years, and extensive research in the early years of reading has demonstrated its validity (e.g., Deno, 1985; Marston, Fuchs, & Deno, 1986). Messick (1989) argued that construct validity, which includes score utility and consequences, goes beyond the concept of test scores meaning.

Extensive research indicates CBMs are a reliable and valid indicator of students' basic skill level in reading, math, and science and that they are adequate tools for monitoring response to instruction (Deno, Mirkin, & Chiang, 1982; Fletcher & Vaughn, 2009; Keller-Margulis, Payan, & Booth, 2012; Marston, 1989; Marston & Magnusson, 1985; Shinn, 1989; Shinn, Baker, Habedank, 1993; Shinn, Good, Knutson, Tilly, & Collins, 1992). Frequently assessing student learning and adapting instruction to students' needs are considered critical components for increasing literacy skills of students identified as at-risk for later reading difficulties (Deno, 1985, 2003).

Howell and Nolet (1999) describe CBM as a set of specific measurement methods for assessing students' progress over time and for identifying students in need of additional instructional support and further diagnostic testing. CBM probes typically are administered to all students at the beginning, middle and end of the school year (Good, Simmons, & Kame'enui, 2001). This frequent administration of CBMs is designed to provide teachers with multiple opportunities to monitor students' progress/learning and determine when to adapt instruction to meet students' learning needs, a critical component for increasing students' literacy skills (Deno, 2003). CBMs are designed to encourage implementation of intervention before students start to fail (Espin, Busch, Shin, & Kruschwitz, 2001). CBM was developed to evaluate growth in response to instruction (Wayman et al., 2007), and to help teachers provide more effective instruction, so that individual students can improve their learning (Torgesen & Miller, 2009).

In particular, CBMs are used as indicators for making education decisions when schools use the Response to Intervention (RTI) model of service delivery (Deno, 2003; Glover & DiPerna, 2007; Nese, Park, Alonzo, & Tindal, 2011). RTI is a multistep approach that provides services and intervention for struggling learners at increasing levels of intensity and allows early intervention by providing behavior and academic support prior to the student failing (Klotz & Canter, 2007). The key components of an RTI approach include (a) universal screening; (b) student progress monitoring; and (c) scientific, research-based instruction (Klotz & Canter, 2007). Typically, RTI is implemented by screening students three times a year in the academic and behavior domains. Their performance is compared with established criteria determined by national benchmarks, local norms or classroom norms. Students who perform slightly below the desired criteria are monitored carefully to

see if they need intensive intervention. Students who perform well below the criteria are considered at risk for reading and are given immediate attention (Gersten & Dimino, 2006).

More important, there are limited findings reporting on the outcomes of the relationship between CBMs and performance on statewide assessments in reading for middle school students. The few studies conducted at the secondary school level have focused on the development of content-area learning, reading, writing and math (Espin et al., 2010). The original content-area measures were pioneered by Tindal and Nolet, and later research focused on three potential indicators: reading aloud, maze, and vocabulary matching (Espin & Tindal, 1998; Nolet & Tindal, 1993). These measures have shown to be good indicators of student performance and progress and were found to relate to performance on state reading tests and improvements on a standardized achievement test (Espin, Deno, Maruyama, & Cohen, 1989; Espin et al., 2010; Tichá, Espin, & Wayman, 2009).

At the secondary level, Espin and Deno (1993) explored the validity of a reading aloud measure and performance on a study task in English and Science with 10th-grade students in general and special education. Correlations between reading aloud measures and English and Science were at the lower range (r = .37). They also examined the relation between reading aloud text and general school performance, standardized achievement test and GPA, and correlations ranged between .35 to .047, but these correlations were much smaller than those at the elementary level, which ranged from .70 to .90 (Deno & Fuchs, 1987; Fuchs, Fuchs & Maxwell, 1988).

Thus, Espin and Deno (1994-1995) and Espin and Foegen (1996) explored other CBMs and their validity to predict content-area performance. They found vocabulary-matching tasks to be better indicators than oral reading fluency and maze. Years later, Espin

et al. (2001) and Espin, Shin, and Busch (2005) examined seventh-grade students and found vocabulary matching stood out as a predominant indicator of student performance and standardized achievement tests ranging from r = .59 to .84. For reading aloud, correlations between CBM and various criterion measures ranged from r = .76 to .89, and for maze from r = .75 to .88 (Espin et al., 2010; Tichá et al., 2009). In their study with students in Grades 3, 5, 7 and 8, Silberglitt, Burns, Madyun, and Lail (2006) suggested that the value of R-CBM predicting outcomes on statewide assessments diminishes at the middle school level.

CBMs and Statewide Achievement Tests

In recent years, researchers have been concerned whether statewide achievement tests accurately reflect students' knowledge and skills of the content being assessed (Wixson & Carlisle, 2005). However, the information that is generated from large-scale assessments is a weak indicator on which to base instructional decisions at the classroom level (Schilling, Carlisle, Scott, & Zeng, 2007). In addition, there is a concern in regards to lack of compatibility between classroom measures of students' progress in literacy and standardized reading tests (Salinger, 2005).

Each statewide achievement test is developed based on the curriculum standards developed in the state, and many studies in different states have examined the relation between CBMs and statewide achievement measures (Keller-Margulis et al., 2012). Results from five studies (Kame'enui & Simmons, 2001); Roehrig, Petscher, Nettles, Hudson, &Torgesen, 2008; Shapiro et al., 2006; Stage & Jacobsen, 2001; Wanzek et al., 2010) indicate a significant positive correlation between CBM benchmarks and performance on statewide achievement tests, suggesting that CBM is a valid indicator of reading performance and a valid predictor of success or failure on statewide assessments.

Oral Reading Fluency (ORF)

Curriculum-based measurement (CBM) of Oral Reading Fluency (ORF) is a standardized procedure to assess accuracy and fluency with connected text (Good et al., 2002). ORF focuses on two of the three components of reading fluency: rate and accuracy (Hasbrouck & Tindal, 2006). It is measured using a metric of number of words read correctly per minute (Shinn, 1989). A teacher listens to a student read aloud from an unpracticed passage for one minute, and at the end of the minute, each error is counted and subtracted from the total number of words read to calculate the score of words read per minute (WCPM; Shinn, 1989).

Reading fluency includes two key components: (a) word recognition automaticity, the ability to recognize words in text so effortlessly that a reader can devote limited attentional resources to the more important task of making meaning from the text (LaBerge & Samuels, 1974; Logan, 1988, 1997; Perfetti, 1977, 1985); and (b) prosody, expressiveness in text reading (Schreiber, 1980, 1991). According to Paige, Rasinski, and Magpuri-Lavell (2012), automaticity is measured by reading speed, and fluency is automatic word recognition that is often measured through reading speed. Paige et al. (2012) state that "fluency is more than automatic word recognition; fluency also consists of prosody that reflects textual meaning" (p. 68).

The short length of the assessment makes ORF an efficient measurement tool to gauge student reading in a quick manner (Shapiro et al., 2008). It is operationalized as "the speed with which text is reproduced into spoken language and counted as words read correctly per minute" (Fuchs, Fuchs, Hosp, & Jenkins, 2001, pp. 241-242). According to Fuchs, Fuchs, et al. (2001), reading aloud fluently reveals a reader's reading competence on

word-level processing, a lexicon of accessible words, and text comprehension. A high rate of ORF suggests efficient word recognition skills, a robust vocabulary knowledge base, and meaningful comprehension of the text (Kame'enui & Simmons, 2001).

Research findings (Deno et al., 1982; Fuchs, Fuchs, et al., 2001; Fuchs et al., 1988; Shinn, 1989; Tindal et al., 1983) showed that ORF is a reliable measure of a student's general reading skills, including reading comprehension. The more fluent a reader, the more cognitive space is allowed for processing the meaning of the text; thus, measures of fluency are usually used as an index of overall reading growth (Deno, Fuchs, Marston, & Shin, 2001). According to Hasbrouck and Tindal (2006), up-to-date national oral reading fluency norms can serve as an important tool to assist educators in developing, implementing and evaluating effective instructional programs.

In addition, the research data (Fuchs, Fuchs, et al., 2001; Shinn, 1989) show strong concurrent and predictive validity between ORF and comprehension (Hasbrouck & Tindal, 2006). This relationship is reported to be stronger with elementary grades (Fuchs, Marston, et al., 2001). While there were positive and significant relations among measures of ORF and comprehension for students in Grades 6-8, this relation for middle school students was moderate (r =.50-.51) and weaker than those often reported in younger students (Denton et al., 2011).

The Statistical Relation Between CBM-ORF and State Standardized Assessments

The majority of research has focused on examining the relationship between ORF and statewide assessments at the elementary level, in particular from third through fifth grades (Espin et al., 2010; Wayman et al., 2007). According to Shinn (1989), CBMs have demonstrated a moderate to strong relationship to outcomes on standardized tests, in

particular in oral reading fluency. Three different articles report on the relation between ORF performance and performance on the Florida statewide assessment of reading with correlations ranging from .60 to .75 (Buck & Torgeson, 2003; Castillo et al., 2003).

An additional nine studies found similar correlations between ORF and statewide assessment tests in Grades 3-5. In Colorado, Shaw and Shaw (2002), while exploring Grade 3 correlations between ORF and the reading test of the Colorado state assessment, found a correlation ranging from .72 to .80. In Illinois, Sibley, Biwer, and Hesch (2001) found a correlation of .79. In Michigan, McGlinchey and Hixson (2004) examined the relation between ORF and the reading test of the Michigan and Educational Assessment Program from 1995 to 2002, finding correlations by year ranging from .49 to .83.

In North Carolina, Barger (2003) explored the relation between ORF and state testing in third-grade reading and found a correlation that ranged between .73 and .74. In Ohio, Vander Meer, Lentz, and Stollar (2005) found a correlation ranging from .61 to .65 between the performance of students in Grades 3 and 4 and reading performance on Ohio's statewide assessment. In Oregon, Crawford et al. (2001) found a direct relationship between ORF and OAKS, and Good et al. (2001) found that Grade 3 ORF predicted students' performance on the OAKS-R at 96% accuracy, with predictive validity between .34 and .82. In Washington, Stage and Jacobsen (2001) found a correlation of .44 between ORF and performance on the Washington Assessment of Student Learning (WASL) in Grade 4. In Pennsylvania, Shapiro et al. (2006) found a moderate to strong correlation of .70 between CBM reading measures and Pennsylvania state testing. Finally, in Arizona, Wilson (2005) found a correlation of .74 between ORF and the Arizona Instrument to Measure Standards. These studies reported a moderate to strong correlation between performance on oral reading

fluency at the elementary school level and performance on statewide assessments (Powell-Smith, 2004).

However, the predictive validity of ORF and statewide assessments at the middle school level has been investigated at a smaller scale. Silberglitt et al. (2006) investigated the relationship between curriculum-based measures (R-CBM and maze) and statewide tests in Minnesota. In addition, Espin and Deno (1993), Hosp and Fuchs (2005), and Jenkins and Jewell (1993) demonstrated that after sixth grade, ORF does not adequately indicate reading performance for students. Espin et al. (2010), Fore et al. (2009), Megert (2010), and Tichá et al. (2009) are the most recent ones.

Similarly, according to Stage and Jacobsen (2001), fourth graders' performance on CBMs significantly predicted failure and success on the Washington Assessment of Student Learning (WASL), and September ORF cut scores increased predictive power of failure or success on WASL by 30% over base-rate levels. McGlinchey and Hixson (2004) replicated the study in the state of Michigan and found consistent results.

While the researchers mentioned above focused on all participants, Good et al. (2001) explored the utility of fluency-based indicators to predict reading outcome, inform educational decision-making, and change reading outcomes for students at risk of reading difficulty. Using participants from a series of longitudinal studies of four cohorts of students in kindergarten through third grade at six elementary schools in the state of Oregon, these researchers found that 96% of children who met the third-grade reading fluency benchmark goal also met or exceeded the Oregon Statewide Assessment. In addition, predictive validities ranged from .34 to .82.

In their study, Roehrig et al. (2008) evaluated the predictive validity of DIBELS and ORF on the Florida Comprehensive Assessment Test (FCAT-SSS) and Stanford Achievement Test (SAT-10) reading comprehension measures. They found the strongest correlations of .70 and .71 on the third administration scores of ORF on both tests when they were administered concurrently. Likewise, Wanzek et al. (2010) explored the difference in the predictive validity of ORF measures on the Texas Assessment of Knowledge and Skills, a state-developed measure, and the Stanford Achievement Test, a nationally normed measure. They administered ORF to students across Grades 1-3 and found a positive relationship between ORF and the two outcome measures.

While the studies that have been examined so far have focused on the predictive validity of ORF and statewide assessments at the elementary level, the predictive validity of ORF for students in the middle school grades has been understudied (Shapiro et al., 2008), and little is known about the valid implications of using ORF with older students (Denton et al., 2011).

In their study of 5,472 students in Grades 3, 5, 7 and 8 from five rural or suburban districts of Minnesota, Silberglitt et al. (2006) investigated the relationship between curriculum-based measures and statewide tests and further analyzed if the intensity of this relationship changed within different grade levels. They found the significance of the relation between R-CBM and the state accountability test declined significantly from Grades 3 and 4 to 7 and 8. The coefficients for the correlation between R-CBM and the statewide test were .71 for third graders and .51 for eighth graders. At Grade 3, the relation between R-CBM and state test scores was significantly stronger than at Grades 5, 7 and 8 (Silberglitt et al., 2006); therefore, this study suggests that the value of R-CBM-predicting outcome on

statewide assessments diminishes at the middle school level. In addition, according to Espin and Deno (1993), Hosp and Fuchs (2005), and Jenkins and Jewell (1993), after sixth grade, ORF does not adequately indicate reading performance for students. These findings have great implications for the use of oral reading fluency at the middle school level for the purpose of predicting statewide outcomes (Silberglitt et al., 2006).

While the predictive studies of ORF and statewide assessments have demonstrated a weaker influence for students who are progressing as expected during the middle school years, for those students who struggle to read, ORF continues to be a sensitive measure (Fore et al., 2009; Fuchs et al., 1988; Wiley & Deno, 2005; Yovanoff, Duesbery, Alonzo, & Tindal, 2005). Fuchs et al. (1988) studied a small sample (N = 70) of students with disabilities from Grades 4-8 and demonstrated that ORF was strongly correlated (r = .91) with the Reading Comprehension Subtest on the Standard Achievement Test. Of this sample, 50 students were identified as having reading disability.

In contrast to the studies mentioned above, very few studies have reported on the relation of other CBMs (e.g., VOC and MCRC) to statewide assessments (Nese et al., 2011). In their study, Nese et al. examined the relation of CBMs to statewide assessments for fourth and fifth graders and found vocabulary to be a strong predictor across grades. Furthermore, Mooney, McCarter, Schraven, and Haydel (2010) found a strong correlation between vocabulary matching and Louisiana's sixth-grade statewide social studies test.

Vocabulary (VOC)

As students progress from the elementary to middle school grades, the focus on vocabulary becomes more prominent and students must have the skills to read complex

multisyllabic words to understand the text used in multiple content areas (e.g., social studies, science, mathematics, etc.; Yovanoff et al., 2005).

Vocabulary is critical for supporting reading comprehension, and one of the main goals of vocabulary instruction is to help students improve their comprehension (Nagy, 2005). Research has shown vocabulary knowledge to be strongly correlated with comprehension, with correlations ranging from .6 to .7 (Anderson & Freebody, 1981). However, this relationship is complex because readers must intentionally and purposefully work with vocabulary to create meaning from what they read (Anderson & Freebody, 1981; RAND Reading Study Group, 2002). Therefore, vocabulary instruction must be intensive (giving students definitional and contextual information and providing opportunities to apply them) in order to increase comprehension (Stahl & Fairbanks, 1986).

Stanovich (1986) explored the relation between vocabulary and comprehension and to illustrate this relation, he used the term Matthew Effect; the rich get richer and the poor get poorer. Students with large vocabularies understand text better, so they read more, while students with smaller vocabularies understand less text, so they read less, and the less they read, the less their vocabulary grows, thus creating a gap between less and more successful readers.

As students grow older, vocabulary becomes a stronger predictor of literacy performance. According to Espin (1996), when students move from elementary to secondary school, the words are multisyllabic and are learned later in life. In particular, this transition to middle school level is more difficult for students with LD because at this stage of their education, they must learn not only the basic concept of reading and writing, but also use

these skills to build up their vocabulary knowledge in the content areas (Alley & Deshler, 1979).

Espin and Deno (1994-1995) and Espin and Foegen (1996) extended curriculum-based measurement into the content area. Because vocabulary is an integral part of students' reading ability and content-area knowledge (Baumann & Kame'enui, 1991), Espin and Deno (1994-1995) created curriculum-based vocabulary measures using core subjects of English and Science content areas. They demonstrated a strong relation between vocabulary knowledge and content-area achievement. Furthermore, they suggested that in order to measure a student's level of knowledge and/or skills in a content area, a vocabulary-matching measure is an indicator of content-area achievement and can be used to inform instruction (Espin & Deno, 1994-1995; Espin & Foegen, 1996).

This measure shows an ongoing picture of student growth in a given content area and is not meant to target assessment of basic skill areas (Busch & Espin, 2003). In addition to providing answers to curriculum questions, Espin and Foegen (1996) provided immediate ways for assessing student learning in relationship to their daily classroom instruction, thus identifying students' individual needs frequently and providing immediate feedback for instructional implementation based on these needs (Fuchs & Deno, 1994; Tindal, 1988).

The Statistical Relation Between CBM-Vocabulary and State Standardized Assessments

Vocabulary matching measures performance and progress in content-area subjects (Mooney et al., 2010). More specifically, Espin and Deno (1994-1995) and Espin and Foegen (1996) demonstrated the validity of CBMs as indicators of content-area performance and found that vocabulary matching was a stronger predictor than oral reading fluency.

Espin and Deno (1993) studied 10th-grade students and examined the relation between CBM oral reading fluency and student performance in a content-area study; they found correlations of (r = .37) between the two measures in English and Science. A follow-up study conducted by Espin and Foegen (1996) with 184 sixth-, seventh- and eighth-grade students from a large urban middle school analyzed the relation of three CBMs for predicting secondary students' performance in content areas. They found that all three CBMs sufficiently predicted performance on the content-area tasks with correlations ranging from .52 to .65, but the best predictor was vocabulary matching with correlations ranging from .62 to .65.

However, these studies were not conducted within the context of a content area classroom. The researchers made up the materials and the learning tasks (Espin et al., 2001). On the other hand, Espin et al. (2001) examined the technical adequacy of vocabulary measures as screening and progress-monitoring tools at the secondary level, using actual materials within the classroom setting. They administered alternate forms of vocabulary measures for 11 weeks to 58 seventh-graders in two social studies classes using pre- and posttest probes of the social studies subtest of the Iowa Test of Basic Skills standardized assessment. Five of those students were receiving services in reading and written expression in special education for learning disabilities. They reported moderate to strong validity correlations with standardized criterion measures ranging from .64 to .87. Overall, the results of these studies demonstrated vocabulary measures as the strongest predictor in content-area performance. They suggested that it may be possible to use a vocabulary-matching measure to predict whether students with LD will pass or fail a content-area class, but the sample was too small (Espin et al., 2001).

While Espin et al. (2001) demonstrated the validity of vocabulary matching as an indicator of student performance in content areas, they did not answer the question of whether vocabulary matching would be an indicator of student progress (Espin et al., 2005). They used two alternate CBM versions: student-read and administrator-read vocabulary probes. Their results showed that "student read vocabulary-matching probes produced growth trajectories that were valid and reliable predictors of student performance in social studies" (p. 359). The results provided further support in the utility of CBM as a measure of change, in particular for students with LD, and these data can be used to determine (a) the level of discrepancy of students with LD as compared to their peers, and (b) how much these students are progressing in comparison to their peers. In summary, both studies demonstrated the utility of vocabulary-matching probes as valid indicators of student performance and student progress over time (Espin et al., 2005).

Moreover, Mooney et al. (2010) extended the validity of vocabulary-matching research to a statewide accountability assessment, Louisiana's statewide grade level social studies test. They studied 146 sixth-grade students (n = 9 were identified as having a Learning Disability) from a rural middle school in Louisiana. The results indicated a correlation of .70 between a single 5-minute measure of vocabulary content knowledge and the statewide social studies test.

In addition, Yovanoff et al. (2005) explored vocabulary assessments as a measure of advanced reading skill acquisition. They addressed the relative value of ORF and a vocabulary measure as a predictor for performance on a comprehension task. They used regression models to demonstrate that as students progressed through grades, vocabulary became a stronger predictor of performance on a reading task across time than PRF.

On the other hand, Megert (2010) extended his study to exploring the predictive validity of vocabulary and oral reading fluency and the performance on statewide assessment in reading. He conducted a study in the Pacific Northwest with sixth-grade students and explored VOC and PRF assessments as predictors of student performance on OAKS-R. His results demonstrated a strong connection between PRF and OAKS-Reading (r = .64) and VOC and OAKS-Reading (r = .70). In addition, multiple-regression results showed that VOC (β = .49) was a stronger predictor than PRF (β =.37) on OAKS-R. VOC also held strong even when he added three nonacademic variables (gender, attendance and NCLB at risk). When the three nonacademic variables were added, VOC (β = .48) was more predictive than PRF (β = .35).

Tindal, Nese, and Alonzo (2009) presented a technical report on the predictive and concurrent relation between various student demographic variables and the three reading easyCBMs with a criterion measure of OAKS for students from Grades 3-8 in two districts. The results presented in this section pertain only to seventh grade. According to the spring descriptive statistics, the correlations between the three benchmark measures and OAKS were generally moderate across all samples ranging from .56 to .68 for District 1, and .51 to .62 in District 2. In District 1, VOC (r = .68) had the strongest correlation to OAKS. Furthermore, in their study, Nese et al. (2011) examined the predictive validity of CBM in an RTI system for fourth- and fifth-grade students and found that while all three CBMs (PRF, VOC, and MCRC) accounted for predictive power on statewide assessments, VOC and MCRC were better predictors than PRF on the oral reading fluency measure used in the study.

Comprehension (MCRC)

Comprehension is defined as the ability to obtain information from printed text (Snow, 2002). Students need to decode and know the meaning of a word in order to know what they read (Manset-Williamson & Nelson, 2005). Furthermore, Guastello, Beasley, and Sinatra (2000) describe comprehension as the ability to process, evaluate, and integrate factual knowledge. The construction of a meaning-based representation involves going beyond the meaning of the text through the generation of inferences. Inferences are necessary to make sense of a text because the degree of inferences readers produce is essential to their comprehension of the text (Cain, Oakhill, & Bryan, 2004). According to Bradsford, Stein, Nye, and Perfetto (1982) and Davey and Macready (1985), poor readers struggle with making inferences.

Fletcher (2006) describes the process of comprehending as complex, overt and often unobservable; making it difficult to measure it as a central construct. Davis (1944) conducted the measurement of reading comprehension using short paragraphs and multiple choice response options. Davis categorized the skills into nine groups: "recalling word meaning, drawing inferences about the meaning of a word from the content, following the structure of a passage, finding answers to questions answered explicitly or merely in paraphrase in the content, weaving together ideas in the content, identifying a writer's techniques, literally devices, tone, and mood, and recognizing the author's purpose, intent and point of view" (Davis, 1944, p. 504).

In the elementary years, instruction is focused on decoding and fluency. In the upper grades starting at third grade, instruction focuses on higher level skills, in particular comprehension, as it is required for a student to be successful in statewide reading

assessments (Shapiro et. al., 2008). According to Torgesen et al. (2007), academic literacy is strongly embedded in content. Reading for understanding continues to be a challenge for many students from sixth to eighth grade (August, 2006; Gajria, Jitendra, Sood, & Sacks, 2007), and reading ability is a key predictor of achievement in mathematics and science (ACT, Inc., 2006).

The Statistical Relation Between CBM-Comprehension and Statewide Assessment Tests

In their study, Espin and Foegen (1996) explored the validity of oral reading fluency and comprehension for predicting performance of 184 middle school students (13 with mild disabilities) on content-area tasks. Their results showed a range of correlations from .54 to .65.

Shapiro et al. (2008) studied the relation between reading comprehension, ORF, and a statewide standardized reading achievement test, the Pennsylvania System of School Assessment (PSSA), across one school year with third, fourth, and fifth graders, and found that the 4Sight Benchmark Assessment, a reading measure composed of 30 multiple choice items, was more strongly correlated with PSSA than Oral Reading Fluency Passages (DORF) across all grade levels. In addition, diagnostic efficiency in fifth grade showed 4Sight to be a better screener for risk than DORF for those students who scored at or above benchmark levels.

In their study, Espin et al. (2010) examined the reliability and validity of CBM oral reading fluency with 236 eighth-grade students. They examined the relation between CBM and statewide testing and found that both oral reading fluency and maze were valid predictors of performance on statewide assessments with validity coefficients $r = .78$.

According to the National Center on Student Progress Monitoring (Espin et al., 2010), a maze is used as a short assessment of reading performance to measure students' reading progress and evaluate their instructional program. A maze is a multiple-choice cloze task that students complete while silently reading a short passage (Shinn & Shinn, 2002). The first sentence of the passage is intact, and every seventh word of the passage is replaced with three words inside parentheses, two of which are distracters. The student's score is the number of words chosen correctly in three minutes (Tolar et al., 2011). Fuchs et al. (1988) state that maze may measure reading comprehension more directly than ORF probes because direct replacements are generated by means of language-based processes. According to research conducted by Brown-Chidsey, Davis, and Maya (2003), Shin, Deno, and Espin (2000), Tichá et al. (2009), and Torgesen, Nettles, Howard, and Winterbottom (2003), maze tasks' alternate form reliabilities in most pairwise comparisons range from .70 to .91 among middle school students. The studies above suggest that maze can be used as an alternate CBM-comprehension-monitoring measure.

In their study, Espin et al. (1989) examined the relation between performance on maze and criterion measures of reading using third and sixth graders. Correlations between the number of correct words read orally and the number of correct maze replacements was .86. In addition, Espin et al. (2010) explored the predictive nature of maze on the Minnesota Basic Standards Test (MBST), as administered to 238 eighth-grade students, and found that maze demonstrated a statistically predictive coefficient of (r = .82) with MBST. Tichá et al. (2009) analyzed the coefficients for predictive validity of maze with the MBST using 35 eighth graders. The result was a statistically significant, strong, and positive correlation coefficient, maze-MBST (r = .82). Furthermore, Fore et al. (2009) studied a group of sixth-,

seventh- and eighth-grade middle school students identified with emotional and behavioral disorders and found that maze (r = .89) was a stronger measure of reading comprehension than ORF (r = .45).

CBMs and Students With Learning Disabilities

The original intent of CBM was that it be used within a problem-solving framework to help identify struggling learners, including students in special education, where the academic difficulties of a student would be viewed as problems to be solved rather than as immutable characteristics within a child (Deno, Fuchs, Marston, & Shin, 2001). CBM was intended to be the tool that teachers would use as a part of the problem-solving process to identify students who may need additional instructional support (Wayman et al., 2007). CBM scores have been used in Individual Education Program (IEP) goals to evaluate the reintegration of special education students into the regular education setting (Powell-Smith & Stewart, 1998; Shinn et al., 1997).

Prior to the Individuals With Disabilities Education Act of 2004 [IDEA], students with learning disabilities were identified based on the discrepancy model where one had to demonstrate a discrepancy between a student's academic performance and his/her ability as measured by some kind of standardized test. IDEA (2004) requires states to utilize response to intervention (RTI), a three-tiered model that incorporates research-based intervention methods and data-based decision-making, which are gathered by frequently monitoring students' progress, in order to determine eligibility.

Since 1976, the number of students diagnosed with a learning disability has increased by more than 300%, and more than half of special education students are identified as having a learning disability (President's Commission on Excellence of Special Education,

2002). The majority of students with learning disabilities (at least 80%) experience severe problems when learning to read (Kavalla & Reece, 1992). According to Fuchs, Fuchs, Mathis, and Lapse (2000), students with learning disabilities experience more severe forms of reading problems than students who are poor readers.

They struggle with fluency skills, in particular their ability to read sight words, decode words, and read phrases and sentences automatically and rapidly (Chard, Vaughn, & Tyler, 2002). In addition, they have limited vocabulary knowledge and have difficulties with learning as a language-based activity (Jitendra, Edwards, Sacks, & Jacobson, 2004). Furthermore, Williams (1993) suggested that students with learning disabilities struggle with comprehension skills because they have specific difficulty getting the point of a story, maybe due to not using background knowledge properly or the intrusion of personal points of view. Students with learning disabilities may have limited background knowledge in history, geography and science, which may impede them from understanding what they are reading (Gersten, Fuchs, Williams, & Baker, 2001).

At the secondary level, the focus of instruction is around the use of basic skills in order to acquire content-area information (Alley & Deshler, 1979). According to Deno and Fuchs (1987), one of the vital questions to ask when designing a CBM is what to measure. While this question can easily be answered at the elementary school level because the focus is on the progress of basic skills (reading, written language, spelling and arithmetic), at the secondary level, answering the question of what areas should be measured to obtain student progress becomes more complicated, in particular for students with disabilities (Deno, 1985; Espin & Tindal, 1998). The second question is "what levels of proficiency do we expect

secondary school students with LD to reach in core curriculum areas?" (Seifert & Espin, 2012, p. 152).

According to Machek and Nelson (2007), reading problems comprise over three fourths of all special education referrals. Students with Learning Disabilities (LD) represent the largest population of students receiving special education services, and the majority of these students exhibit severe difficulties in reading (Fuchs & Fuchs, 1998; Vaughn & Fuchs, 2003). About 21% of students with learning disabilities at the secondary level are at least five grade levels below their peers in reading (Cortiella, 2011).

Further, data show that students with learning disabilities perform four to six years below grade level as opposed to their non-learning-disabled (LD) peers in reading and score in the lowest percentile (Deshler, Shumaker, Alley, Warner, & Clark, 1982; Levin, Zigmond & Birch, 1985). In 2007, the National Assessment of Educational Progress (NAEP) found that 66% of students with learning disabilities in public schools scored below basic level, compared to only 24% of students without disabilities (Lee, Grigg, & Donahue, 2007).

In addition, 70% of secondary students require reading remediation (Biancarosa & Snow, 2004). According to the National Center for Educational Statistics (2011), there have been limited changes in reading scores for students in Grades 4-8 from 2009-2011. The reading process for students with LD at the secondary level proves to be slow and incremental and needs to be monitored so teachers are able to evaluate the effectiveness of instructional programs (Deno, 1985; Espin et al., 2010).

Identifying words in a text fluently and accurately and knowing the meanings of those words are essential to being able to comprehend text and having academic success (Baumann, Kame'enui, & Ash, 2003). Students with reading disabilities read slowly and

with effort and tend to spend less time reading, resulting in less reading, less fluency and understanding less of what they read (Osborn, Lehr, & Hiebert, 2003). Reading becomes more complex, and students with disabilities struggle to learn the process of reading, thus creating problems such as loss of self-confidence, low expectations for success, and dropping out of school (Hargrove, Church, Yssel, & Koch, 2002). Students with disabilities exhibit a very low rate of school completion compared to their peers in regular education settings and have a dropout rate twice that of their general education peers; for example, data from 2005 show that 24% of youth (ages 14 and older) dropped out of high school, compared to 11% of the general education population (Blackorby & Wagner, 1996; Reschly & Christenson, 2006; Kaufman, Alt, & Chapman, 2004).

Early identification of students who are at risk of not passing Oregon's statewide assessment of reading OAKS-Reading (OAKS-R) by their eighth-grade year is crucial in order to provide reading intervention that will assist students at risk of lacking success in OAKS-R. The eighth-grade OAKS-R score is an important indicator of whether students are meeting grade-level expectations and are on track for meeting the reading essential skill requirement of the Oregon Diploma (Oregon Department of Education [ODE], 20010). According to the report presented by the Oregon Department of Education (2012-2013), there were only 29.8% of seventh-grade students with disabilities who met or exceeded the OAKS-R, and 31.5% of students with disabilities in the district this study was conducted as compared to 73% of students without disabilities statewide, and 69.3% of students without disabilities in the district this study was conducted.

Time is of the essence for students with Learning Disabilities; therefore the use of CBMs that are quick, valid and reliable assessments to measure progress, inform instruction

and predict success on statewide assessment outcomes such as OAKS is vital. The scores students receive on statewide assessment will determine their trajectory: graduating with a diploma or an alternative diploma and/or certificate. According to IDEA Part B Child Count (2011-2012), there are 5.5 million students with disabilities and more than 2.2 million students with LD (41%). Only 68% are graduating with a regular diploma, while 19% dropped out, and 12% received a certificate that is not recognized from a postsecondary education or employment perspective (IDEA Part B Exiting Data, 2010-2011). In Oregon, the 4-year adjusted cohort graduation rate for the 2010-2011 school year was 68% for all students and 42% for students with disabilities.

The data presented in the previous two paragraphs indicate that too many students with LD are dropping out or receiving a certificate of completion and these options limit their passageway to higher education or meaningful employment. According to the Bureau of Labor Statistics (2012), the unemployment rate for those with less than a high school diploma is over 12%, almost double that of all workers with median weekly earnings of $471, as compared to all other workers with a weekly median of $815.

The Statistical Relation Between CBM-Students With Learning Disabilities and Statewide Assessment Tests

In their study, Fuchs et al. (1988) studied a small sample (N = 70) of students with disabilities from Grades 4-8 and demonstrated that ORF (r = .91) was strongly correlated with performance on the Reading Comprehension Subtest of the Standard Achievement Test. As mentioned previously, fully 50 students in this sample were identified as having reading disability. In addition, Fore et al. (2009) studied a group of middle school students identified

with emotional and behavioral disorders and found that maze (r = .89) was a stronger measure of reading comprehension than ORF (r = .45).

As the literature review has shown, there is lack of research conducted specifically on the statistical relationship between CBM and students with learning disabilities undergoing statewide assessments at the middle school level. Thus, this study examines the predictive relation between CBM reading measures and statewide assessments. In particular it explores the predictive relationship between CBMs and the reading portion of the Oregon statewide assessment, OAKS-R, for seventh-grade students categorized as general education students and students with learning disabilities.

CHAPTER III

METHODS

The current study analyzed extant data from a sample of convenience obtained in 2010-2011 from the following seventh-grade reading assessments—passage reading fluency, vocabulary, multiple-choice reading comprehension—and the Oregon statewide reading assessment for seventh-grade students, the Oregon Assessment of Knowledge and Skills/Reading Literature (OAKS-R).

The research questions underlying this study examined using easyCBM and OAKS data collected in a school district in the Pacific Northwest during the 2010-2011 school year. The analysis includes easyCBM data from all students, but I focused only on students' highest OAKS-R scores and spring scores for easyCBM measures of interest: Passage Reading Fluency, Vocabulary and Reading Comprehension.

Research Design

My study utilized a nonexperimental, descriptive research design that employed correlation and regression analyses to examine the concurrent and predictive validity of easyCBM in the sample of seventh-grade students. An alpha value of .05 was used as the cutoff criteria for all statistical significance tests.

To answer the first question, about the relation between the curriculum-based measures of Oral Passage Reading Fluency, Vocabulary, Comprehension, and performance on the reading portion of the Oregon Assessment of Knowledge and Skills (OAKS-R) in Grade 7 for students with and without LD, a correlation of spring fluency, vocabulary and comprehension and spring OAKS-R was estimated.

To answer the second research question concerning which easyCBM subtest (fluency, vocabulary, or multiple-choice reading comprehension) best predicted the OAKS-R for seventh-grade students with and without LD, a multiple regression analysis was conducted between easyCBM measures and OAKS-R.

To answer the third question, regarding how specific nonacademic factors predicted performance on the statewide assessments, a multiple-regression analysis was conducted to estimate the independent and joint relations between gender, attendance, residence changes, race and ethnicity, cumulative grade point average (GPA) and school changes and the spring CBMs (ORF, VOC and MCRC) in the prediction of seventh-grade spring OAKS reading assessment scores. GPA was included as a nonacademic factor because it encompassed both academic and nonacademic classes.

Setting and Population Demographics

This study was conducted using data from five middle schools in a school district in a city in the Pacific Northwest with approximately 58,000 residents serving 10,837 students from elementary to high school level. Of those, 2,400 students were of Grades 6-8 served at the five middle schools.

The district's population is relatively homogenous, with approximately 33% of the students coming from ethnically diverse backgrounds. More specifically, 67% of the students in the district are White, 2.4% are Native American, 1.1% are African American/Black, 1.7% are Asian/Pacific Indian/Alaskan Islander, 18.3% are Hispanic, and 9.2% are Multiethnic (ODE, 2010-2011). Economically disadvantaged, based upon the district's free and reduced-price lunch data, accounted for 60.80% of the student population across all the schools in the district (Free and Reduced District Report, 2011).

Study Participants

The participants in this study included all seventh-grade students (with and without disabilities) in the district (N = 857). I utilized two a priori participation criteria. The first criterion specified that the student had scores from all three spring easyCBM Reading measures (PRF, VOC and MCRC) and an OAKS-R score. Second, only students in special education who were identified as learning disabled were included in that group. Any student with an alternative special education designation was excluded.

Of the 857 students, 672 students were classified as general education (GenEd) students who attended seventh grade in the district during the 2010-2011 school year. To be classified as GenEd, a student could *not* be identified as having any IDEA-identified disability. However, only 499 of those students had reported scores for the OAKS-R and all three easyCBM measures. A total of 91 students who were identified as special education under the IDEA category of Learning Disability (LD) had scores reported for the OAKS-R. Of those 91 students with learning disabilities, only 58 had reported scores for the OAKS and the three easyCBM measures. See Table 1 for complete demographics.

Included and Excluded Students

As noted earlier, only 763 students of the 857 were included in the study. The included were made up of 672 General Education (GenEd) students and 91 students with a learning disability. That left 94 students classified as excluded. It is important to note that not all of the included or excluded students had data points for the variables

TABLE 1. General Education and LD Population Demographics

	General Education		Learning Disabled	
	n	%	*n*	%
Gender				
Female	242	48.5	28	48.3
Male	257	51.5	30	51.7
Race /Ethnicity				
Native American	13	2.6	3	5.2
Asian	6	1.2	1	1.7
Black	9	1.8	1	1.7
Hispanic	77	15.4	7	12.1
Multiple	43	8.6	6	10.4
Pacific Islander	5	1.0	0	0.0
White	346	69.3	40	69.0

collected. Table 2 displays the data for each of the factors. For example, Table 2 shows that 702 of the 763 included students had a valid OAKS-R score and that 78 of the 94 excluded students had valid OAKS-R scores. For passage reading fluency (PRF), 591 of the 763 included students had spring scores and 63 of the 94 excluded students had spring scores. Conversely, all 763 included students had current attendance data, as did the 94 excluded students. Table 2 contains the complete means and standard deviations across the various data collected for those students in both the included and excluded groups who had valid scores. Table 2 also includes the demographic variable counts for the included and excluded groups. For example, 411 females and 352 males were in the included group, while 28 females and 66 males were in the excluded group.

TABLE 2. Included vs. Excluded Statistics

	Included	*n*	*M*	*SD*
OAKS-R	Yes	702	232.87	9.09
	No	78	230.21	10.70
PRF	Yes	591	158.27	39.60
	No	63	151.19	51.21
VOC	Yes	566	15.13	3.92
	No	62	13.87	4.65
MCRC	Yes	573	12.02	2.77
	No	63	11.21	3.52
Resident Changes	Yes	763	4.51	4.55
	No	94	5.15	5.58
School Changes	Yes	763	0.22	0.51
	No	94	0.32	0.66
CUM GPA	Yes	665	2.92	0.81
	No	78	2.92	0.84
CURR ATTD PERCENTAGE	Yes	763	91.91	9.65
	No	94	91.07	10.10
Gender				
Female	Yes	411		
	No	28		
Male	Yes	352		
	No	66		
Race/Ethnicity				
Native American	Yes	18		
	No	6		
Asian	Yes	7		
	No	1		
Black	Yes	12		
	No	0		
Hispanic	Yes	115		
	No	7		

TABLE 2. (Continued)

	Included	*n*	*M*	*SD*
Race/Ethnicity				
Mixed	Yes	57		
	No	7		
Pacific Islander	Yes	6		
	No	0		
White	Yes	548		
	No	73		
SubGroup Designation				
ASD	Yes	0		
	No	24		
CD	Yes	0		
	No	49		
ED	Yes	0		
	No	6		
GenEd	Yes	672		
	No	0		
ID	Yes	0		
	No	3		
OHI	Yes	0		
	No	9		
OI	Yes	0		
	No	1		
SLD	Yes	91		
	No	0		
TBI	Yes	0		
	No	2		

Economically disadvantaged were included as participants but not as a demographic variable because the district does not release this data on an individual student basis due to the Family Educational Rights and Privacy Act (FERPA). The data on economically

disadvantaged are generated from those who participate in the free and reduced lunch program. According to the district report on the free and reduced lunch program, for the 2010-2011 school year, 71.96% of students in the five middle schools received free and reduced lunches. It is important to note that for my research purposes it is unknown how many of my study participants qualified for free and reduced-price meals.

English Language Learners (ELLs) were excluded from these data because there were insufficient numbers on which to run any kind of analysis. Only 9 seventh-grade students were classified as ELL. Three of the ELL students were included in the general education population and six of the ELL students were identified under the LD category. Identifying an ELL student under the category of LD is very complex due to lack of appropriate classification, identification and intervention methods (McCardle, Mele-McCarthy, Cutting, Leos, & D'Emilio, 2005). Because of low numbers and the problems that ELL introduces to the LD classification, the nine ELL students were not included in the sample for my statistical analyses.

Measures

The measures used in this study were (a) predictor variables consisting of easyCBM reading measures (ORF, VOC, MCRC) and student non-academic variables; and (b) a criterion variable consisting of Oregon Assessment of Knowledge and Skills Reading (OAKS-R) scores.

Predictor Variables

Predictor Variables were scores on easyCBM reading measures of fluency, vocabulary and comprehension and nonacademic (attendance percentage, gender, race and ethnicity, residence changes, cumulative GPA, and school changes). Students were tested in the spring on easyCBM measures: individually administered PRF, and group-administered computer-based assessments Vocabulary CBM, Comprehension CBM.

In this dissertation, ORF is synonymous with Passage Reading Fluency (PRF), as they both describe an individually administered test of accuracy and fluency with connected text (Nese et al., 2011). Classroom teachers and paraprofessionals administered the PRF to individual students in classrooms, computer labs, hallways, and small offices, while the measures of vocabulary and comprehension were administered to groups of students via the computer using laptops in the computer lab or in classrooms equipped with computers. Each of the assessors was trained by a designated trained assessor from the district.

Oral Reading Fluency Measures

Students' scores on the spring 2011 easyCBM Passage Reading Fluency (PRF) benchmark measure were included as the first predictor variable. This study analyzed only the data gathered during spring quarter.

This test was administered to students on an individual basis using standardized administration procedures. The assessor sat across the student with a clipboard and a stopwatch ready. Each student was called alphabetically. The assessor greeted the student and told him/her that he or she was to read a passage. The assessor gave these exact directions, "I want you to read this story to me. You will have one minute to read as much as

you can. When I say begin, start reading aloud at the top of the page. Do your best reading. If you have trouble with a word, I will tell it to you. Do you have any questions? Begin."

When the student read the first word in the passage, the assessor started the stopwatch. While the student read the passage, the assessor marked errors by circling omissions and slashing hesitations of more than 3 seconds. Words self-corrected within 3 seconds were scored as accurate. At the end of one minute, the assessor marked a bracket after the last word read and allowed the student to finish the sentence before notifying the student to stop. The assessor documented the total number of words read in a minute and the errors then calculated the correct words read per minute.

Vocabulary Measures

Students' scores on the spring 2011 easyCBM vocabulary benchmark measure (VOC) were included as the second predictor variable. The easyCBM Vocabulary measure is a computer-based, group-administered assessment. The vocabulary CBM required the assessor to provide a setting with enough computers for all of the students (either in a computer lab or a portable laptop computer lab). The assessor had printed directions on the white board in the front of the room. The students entered a web address, clicked on a large icon labeled "students," entered their teacher's name in a text box, selected their own name from a dropdown menu, and selected the vocabulary assessment from a dropdown menu. During these procedures, approximately three adults monitored the students to ensure that they entered proper information. Before the students selected the "take test" button, one of the adults verified the information on the screen. After the students began the assessment, one adult remained in the room during the assessment period until all students finished. The untimed assessment took 10-20 minutes for students to complete. The assessors assisted the

students with navigating the website and any technical problems but were instructed to refrain from reading any words to the students or providing any word definitions.

Multiple-Choice Reading Comprehension Measures

Students' scores on the spring 2011 easyCBM Multiple Choice Reading Comprehension (MCRC) benchmark measure were included as the third predictor variable. The easyCBM MCRC measure was developed by researchers at the University of Oregon (Alonzo, Tindal, Ulmer, & Glasgow, 2006). This is an untimed, independent reading of a passage and includes responding to a series of 20 questions in multiple-choice format administered by a computer. Students read the passage and can refer to it as they answer the comprehension questions designed to assess students' literal, inferential, and evaluative reading comprehension. Some students completed the measure during a 45-minute period and some completed it over two class periods of 45 minutes each.

Specific Nonacademic Variables

It is important to examine whether CBM predictive validity is consistent for a variety of groups across the nonacademic characteristics of a group (Cui, Conger, & Lorenz, 2005); Yeo, Fearrington, & Christ, 2011). Nonacademic variables may influence CBM data by increasing or decreasing their variance power (Betts et al., 2008) and possibly creating predictive bias for CBM measures. It is vital to provide evidence that CBM can be generally used for various groups (Betts et al., 2008).

Student nonacademic variables utilized in the regression analysis included (a) attendance percentage, (b) gender, (c) race and ethnicity, (d) residence changes, (e) cumulative grade point average (GPA), and (f) school changes. Those nonacademic variables were combined with student scores from the three different easyCBM reading

measures. Students' state reading scores (OAKS-R) from spring quarter were included as predictor variables in my analyses for Question 3.

Criterion Variable

Oregon Assessment of Knowledge and Skills–Reading/Literature (OAKS-R)

Students' highest scores on the 2010-2011 OAKS were used as the criterion variable in this study. The OAKS-R (ODE, 2008) is an untimed, multiple-choice test administered every year to all students in Oregon starting in Grade 3. Reading passages include literary, informative and practical selections. Subtests require students to (a) understand word meanings in a context of a selection; (b) locate information in common sources; (c) answer literal, inferential and evaluative comprehension questions; (d) recognize common literary forms such as novels, short stories, poetry and folk tales; and (e) analyze the use of literary elements and devices such as plot, setting, personification, and metaphor.

OAKS provide critical data for Oregon's accountability system. All students in Grades 3 through 8 are required to take a reading and math test. OAKS is also one way for students to demonstrate proficiency in the essential skills of reading, writing and math, which are necessary to earn a high school diploma. OAKS is a criterion-referenced assessment based on the Oregon Content Standards, and the scores produced are different from those produced by national norm-referenced tests (ODE, 2012-2014).

The OAKS-R assessment was administered during the spring of the school year. Each student had an opportunity to take the statewide assessment three times, but many students took it only one or two times if they met or exceed the standard on their first or second opportunity. The rationale to have students take the test three times was for the purpose of seeing if there would be any growth over the three time opportunities. Each

student had the opportunity to take the assessment three times during spring in order to raise his or her score from "does not meet" to "meets" or from "meets" to "exceeds." For the purposes of this study, each student's highest score was used for analyses.

The students' teachers proctored the reading OAKS assessments according to the Oregon state assessment guidelines. Each student chose a computer already logged on to the state assessment site. The students selected their names from a dropdown menu and proceeded to take the assessment. Depending on the academic skills of the student and the accommodations necessary (according to an IEP or other individualized plan), the entire test took 45-70 minutes. The district testing coordinator provided the teachers training regarding proctoring the assessments. Written documentation pertaining to the assessment procedures was provided to the teachers approximately 2 weeks prior to the first testing opportunity. If the teacher had any further questions regarding the state assessment, the school district assessment coordinator fielded the question via telephone, email, or personal visit.

Data Analysis

The statistical analysis for this study addressed the relative importance of easyCBM measures, which included Oral Reading Fluency (ORF), Vocabulary and Multiple-Choice Reading Comprehension (MCRC), and nonacademic variables, which included (a) attendance percentage, (b) gender, and (c) residence changes, (d) race and ethnicity, (e) cumulative GPA, and (f) school changes for predicting student success in OAKS-Reading, for students in general education and learning disabilities students. The statistical analysis was divided into two sections: General Education and LD (students with learning disabilities).

For each of the two populations—general education and LD—the analyses include descriptive statistics as well as the mean and standard deviation of each measure. A correlation was calculated for all of the variables used. Next, a multiple-regression analysis estimated the independent and joint relations between students in the general education program and students with LD and each spring administered easyCBM ORF, Vocabulary and Comprehension in the prediction of spring OAKS-R. Finally, a multiple-regression analysis evaluated the independent and joint relations between gender, attendance percentage, residence changes, race and ethnicity, cumulative GPA, and school changes and spring CBM (ORF, VOC and MCRC) in the prediction of seventh-grade spring OAKS-R assessment scores.

CHAPTER IV

RESULTS

In this chapter, the results associated with three study research questions are provided. The first question investigated the relationship between the spring easyCBM tests Passage Reading Fluency (PRF), Vocabulary (VOC), and Multiple-Choice Reading Comprehension (MCRC) with the seventh-grade Spring Oregon Assessment of Knowledge and Skills Reading statewide test (OAKS-R). This question was answered utilizing correlation coefficients amongst the four measurement variables. Separate correlations were run for the two groups in this study: (a) General Education without Special Education, and (b) Students with Learning Disabilities (a subset of Special Education).

The second question examined the extent to which PRF, VOC and MCRC exclusively predicted performance on the OAKS-R. To answer Question 2, linear regression analyses were conducted on easyCBM tests and OAKS Reading data. As with the first question, separate regression analyses were run for the two groups in this study: (a) General Education without Special Education, and (b) Students with Learning Disabilities (a subset of Special Education).

The third question examined whether adding specific nonacademic indicators in the regression model accounted for more of the variance. The variables included (a) spring ORF, (b) spring VOC, (c) spring MCRC, (d) attendance percentage, (e) gender, (f) residence changes, (g) race and ethnicity, (h) cumulative GPA, and (i) school changes. These analyses provided information about which of the three CBM scores and demographic indicators were most predictive of performance on OAKS-R.

It is important to remember that two a priori decision processes were used where the sample was limited to students who had scores reported for each of the four measures: (a) OAKS-R seventh-grade, (b) easyCBM PRF, (c) easyCBM MCRC, and (d) easyCBM VOC were included in the analysis. Also, only students with the designation of LD were used and all other students with disabilities were not included.

Analyzing for Multicollinearity

It was important to rule out multicollinearity among the variables to eliminate any of its potential harmful effects on teasing apart the unique effects of individual predictors. Multicollinearity is present when there is a close to similar linear relationship among some or all of the independent variables in a regression model (Belsley, Kuh, & Welsch, 1980). According to Mason and Perreault (1991), the interpretations of scores and conclusions based on the size of the regression coefficients and their standard errors are potential confounding effects of multicollinearity. When there is overlap among some of the variables, the statistical power for estimating the individual predictors decreases, because it takes more data to isolate these variables (Morgan, Leech, Gloeckner, & Barrett, 2011).

I used two tests to determine multicollinearity: (a) correlation and (b) tolerance/Variance inflation factor (VIF). If the correlation was .90 or larger, the variables are highly correlated to be used in the same regression analysis and would be considered to have multicollinearity (Abrams, 2007).

Determining Multicollinearity Through Correlation

General Education. Correlations for the General Education group show that none of the correlations reached the .90 threshold. Correlations for OAKS Reading ranged between a high of .658 with VOC to a low of .526 with MCRC. As demonstrated by these

scores, there was not a degree of overlap among the variables; thus, all of the variables should be used in the multiple-regression analyses for the General Education group (Abrams, 2007).

Students with LD. Correlations for the group with Learning Disabilities show that none of the correlations reached the .90 threshold. Correlations with OAKS Reading ranged between a high of .600 with MCRC to a low of .489 with VOC. As demonstrated by these scores, there was not a degree of overlap among the variables; thus, all of the variables should be used in the multiple-regression analyses for the groups with learning disabilities (Abrams, 2007).

Determining Multicollinearity Through Tolerance and Variance Inflation Factor

The second test for determining multicollinearity was (a) tolerance and (b) variance inflation factor (VIF). Tolerance is referred to as the proportion of unique information that an individual predictor offers in the regression analysis (Norusis, 2002). According to Tomkins (1992), tolerance values range from 0 to 1, where tolerance of 1 indicates no multicollinearity and tolerance values closer to 0 indicate a serious problem with multicollinearity.

VIF demonstrates the level of inflation of the variance of the estimated coefficients affected by multicollinearity. VIF is the reciprocal of tolerance in which large values indicate a strong relationship between predictor variables (Mansfield & Helms, 1982). A VIF surpassing 4 merits further inquiry, while a VIF exceeding 10 suggests serious multicollinearity (Belsley et al., 1980; Gammie, Jones, & Robertson-Miller, 2003).

General Education. The tolerance statistics and the VIF statistics in Table 3 specified that multicollinearity was not a problem for my General Education data. All

tolerances for General Education were closer to 1, indicating a lack of multicollinearity (Tomkins, 1992). Tolerance statistics ranged from a low of .721 (PRF) to a high of .775 (VOC).

Finally, all VIF statistics in General Education were much lower than 10, demonstrating a lack of multicollinearity (Belsley et al., 1980; Gammie et al., 2003). VIF statistics across General Education ranged from a low of 1.291 (VOC) to a high of 1.386 (PRF). The complete General Education tolerance and VIF statistics are listed in Table 3.

TABLE 3. Tolerance VIF Matrix for Seventh-Grade General Education

	Tolerance	Variance Inflation Factor (VIF)
PRF	.721	1.386
VOC	.775	1.291
MCRC	.765	1.307

Students with LD. The Learning Disabled tolerance statistics and the VIF statistics in Table 4 indicated that multicollinearity was not a problem for my data. All tolerances for Learning Disabled were closer to 1, which indicated a lack of multicollinearity (Tomkins, 1992). Tolerance statistics ranged from a low of .689 (VOC) to a high of .723 (MCRC).

In addition, all VIF statistics in Learning Disabled were much lower than 10, indicating a lack of multicollinearity (Belsley et al., 1980; Gammie et al., 2003). VIF statistics across LD ranged from a low of 1.383 (MCRC) to a high of 1.450 (VOC). The complete LD tolerance and VIF statistics are listed in Table 4.

TABLE 4. Tolerance VIF Matrix for Seventh-Grade Learning Disabled

	Tolerance	Variance Inflation Factor (VIF)
PRF	.715	1.400
VOC	.689	1.450
MCRC	.723	1.383

Descriptive Statistics for General Education and LD

The seventh-grade General Education descriptive statistics for academic and demographic variables are provided in Table 5. Table 5 provides the means and standard deviations for each of the variables used. Table 5 also supplies both the General Education and the Learning Disabled group descriptive statistics for academic and nonacademic variables used.

Research Question 1

The first research question analyzed the relationship between student performance on the OAKS-Reading and easyCBM: (a) Fluency (PRF), (b) Vocabulary (VOC), and (c) Comprehension (MCRC). The relationship was determined by correlation coefficients. Separate correlations were run for the two groups in this study: (a) General Education without Special Education, and (b) Students with Learning Disabilities (a subset of Special Education).

General Education

In all, 499 general education students had scores across all measures. The correlations for general education students ranged from a high of .658 for VOC and OAKS-R to a low of .526 for MCRC and OAKS-R, as indicated in Table 6. All correlations were significantly different than zero, $p < .001$.

TABLE 5. Descriptive Statistics for Seventh-Grade General Education and Learning Disabled Groups

	N	*M*	*SD*
General Education			
OAKS Reading	499	234.33	8.059
PRF	499	163.97	36.107
VOC	499	15.58	3.790
MCRC	499	12.25	2.591
Gender	499	.48	.500
Race/Ethnicity	499	.31	.462
Resident Change	499	4.59	4.669
School Changes	499	.21	.510
Cumulative GPA	499	3.07	.750
Current Attendance %	499	92.754	8.6934
Learning Disabled			
OAKS-R	58	222.552	8.150
PRF	58	112.241	35.519
VOC	58	11.569	2.956
MCRC	58	10.328	3.369
Gender	58	0.483	0.504
Race/Ethnicity	58	0.310	0.467
Resident Changes	58	5.776	4.619
School Changes	58	0.276	0.555
Cumulative GPA	58	2.346	0.684
Current Attendance %	58	88.375	13.675

Students With LD

In all, 58 students with LD had scores across all four measures. The correlations for students with LD ranged from a low of .489 for VOC and OAKS-R to a high of .600 for

MCRC and OAKS-R, as indicated in Table 7. All correlations were significantly different than zero, $p < .001$.

TABLE 6. Correlations for Seventh-Grade General Education

	OAKS-R	PRF	VOC
PRF	.595		
VOC	.658	.431	
MCRC	.526	.442	.369

TABLE 7. Correlations for Seventh-Grade Learning Disabled

	OAKS-R	PRF	VOC
PRF	.510		
VOC	.489	.477	
MCRC	.600	.436	.467

Research Question 2

The second research question addressed the relative predictive nature of the three easyCBMs administered. The easyCBM subtests of (a) PRF, (b) VOC and (c) MCRC were included in a multiple-regression analysis against OAKS-R. As with Question 1, separate regression analyses were run for the two groups in this study: (a) General Education without Special Education, and (b) Students with Learning Disabilities (a subset of Special Education).

General Education

General Education regression statistics. The second research question addressed the relative predictive nature of the three easyCBMs administered for General Education students. This analysis did not include any students identified as requiring special education services. The spring PRF, VOC, and MCRC easyCBM scores were included in a multiple-

regression analysis as the predictor variables, while the OAKS-R was the dependent variable. The General Education ANOVA statistics indicated that at least one of the independent variables significantly predicted ($p < .001$) OAKS-Reading. See Table 8 for the ANOVA statistics.

Additionally, the R-squared coefficient (adjusted $R^2 = .589$) for General Education indicated that for students in the general education program, over 58% of the variance could be explained by PRF, Vocabulary and MCRC for general education students. See Table 9 for detailed General Education information.

TABLE 8. ANOVA for Seventh-Grade General Education

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	19135.488	3	6378.496	239.092	.000[a]
Residual	13205.622	495	26.678		
Total	32341.110	498			

Note. Dependent variable: OAKS Reading.

[a]Predictors: (Constant), PRF, VOC, MCRC.

TABLE 9. Model Summary for Seventh-Grade General Education

				Change Statistics				
R	R^2	Adjusted R^2	Std. Error of Estimate	R^2 Change	*F* Change	*df*1	*df*2	Sig. F Change
.769[a]	.592	.589	5.165	.592	239.092	3	495	.000

[a]Predictors: (Constant), PRF, VOC, MCRC.

Table 10 provides the multiple-regression results with OAKS as the dependent variable and the spring PRF, Vocabulary and MCRC scores as the predictor variables.

Statistically significant results were found for three predictor variables: (a) PRF ($p < .001$), (b) VOC ($p < .001$), and (c) MCRC ($p < .001$). Additionally, the standardized coefficients indicated that VOC ($\beta = .443$) was relatively more predictive than PRF ($\beta = .303$) and MCRC ($\beta = .229$) for general education students. Table 10 provides further information pertaining to the regression analysis regarding the semipartial correlations. The semipartial correlation for VOC (.390) was larger than PRF (.257) and MCRC (.200). Squaring the semipartial correlation coefficients revealed that VOC accounted for 15.21% of the variance, PRF accounted for 12.74% of the variance, and MCRC accounted for 4% of the variance.

TABLE 10. Multiple-Regression Model Results of easyCBMs on Reading OAKS for Seventh-Grade General Education

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	*t*	Sig.	Zero-order	Partial	Part
(Constant)	199.864	1.348		148.245	.000			
PRF	.068	.008	.303	8.954	.000	.595	.373	.257
VOC	.941	.069	.443	13.567	.000	.658	.521	.390
MCRC	.712	.102	.229	6.970	.000	.526	.299	.200

Note. Dependent variable: OAKS Reading.

Students with LD

LD regression statistics. The second research question addressed the relative predictive nature of the three easyCBMs administered for students with LD. This analysis did not include any students requiring general education or other types of special education services. The PRF, VOC, and MCRC easyCBM were included in a multiple-regression analysis against OAKS-R. The ANOVA statistics indicated that one or three of the variables

significantly predicted ($p < .001$) the OAKS-Reading. See Table 11 for the ANOVA statistics.

Additionally, the coefficients (adjusted $R^2 = .429$) indicated that almost 43% of the variance could be explained by PRF, VOC, and MCRC for students with LD. See Table 12 for complete model summary statistics.

TABLE 11. ANOVA for Seventh-Grade Learning Disabled

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	1736.596	3	5778.865	15.250	.000[a]
Residual	2049.749	54	37.958		
Total	3786.345	57			

Note. Dependent variable: OAKS Reading.

[a]Predictors: (Constant), PRF, VOC, MCRC.

TABLE 12. Model Summary for Seventh-Grade Learning Disabled

				Change Statistics				
R	R^2	Adjusted R^2	Std. Error of Estimate	R^2 Change	*F* Change	*df*1	*df*2	Sig. F Change
.677[a]	.459	.429	6.161	.459	15.250	3	54	.000

[a]Predictors: (Constant), PRF, VOC, MCRC.

The standardized coefficients indicated that MCRC ($\beta = .408$) was relatively more predictive than PRF ($\beta = .246$), and VOC ($\beta = .181$) for students with LD. Table 13 provides further information pertaining to the regression analysis. The semipartial correlations included in Table 13 revealed that MCRC (.347) uniquely accounted for more of the variance than the other variables of PRF (.208) and VOC (.151). Squaring the semipartial correlation coefficients revealed that MCRC accounted for 12.04% of the

variance, PRF accounted for 4.33% of the variance and VOC accounted for 2.28% of the variance. See Table 13 for complete regression model results.

TABLE 13. Multiple-Regression Model Results of easyCBMs on Reading OAKS for Seventh-Grade Learning Disabled

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	*t*	Sig.	Zero-order	Partial	Part
(Constant)	200.246	3.607		55.518	.000			
PRF	.056	.027	.246	2.074	.043	.501	.272	.208
VOC	.500	.332	.181	1.503	.138	.489	.201	.151
MCRC	.987	.285	.408	3.465	.001	.600	.426	.347

Note. Dependent variable: OAKS Reading.

Research Question 3

The third research question asked whether the nonacademic variables—gender, current attendance, residence change, ethnicity, school changes, and cumulative GPA—added to the relative prediction in the multiple-regression model. To analyze the predictive relations, the nonacademic indicators specified above and CBMs were included as independent variables in a multiple-regression analysis with OAKS-R as the dependent variable.

General Education

General Education regression statistics for academic and nonacademic variables. The third research question addressed the relative predictive nature of the academic and demographic variables and three easyCBM measures administered for General Education students. This analysis did not include any students identified as requiring special education services. The spring PRF, VOC, and MCRC easyCBMs score

and the specified nonacademic variables were included in a multiple regression analysis as the predictor variables, while the OAKS-R was the dependent variable.

The General Education ANOVA statistics indicated that at least one of the independent variables significantly predicted ($p < .001$) the OAKS-Reading. See Table 14 for the ANOVA statistics.

TABLE 14. ANOVA for Seventh-Grade Academic and Nonacademic Variables for General Education

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	20,880.584	9	2,320.065	98.993	.000[a]
Residual	11,460.526	489	23.437		
Total	32,341.110	498			

Note. Dependent Variable: OAKS Reading

[a]Predictors: (Constant), PRF, VOC, MCRC, Current Attendance Percentage, Race/Ethnicity, Gender, School Changes, Resident Change, Cumulative GPA.

Additionally, the coefficients (adjusted $R^2 = .639$) indicated that over 63% of the variance could be explained by PRF, Vocabulary, MCRC, and the nonacademic variables specified for General Education students. See Table 15 for the model summary statistics.

TABLE 15. Model Summary for Seventh-Grade Academic and Nonacademic Variables for General Education

				Change Statistics				
R	R^2	Adjusted R^2	Std. Error of Estimate	R^2 Change	*F* Change	*df*1	*df*2	Sig. F Change
.804	.646	.639	4.841	.646	98.993	9	489	.000

Note. Predictors: (Constant), PRF, VOC, MCRC, Current Attendance Percentage, Race/Ethnicity, Gender, School Changes, Resident Change, Cumulative GPA.

The standardized coefficients indicated that VOC (β = .415) was relatively the most predictive. In regards to nonacademic predictors, cumulative GPA (β = .228) was relatively the most predictive. However, all of the nonacademic predictors' standardized coefficients were lower than the academic predictors'. For more detailed information, see Table 16.

In addition, Table 16 provides further information pertaining to the regression analysis. The semipartial correlations included in Table 16 reveal that, uniquely, VOC (.361) accounted for more of the variance than the other variables of PRF (.209) and MCRC (.152), while for the nonacademic predictors, cumulative GPA (.180) accounted for more of the variance than the other variables. Squaring the semipartial correlation coefficients revealed that VOC accounted for 13.03% of the variance and cumulative GPA accounted for about 3.24% of the variance.

Students With LD

LD regression statistics for academic and nonacademic variables. The third research question addressed the relative predictive nature of the academic and nonacademic variables and three easyCBM measures administered for students with LD. The spring PRF, VOC, and MCRC easyCBMs scores and the specified nonacademic variables were included in a multiple-regression analysis as the predictor variables, while the OAKS-Reading score was the dependent variable. The ANOVA statistics for this sample indicated that at least one of the independent variables significantly predicted ($p < .001$) the OAKS-R. See Table 17 for the ANOVA statistics.

TABLE 16. Multiple-Regression Model Results of Academic and Nonacademic Variables on Reading OAKS for Seventh-Grade General Education

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	*t*	Sig.	Zero-order	Partial	Part
(Constant)	192.137	2.711		70.886	.000			
PRF	.056	.007	.253	7.773	.000	.595	.332	.209
VOC	.882	.066	.415	13.417	.000	.6588	.519	.361
MCRC	.556	.098	.179	5.664	.000	.526	.248	.152
Gender	-.008	.437	.000	-.018	.986	.009	-.001	.000
Race/ Ethnicity	.594	.473	.034	1.256	.210	.068	.057	.034
Resident Changes	.035	.052	.020	.680	.497	-.182	.031	.018
School Changes	.109	.459	.001	.042	.967	-.128	.002	.001
Cumulative GPA	2.452	.366	.228	6.697	.000	.510	.290	.180
Current Attendance %	.049	.029	.053	1.717	.087	.262	.077	.046

Note. Dependent variable: OAKS Seventh-Grade Reading.

TABLE 17. ANOVA for Seventh-Grade Academic and Nonacademic Variables for Learning Disabled

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	2,010.818	9	223.424	6.040	.000[a]
Residual	1,775.527	48	36.990		
Total	3,786.345	57			

Note. Dependent Variable: OAKS-R

[a]Predictors: (Constant), PRF, VOC, MCRC, Current Attendance Percentage, Race/Ethnicity, Gender, School Changes, Resident Change, Cumulative GPA.

Additionally, the coefficients (adjusted R^2 = .443) indicated that over 44% of the variance could be explained by PRF, Vocabulary, MCRC, and the nonacademic variables specified for students with LD. See Table 18 for complete model summary statistics.

TABLE 18. Model Summary for Seventh-Grade Academic and Nonacademic Variables for Learning Disabled

				Change Statistics				
R	R^2	Adjusted R^2	Std. Error of Estimate	R^2 Change	*F* Change	*df*1	*df*2	Sig. F Change
.729	.531	.443	6.082	.531	6.040	9	48	.000

Note. Predictors: (Constant), PRF, VOC, MCRC, Current Attendance Percentage, Race/Ethnicity, Gender, School Changes, Resident Change, Cumulative GPA.

The standardized coefficients indicated that MCRC (β = .434) was the most predictive of the academic predictors. In regards to nonacademic predictors, current attendance (β = .151) was relatively more predictive than the other nonacademic predictors. For more detailed information, see Table 19.

In addition, Table 19 provides further information pertaining to the regression analysis. The semipartial correlations reveal that MCRC (.343) uniquely accounted for more of the variance than the other variables. For the nonacademic predictors, current attendance (.119) accounted for more of the unique variance than the other variables. Squaring the semipartial correlation coefficients revealed that MCRC accounted for 11.76% of the variance, while current attendance accounted for only 1.42% of the variance.

TABLE 19. Multiple-Regression Model Results of Academic and Nonacademic Variables on Reading OAKS for Seventh-Grade Learning Disabled

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	*t*	Sig.	Zero-order	Partial	Part
(Constant)	195.706	6.810		28.739	.000			
PRF	.040	.029	.175	1.379	.174	.510	.195	.136
VOC	.470	.363	.170	1.295	.201	.489	.184	.128
MCRC	1.050	.302	.434	3.475	.001	.600	.448	.343
Gender	-3.324	1.865	-.206	-1.782	.081	-.284	-.249	-.176
Race/ Ethnicity	.625	1.881	.036	.332	.741	.153	.048	.033
Resident Changes	.032	.204	.018	.158	.875	.086	.023	.016
School Changes	.090	1.721	.006	.052	.959	-.061	.008	.005
Cumulative GPA	-.304	1.516	-.026	-.201	.842	.002	-.029	-.020
Current Attendance %	.090	.075	.151	1.119	.236	.221	.171	.119

Note. Dependent variable: OAKS-R Seventh Grade.

Summary of Results

This study examined the predictive relationships between easyCBM measures: PRF, VOC and MCRC for seventh-grade students (with and without LD) and performance on the OAKS-R. Results indicated that all three easyCBM reading measures significantly predicted scores on OAKS-R for all students, and VOC accounted for the largest effect for the general education population, while MCRC accounted for the largest effect for students with LD.

Question 1. The first question investigated the relationship between the spring easyCBM measures—Passage Reading Fluency (PRF), Vocabulary (VOC), and Multiple-

Choice Reading Comprehension (MCRC)—and the seventh-grade spring Oregon Assessment of Knowledge and Skills Reading (OAKS-R) statewide test. For general education, the highest correlation coefficient was between VOC and OAKS-R (r = .658). For students with LD, the highest correlation coefficient was between MCRC and OAKS-R (r = .600).

Question 2. The second question examined the extent to which PRF, VOC and MCRC exclusively predicted performance on the OAKS Reading assessment. The regression model for general education students showed that VOC (β = .443) was relatively more predictive of student performance on OAKS-R than PRF (β = .303) and MCRC (β = .229). For students with LD, the regression model showed MCRC (β = .408) was relatively more predictive than PRF (β = .246), and VOC (β = .181).

Question 3. The third question examined whether adding the nonacademic indicators in the regression model accounted for more of the variance. The variables included (a) PRF, (b) VOC, (c) MCRC, (d) attendance percentage, (e) gender, (f) residence changes, (g) race and ethnicity, (h) cumulative GPA, and (i) school changes. When the nonacademic variables were added for students in general education, VOC (β = .415) was still the most predictive with cumulative GPA (β = .228), the most predictive nonacademic variable. For students with LD, MCRC (β = .434) was still the most predictive, and none of the nonacademic variables were significant. The addition of nonacademic variables to both general education and the population with learning disabilities did not statistically influence the prediction of performance on the OAKS-R.

CHAPTER V

DISCUSSION

In this chapter, I provide (a) a summary of the analyses presented in the previous chapter, (b) a review of the limitations to this study, (c) a connection to previous research, (d) a discussion of the practical implications, and (e) suggestions for future research.

Summary of Results

In this study, I examined the predictive relationships between easyCBM measures—passage reading fluency (PRF), vocabulary (VOC), and multiple-choice reading comprehension (MCRC)—and performance on the Oregon Assessment of Knowledge and Skills–Reading (OAKS-R) for seventh-grade students with and without LD. The results indicated that CBMs strongly predicted success for seventh-grade students with and without LD on the large-scale reading outcome assessment (OAKS-R). However, there were differences in the CBM that best predicted OAKS-R, by student group.

General Education

More specifically, VOC ($\beta = .443$) was the best predictor of success on the OAKS-R for students in the general education population. In addition, correlation analysis of spring-administered CBM and the OAKS-R revealed moderately strong relationships between the OAKS-R and all three CBMs. For students in general education, the correlation coefficients indicated a moderately strong relation between VOC and OAKS-R ($r = .658$).

Students With LD

On the other hand, MCRC ($\beta = .408$) was the best predictor of success on the OAKS-R for students with LD. In addition, correlation analysis of spring-administered CBM and the OAKS-R revealed moderately strong relationships between the OAKS-R and all

three CBMs. For students with LD, the correlation coefficients indicated a moderately strong relation between MCRC and OAKS-R (r = .600).

Specific Nonacademic Variables

Finally, when the nonacademic variables were added to the regression model for the general education population, results showed that VOC (β = .415) was still the most predictive variable, and GPA (β = .228) was relatively the most predictive for the nonacademic factors. Also, of the six nonacademic factors, only GPA significantly predicted unique variance, but it accounted for only about 3.24% of the variance. For students with learning disabilities, MCRC (β = .434) was still the most predictive variable, and current attendance (β = .151) was relatively the most predictive compared to the the other nonacademic predictors, but it accounted for only 1.42% of the variance. However, none of the nonacademic predictors significantly predicted unique variance. Even though the nonacademic variables proved to be less predictive than the academic variables, they did not add to the predictive significance of CBM performance on statewide assessments for seventh-grade general education students and students with learning disabilities. Thus, the CBM measures can be used for both groups without schools having to worry that their academic decisions might be biased by nonacademic factors (Yeo et al., 2011).

Limitations

Even though this study demonstrated positive findings, a few limitations should be considered. The three limitations in this study were related to (a) internal validity, (b) external validity, and (c) construct validity.

Internal Validity

Sampling bias. Students were already identified under the category of LD in my extant data set. My analysis accepted rather than authenticated the existence of a disability. Treating the LD group as homogenous may have been problematic because of the noted differences in processes for LD identification. Although the majority of states define LD

> as a disorder in one or more of the basic psychological processes involved in understanding, or in using language spoken or written that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations (Sternberg & Grigorenko, 2002, p. 65),

many states differ in how they define discrepancy and eligibility criteria and they often leave it to local agencies.

Selection. Only those students who took all four measures were included in the analysis. In order for a student to participate in this study, s/he must have met the following criteria: (a) The student was administered the PRF measure in the spring, (b) the VOC in the spring (either a computer-based or paper/pencil administration for a student with LD if testing accommodations were reflected on the IEP), (c) the MCRC in the spring (either a computer-based or paper/pencil administration for a student with LD if testing accommodations were reflected on the IEP), and (d) the computer-based statewide reading/language arts assessment—OAKS-Reading. In all, there were 858 seventh-grade students enrolled in the participating district during the 2010-2011 school-year, but due to my a priori rule, 301 students were dropped from the analysis. Data collected from the general education sample of 499 students and from the LD sample of 58 students were included in the analysis.

Staff, curricular and instructional influences. This study utilized extant data and did not account for differences in district and school instructional approaches, curriculum

selection and/or teacher variability across students. This study focused only on the three scores of CBM measures and OAKS-R for the spring quarter and a few of the nonacademic variables; it did not consider any of the teacher or classroom variables or any types of interventions that might have been provided during the school year. Thus, teacher and classroom variables and/or interventions may be considered confounding variables that might have influenced the results.

Small cell size for the LD group. Question 2 analyzed 58 students with LD using nine factors in the second regression analysis. While comprehensive enough to run the regression analysis, the final statistics based on small cell sizes can only suggest possible findings. Much larger cell sizes would be required for any definitive findings.

External Validity

Sampling plan. The current study lacks strong external validity because it utilized a convenience sample of seventh-grade students enrolled in one school district. Using only one grade level provided information that is grade-level specific, thereby prohibiting the generalizability of findings to additional grade levels. Moreover, the results of this study can be generalized only to other demographically similar populations of seventh-grade students with and without LD.

OAKS. OAKS is specific to Oregon because 49 out of 50 states do not use OAKS. Therefore, the generalizability of this study to other statewide assessments in other states is lacking.

Construct Validity

Inadequate preoperational explication of constructs. The construct of LD had been indirectly operationalized prior to this study being conducted. As noted earlier, there

were no available data explaining the process or criteria that were used to identify a student under the category of LD across all of the schools within my sample. The lack of precise/concise identification procedures creates an ill-defined group.

Connections to Previous Research

General Education Students

Vocabulary (VOC). Results of the current study support the findings of previous research demonstrating the strong correlation of VOC performance on OAKS-R and the use of VOC as a strong predictor of success/failure of students' performance on OAKS-R (Espin et al., 2001; Espin et al., 2005; Megert, 2010; Silberglitt et al., 2006; Tindal et al., 2009; Yovanoff et al., 2005).

Espin et al. (2001) and Espin et al. (2005) examined the technical adequacy of vocabulary measures as screening and progress-monitoring tools for seventh-grade students and reported moderate to strong validity correlations with standardized criterion measures ranging from .64 to .87. In the same way, the correlations coefficients for the general education population in my study indicated a moderate relation between VOC and OAKS-R (r = .65).

Similarly, according to a study conducted by Megert (2010) with sixth-grade students in the general education setting, the correlation coefficients indicated a moderate connection between VOC and OAKS-R (r = .70). Likewise, Tindal et al. (2009), in their technical report, presented the correlations between the three benchmark measures and OAKS in the spring as generally moderate across all samples, ranging from .56 to .68 for District 1 and .51 to .62 in District 2. In District 1, VOC (r = .68) had the strongest correlation to OAKS. In addition, Mooney et al. (2010) found similar results, a strong

correlation (r = .70) between a single 5-minute measure of vocabulary content knowledge and Louisiana's statewide grade level social studies test.

Moreover, my study demonstrated that the VOC (β = .443) measure was the most predictive variable for students in the general education sample. Vocabulary matching stood out as a predominant indicator of student performance on standardized achievement tests, ranging from *r* = .59 to .84 (Espin et al., 2001). According to Yovanoff et al. (2005), the vocabulary measure is a better predictor of performance on the reading comprehension task than PRF. They used regression models to demonstrate that VOC was relatively more predictive than PRF. My study expands the research of Yovanoff et al. by using the VOC to predict performance on the OAKS-R, which shows an ongoing picture of student growth in a given content area. Megert (2010) also found VOC (β = .49) a better predictor of student performance on the OAKS-R than the other variables. Finally, when the nonacademic variables were added VOC (β = .41) was still relatively more predictive than MCRC (β = .17), and PRF (β = .25). In addition, Megert (2010) demonstrated that when nonacademic variables such as gender, attendance and NCLB at risk were added in the multiple regression, VOC (β = .48) was found to be a better predictor than PRF (β = .35). The results of my study support previous research, indicating that VOC is not only a better predictor of reading comprehension tasks and content areas, but also a strong predictor of reading skills (Espin et al., 2005; Yovanoff et al., 2005).

Oral Reading Fluency (PRF). My study's results indicated that performance on PRF (*r* = .59) was moderately correlated to performance on the OAKS-R, but the correlation was weaker than VOC (*r* = .65). These data are supported by Silberglitt et al. (2006), who suggested the value of R-CBM predicting outcomes on statewide assessments diminishes at

the middle school level. They found the significance of the relation between R-CBM and the state accountability test declined significantly from Grades 3 and 4 to 7 and 8, respectively; the coefficients for the correlation between R-CBM and statewide test were .71 for third graders, and .51 for eighth graders.

Furthermore, while my study demonstrated that PRF (β = .303) was a significant predictor of performance on OAKS-R in relation to vocabulary for general education students, it was weaker than VOC with (β = .443). This is supported by Espin and Deno (1993), Hosp and Fuchs (2005), and Jenkins and Jewell (1993), who indicated that after sixth grade, ORF does not adequately indicate reading performance for students. Similarly, Megert (2010) found that PRF (β = .37) presented as a weaker predictor than VOC.

Students With LD

Comprehension (MCRC). In my study, the correlation coefficients indicated a moderately strong relation between MCRC and OAKS-R (r = .600) for students with LD. Although, Fore et al. (2009) did not specifically study students with LD at the middle school level, they studied a group of middle school students identified with emotional and behavioral disorders and found that Maze (r = .89) was a stronger measure of reading comprehension than ORF (r = .45). While the previous study addressed a subset of special education students identified under the category of emotional and behavior disorders, this is a significant finding and provides evidence that MCRC can be a valid tool to predict success or failure of middle school students with LD on a statewide assessment such as the OAKS-R.

Implications for Practice

For the last 30 years, CBM has contributed to the use of student assessment data in making instructional decisions for students at risk and with disabilities (Tindal, 2013).

Research conducted in recent decades suggests that with careful and systematic instruction almost all students can become competent readers (Denton & Mathes, 2003; Lyon, Fletcher, Fuchs, & Chhabra, 2006).

However, according to the National Center for Educational Statistics (NCES, 2011), one third of fourth graders and nearly one fourth of eighth graders scored below the basic level in their reading proficiency. These data suggest that many students above fourth-grade level need intervention to improve their comprehension skills (Scammacca, Roberts, Vaughn, & Stuebing, 2013), and if they do not receive adequate intervention to improve these skills, they will lack the literacy skills needed to join the workforce or pursue postsecondary education (Kamil et al., 2008). Further, data show that over 50% of students with LD do not reach proficiency level on statewide assessments and are twice as likely to drop out of high school as their peers (Schulte, Villwock, Whichard, & Stallings, 2001; U.S. Department of Education, 2002).

Implications for Assessment

My study has important implications for practitioners. It restates the importance of CBM measures as school-based assessment methods that assess students' academic competence at one point in time, monitor students' academic progress in core academic areas, and predict students' reading performance on statewide assessments. Identifying students who are at risk of reading failure is crucial to designing appropriate interventions (Petscher, Kim, & Foorman, 2011). Having knowledge of students' skills is vital for selecting and implementing effective instruction, and student assessment data are regularly gathered and carefully measured by those with the best student outcomes (Roehrig et al., 2008; Taylor & Pearson, 2005).

According to Deno (1989) and Shinn (1989), CBM was developed to incorporate data-based decision-making into instructional planning. CBM measures concentrate on the broad goal of the curriculum, thus attending to the desired outcome of instruction and generalization of learning (Hintze & Silberglitt, 2005). Research has shown that when teachers use CBM measures as progress-monitoring tools, students learn more, teacher decision-making improves, and students are more aware of their performance (Stecker, Fuchs, & Fuchs, 2005; Fuchs, Fuchs, Karns, Hamlett, & Katzroff, 1999).

Specifically, this study demonstrates the importance of implementing evidence-based interventions with sensitivity to disability status diverse populations (National Center on Response to Intervention [NCRTI], 2010). Scores from this study indicated that vocabulary was a better predictor for general education students and comprehension a better predictor for LD students. While preliminary, my findings are the first step in providing vital information for educators because educators now have a blueprint to infer the importance of vocabulary and/or comprehension skills for designing academic interventions and focusing instruction to match students' needs with appropriate interventions. It is important to remember, though, that an intervention that focuses on comprehension does not preclude teaching fluency and vocabulary or vice versa.

CBMs provide practitioners with a quick method of obtaining empirical information on the progress of their students (Fuchs & Fuchs, 2004). Schools usually administer CBMs on one of two schedules: benchmark and/or progress monitoring (Howe, Scierka, Gibbons, & Silberglitt, 2003). Benchmarks are administered to all students on a standard schedule, usually three times per year—fall, winter and spring—while progress monitoring is administered to students who scored in the at-risk category in their benchmarks (Hintze &

Silberglitt, 2005). This study utilized spring benchmark scores. It is important to remember that these benchmark scores may be insufficient in providing individual students' growth rates; thus, practitioners are encouraged to use progress monitoring to check their problem-solving decisions for a more in-depth diagnosis of specific skills individual students are lacking.

Implications for Instruction

Improving student outcomes and meeting the new federal legislation requirements demand success on high-stakes assessments for students with and without disabilities. One method that schools are using to help students reach proficiency on statewide assessments is the use of CBMs. Given early in the year, these measures can provide districts with advance notice of a student's risk status and allow the district time to provide the necessary intervention or remediation prior to the students taking the statewide reading assessment (Nese et al., 2011). The results from this study suggested that CBM measures can provide teachers and districts with knowledge on students' performance and progress towards statewide assessments. Districts would benefit from continuing to use CBM measures as their universal screening assessments in order to identify students at risk for low reading performance (Nese et al., 2011). More specifically, my study inferred that practitioners might want to utilize different instructional strategies that concentrate on all three reading skills—fluency, vocabulary and comprehension—at different rates and intensity for each of the populations, including the general education population and for students with LD, respectively.

Schools are using the Response to Intervention (RTI) approach to identify students at risk for poor learning outcomes, monitor student progress, provide evidence based

intervention, and adjust the intensity of those interventions depending on students' responsiveness (NCRTI, 2010). The first step of the RTI system is universal screening, and if students fall below a cut score, they are given short-term progress monitoring to determine in more depth their specific deficits. These progress-monitoring tools must represent a student's academic development and must present with information for instructional purposes and assess student's learning (NCRTI, 2010).

When a student is identified in the at-risk category, evidence-based interventions are provided in addition to the core primary instruction (NCRTI, 2010). This study indicated that VOC was a better indicator for middle school general education students, and MCRC was a better predictor of reading performance on statewide assessments for middle school students with LD. Low scores on CBMs in the spring will provide teachers with the information to design instructional interventions with sensitivity to academic and nonacademic variables indicated in this study.

Implications for Resource Allocation

According to Espin and Deno (1993), Hosp and Fuchs (2005), and Jenkins and Jewell (1993), after sixth grade, ORF does not adequately indicate reading performance for students. These findings have great implications for the use of oral reading fluency at the middle school level for the purpose of predicting statewide outcomes (Silberglitt et al., 2006). While the PRF measure was a significant predictor, VOC and MCRC were better predictors, which supports the suggestion by Yovanoff et al. (2005) that PRF is a less sensitive measure of reading performance than the vocabulary measure in the upper grades. Although, my study was limited to seventh-grade students, the findings of Fuchs et al. (2001) indicate that the relationship between ORF and comprehension is stronger with

elementary students and junior high students than with older individuals; this suggests that my findings might be even more relevant for students in middle school and high school.

Students with LD. The findings of my study indicated MCRC was a better predictor for students with LD. These results are vital to a district's decision-making process when designing interventions for middle schools students with LD. A careful and systematic design of instruction is vital for students with LD because their passing or failing of the state test is a requirement for them to graduate (Tichá et al., 2009).

As it was demonstrated in my literature review, students with LD experience severe problems in reading. My study highlights the difficulties that students with LD have with reading skills, but in particular with comprehension skills. Williams (1993) suggested that students with LD struggle with comprehension skills because they have specific difficulty getting the point of the story possibly due to not using background knowledge. According to Anderson and Pearson (1984), comprehension depends on the reader's background knowledge and vocabulary used in the text. Furthermore, students with LD have limited background knowledge such as in history, geography and science, which impedes them from learning to understand (Gersten et al., 2001). As students move from elementary to secondary grades, comprehension skills become very crucial to their success in gaining information and engaging with text (Gardill & Jitendra, 1999). Because of the findings in this study, as well as the importance that research has demonstrated in regards to comprehension skills and the success of students with LD at the middle school level, practitioners may think about focusing on strategies and interventions that emphasize comprehension skills, but they also must include fluency and vocabulary instructional components.

It is important to note that even though ORF was not a strong indicator in this study, Allinder, Fuchs, and Fuchs (1998) demonstrated a relationship between students' rate of oral reading and performance on standardized tests of reading comprehension. In their study of seventh-grade students with LD, Allinder, Dunse, Brunken, and Obermiller-Krolikowski (2001) found that students who used an oral reading fluency strategy performed significantly better on the maze, which suggests that fluency and comprehension are closely related. These findings should caution practitioners at the middle school setting to include fluency in their reading programs when designing interventions for struggling readers or students with learning disabilities (Allinder et al., 2001).

General Education students. The results of my study indicated that VOC was a stronger predictor for the general education population. As demonstrated earlier, when students move from an elementary to a secondary setting, vocabulary transforms from simple words to words that are more abstract and more difficult to understand (Yovanoff et al., 2005). Furthermore, these researchers suggest the importance of shifting instructional approaches and measurements to match students' grade-level reading needs and their psychological development. Once students have reached a functional level of fluency, demonstrating that the student is not focusing on decoding skills, emphasis on vocabulary skills becomes important (Yovanoff et al., 2005). My findings suggest that educators may want to start the problem-solving discussion with emphasis on vocabulary skills for the general education population but still include fluency and comprehension components.

Future Research

This study indicated a strong relation between CBMs and success on statewide assessments. More important, it suggests practitioners must be sensitive to disability status

and nonacademic variables when designing interventions for middle school students. Educators can use this information to identify students at risk for reading at an early time and provide them with the necessary instruction and intervention to speed up their ability for success on statewide assessments.

My study focused on only one year, and further research is warranted across years to examine the long-term prediction of CBMs on the OAKS at the middle school level. There is a need for a longitudinal study that can demonstrate the ability of CBMs to predict success or failure for students with learning disabilities at the middle school level across school years into high school. Besides, looking across years, a study that uses sixth-, seventh- and eighth-grade scores, as well as OAKS scores, to examine the growth or the decrease of students in the at-risk category at the ninth grade would be more informative.

In addition, research must be conducted on the longitudinal efficiency of interventions for general education and students with learning disabilities at the middle school level. Ideally, the research project should begin during the first year of middle school and continue throughout the middle school years into high school. The goal is to decrease the number of students who fall in the at-risk category and the number of students who are in general education and are slipping into the at-risk category. The data need to show if educators are intervening early enough and are utilizing effective interventions based on the CBM scores to decrease the number of students in the at-risk category by eighth grade.

Conclusion

Reading is one of the basic skills that students learn, and those who develop good reading skills have a better chance to succeed at school and become productive members of society (Adams, 1990; Forster & Souvignier, 2011). Those who experience reading

difficulties are less likely to succeed and more likely to experience academic and behavior problems at school (Cunningham & Stanovich, 1998). According to Fletcher, Morris, and Lyon (2003), Snow, Burns, and Griffin (1998), and Torgesen et al. (2001), a large number of students enter upper elementary and middle school with severe reading deficits in basic, automatic word identification, decoding, fluency and comprehension skills, and a number of these students are identified as needing special education services.

In order for students to be successful, they must decode difficult words, read fluently, understand word meaning, monitor their learning, and summarize and connect ideas (Lenz, Ellis, & Scanlon, 1996). At the middle school level, there is a huge focus on new vocabulary, connecting and summarizing ideas, organizing and remembering information (Readance, Bean, & Baldwin, 1998). Thus, multiple reading interventions are necessary in order for students to be successful learners (Bryant et al., 2000).

According to Manset-Williamson and Nelson (2005), providing middle school students with reading instruction is not an easy task and practitioners must be aware of the effect interventions have on individual students' needs. Using CBM benchmarks that are given three times per year, as well as progress monitoring administered at least monthly for students in need for more intensive reading interventions, provides practitioners with the knowledge of what is possible for students with learning disabilities to achieve, rather than what is likely they will achieve (Deno et. al., 2001). When teachers selected effective interventions, students with learning disabilities achieved growth rates comparable to those of their regular education peers (Deno et al., 2001).

The results of this study further support the empirical research conducted over the years on the utility of CBMs as progress-monitoring tools, performance indicators of reading

skills, and predictors of success or failure on statewide assessments. In addition, they support the ability of CBMs to differentiate between student groups of various proficiency levels and students from diverse backgrounds, such as those with disability status (Fewster, & Macmillan, 2002). More important, these findings inform practitioners with potentially vital data on how to utilize assessments efficiently and design instructional strategies at an early stage to match each student's individual deficits and develop their reading skills.

Low scores on CBM reading measures in the spring have the potential to inform practitioners with the necessary data to place students in appropriate interventions in the coming fall. Using a proactive approach by which they gauge students' skills, monitor them throughout the year, and make instructional adjustments accordingly, practitioners have the potential to increase students' chances of succeeding in statewide assessments and improving their overall reading skills.

Additionally, this study points to differences by group on CBMs and performance on the OAKS. Vocabulary was a stronger predictor of performance for the general education population, while comprehension was a stronger predictor of performance for the LD population, thus cautioning practitioners to select instructional strategies and interventions with sensitivity to student needs and disability status instead of universally based on the entire population in their schools. It must be noted that the conclusions of this study should be viewed within the limitations previously noted. Though it does not demonstrate direct cause-and-effect conclusions, it does highlight the use of CBM reading measures as tools to identify students at risk for reading problems and to predict student performance on statewide assessments. Provided with this information, practitioners increase the chances to find the best approaches to assess, monitor and improve reading skills of students.

Finally, this study supports the use of CBM reading tools that have proven to be effective for students who need additional assistance with their reading deficits. Early and frequent assessments and interventions with students with LD are important as it impacts all the other aspects of their educational experience and achievement. The study points to both assessment tools and differing student populations that help to direct effective interventions. Though the relation between CBM reading measures and statewide assessments has been reported by numerous studies, this study continues to suggest that it would be helpful if this study were replicated to determine the strength of these findings in a variety of school-based setting with students of other diverse backgrounds. This will offer practitioners greater expertise on how to best screen and monitor students, so they can predict performance on statewide assessments and design appropriate interventions in a timely manner.

APPENDIX A

SAMPLE ORAL READING FLUENCY PASSAGE: GRADE 7

easyCBM Fluency – Spring

Assessor Copy Form 7 – Spring

Student Name: _____ Date: _____

1.Place the first passage without numbers in front of the student. Point to any names in the document and tell the student how to say the name. Then say:

"This is a story about Benjamin. I want you to read this story to me. You'll have 1 minute to read as much as you can. When I say "begin," start reading aloud at the top of the page. Do your best reading. If you have trouble with a word, I'll tell it to you. Do you have any questions? Begin."

2. Start the timer.
3. While the student is reading, mark errors with a slash (/).
4. At 1 minute, mark the last word read with a bracket (]).
5. When the student gets to a logical stopping place, say "**Stop**."

Benjamin leaned over and stretched, concentrating on tying his running shoes and	12
trying not to get too nervous. The biggest relay race of the spring track season was	28
about to begin, and he was worried about letting his teammates down. All week in	43
practice, he'd been struggling to pass the baton without dropping it, but because he'd	57
managed to make a successful pass only a little more than half the time, he knew he had a	76
good reason to worry. He hated to think about how terrible he would feel if he let	93
everyone down, especially since the audience for this particular race was expected to be	107
immense!	108
He started to feel even more stressed when he saw his coach walking his direction.	123
What should he say to her if she asked him if he was prepared? Should he try to pretend	142
that he was confident although inside he could feel himself trembling? Deciding that	155
pretending he was confident was the best bet, Benjamin took a really deep breath and	170
faked a smile as she stopped in front of him. As soon as he looked up and saw his coach's	190
face, though, Benjamin realized how foolish his decision had been. There was no way he	205
could fool her; it wasn't worth the attempt.	213
His coach just stood there, looking down at him with a gentle half-smile on her	228
face. Finally, Benjamin felt himself settling down. It was as though the coach's	242
in him and his teammates had somehow been transferred to him through her kind glance.	257
He grinned back, more sincerely this time, and gave her the 'thumbs up' sign with	273
enthusiasm. "Maybe," he thought, "today will be different." With a final stretch, he	286
adjusted his team number and jogged over to the starting line, determined to try his	301
absolute hardest.	303

Total Words Read: - # of Errors: = CWPM

Student Copy Form 7 – Spring

Benjamin leaned over and stretched, concentrating on tying his running shoes and trying not to get too nervous. The biggest relay race of the spring track season was about to begin, and he was worried about letting his teammates down. All week in practice, he'd been struggling to pass the baton without dropping it, but because he'd managed to make a successful pass only a little more than half the time, he knew he had a good reason to worry. He hated to think about how terrible he would feel if he let everyone down, especially since the audience for this particular race was expected to be immense!

He started to feel even more stressed when he saw his coach walking his direction. What should he say to her if she asked him if he was prepared? Should he try to pretend that he was confident although inside he could feel himself trembling? Deciding that pretending he was confident was the best bet, Benjamin took a really deep breath and faked a smile as she stopped in front of him. As soon as he looked up and saw his coach's face, though, Benjamin realized how foolish his decision had been. There was no way he could fool her; it wasn't worth the attempt.

His coach just stood there, looking down at him with a gentle half-smile on her face. Finally, Benjamin felt himself settling down. It was as though the coach's confidence in him and his teammates had somehow been transferred to him through her kind glance. He grinned back, more sincerely this time, and gave her the 'thumbs up' sign with growing enthusiasm. "Maybe," he thought, "today will be different." With a final stretch, he adjusted his team number and jogged over to the starting line, determined to try his absolute hardest.

APPENDIX B

SAMPLE VOCABULARY: GRADE 7

Vocabulary 7_Spring

Student Name:_____ Date:_____

1. Sara's little brother stacks the blocks as high as he can before they all **collapse**. **collapse** means:

   A. stop working **B.** fall down **C.** grow larger

2. A sleepy dog **basks** on the carpet near a sunny window. He had his tongue hanging out, with a doggy grin on his face. **basks** means:

   A. lying down relaxed **B.** curled up and shivering **C.** running and barking

3. Marcia sets to work on cleaning up the **dingy** old apartment, sweeping the floors and washing the windows. Here **dingy** means:

   A. large **B.** historical **C.** dirty

4. Vince's grandma tucks him into his sleeping bag. "Now you're **snug as a bug in a rug**," she says. **snug as a bug in a rug** means:

   A. baggy and loose **B.** comfy or cozy **C.** itchy or infested

5. Mary has a **tradition** of baking a pie on the first day of rain every year. Her friends come over when they see the first rain. **tradition** means:

   A. holiday festivity **B.** established event **C.** dessert baking

6. The **decoy** for the celebrity was supposed to distract the media from following him to his grandmother's house. Here **decoy** means:

   A. imitation **B.** news **C.** fans

7. The old sailor did not **begrudge** his crew for wanting to dock early to rest. The storm had taken a toll on his own strength as well. **begrudge** means:

   A. disapprove of **B.** forget about **C.** take seriously

8. The team felt **melancholy** after their one point loss. **melancholy** means:

   A. charmed **B.** exhausted **C.** dejected

9. Sara serves us hot **beverages** like tea, coffee, and hot chocolate. A **beverage** is something to:

   A. boil **B.** drink **C.** decorate

10. The road was **repaved** after the storm washed part of it away. **repaved** means:

    A. reconnaissance **B.** reconstructed **C.** reconciled

APPENDIX C

SAMPLE MULTIPLE CHOICE COMPREHENSION: GRADE 7

easyCBM Comprehension – Spring

Student Copy, Form 7 – Spring

Directions: Please read the story and then answer the questions that come after it.

The Concert

A black cloud hung over Steven as he sat on the entrance steps of the coliseum and glumly considered his situation. As he sat there, he was tortured by the muffled sounds of the sound check, which marked the beginning of the concert he wanted to attend more than any other, ever. Things did tend to go wrong for Steven, and they had really gone wrong this time.

Under any other circumstances, listening to the pre-concert sound-check would have filled him with unbounded excitement, as it would mean that Steven was about to see his favorite band in the world, The Half Masters. Steven was only dozens of yards away from his musical heroes, but it was his friends, Kevin, Margo and Tom who were about to receive a heaping helping of rock and roll. So here he was, sitting alone, outside the coliseum where The Half Masters were about to play, without a ticket and without any means of getting in. He should have known something like this would probably happen, but how had it happened this time?

Steven's mind flew back to how his misfortune had begun. It had started the night before, when Steven and his friend Margo were sitting in his family room listening to an internet radio station that was giving a sneak preview of The Half Masters' latest album. He and his friend debated hotly about who each thought was the best member of their favorite band. For Steven, the best member was, without a doubt, Masako Shibata, the front woman whose unusual voice made every song seem like it was being transmitted from some other realm. Steven listened again to Margo's argument in favor of Thom Veneer for what seemed like the millionth time. "He is simply the greatest drummer the world has ever seen," she asserted, "and I can name at least five music critics who think the same thing."

Steven was about to make his usual rebuttal when the voice of the radio DJ interrupted him. "All right, people, you just heard the newest from your favorite band and mine, The Half Masters! Now it's your chance to win four tickets for a secret Half Masters concert in…[he made a vocal drum roll]...the Shelbyville Coliseum, tomorrow night at 8:00!"

Steven's heart started beating in his throat as he thought about the

Shelbyville Coliseum being little more than an hour away from their town. He knew he hadn't a chance of winning, and that he and Margo had no way of getting to the concert without drivers' licenses or cars if they did win, but he simply had to get to that concert. "How do we win them?" Steven asked.

As if he was reading Steven's mind, the DJ continued, "Just be the 1000th person to send a text message to 1-800-555-MAST that says Half Mast Tix Plz and your phone number!" Without even speaking to one another, Steven and Margo both whipped out their cell phones, and with hearts racing, their fingers began a flurry of activity on the keys.

After about ten minutes, Steven's thumbs felt as though they had just run a marathon, and he wasn't sure they would ever move the same again. Not only that, but he

was sure that he and Margo must've sent 1000 text messages just between the two of them, and his spirits sank as he realized they must not have won the tickets. The gloom set in again. The Half Masters would be playing a rare concert less than 100 miles from his house, and he wouldn't be there. Just then, an incoming text alert sounded on Steven's phone, giving him a fresh shot of adrenaline. He punched the open button on his phone and stared in amazement at the short text message before him. "Congratulations," it said. "We will call tomorrow to give you the address where you can pick up the Half Masters tickets."

"Margo…" Steven seemed to have lost his ability to speak, though his mouth hung open. He was almost afraid to say anything because the magic spell might suddenly be broken. "Margo…look," he eventually managed to say.

"I can't believe it, Steven!" she shrieked while jumping up and down. "We won, we won!" However, her next words sent them both hurtling back to earth. "But Steven," she asked, "will your parents let you go? And if they do, how will we get to the concert in Shelbyville?"

She saw the look on Steven's face and said, "Listen, Steven, don't panic.

Winning the tickets was the hard part, right? Surely if we can win the tickets, we can figure a way to get to the concert. Stop worrying. Your parents will let you go, I'm sure, and we'll find a way to get there."

Steven stared starkly ahead with hunched shoulders and moaned. He knew that winning the tickets was just the beginning of his problems.

Margo didn't notice the shadow passing over Steven's face because she was considering the more practical aspects of their situation. "I know that my mom won't be able to take us because she works the late shift tomorrow, so let's try your parents. Come on, give them a call."

Steven glumly pulled out his phone and called his parents while Margo waited with anticipation listening to Steven's side of his telephone call to his parents. "Hey, Dad! Guess what? I won tickets to see the Half Masters...No, no, I really won them…No, Dad, it's not a hoax, not this time…I just know it, that's all…It's tomorrow…Yeah, I know it's short notice, but that's when it's happening…But Dad, I have to go…Please Dad…Because Margo needs me…She can't go unless I go…Yeah, at 8:00. Can you drive us?....Why not?…Yeah, but we could have dinner with Grandma on another night....Well, how will I get there then?.....Are you sure you can't drive us?....Okay...Okay….Yeah, I'll call you back when I find out…..Okay, Dad." Steven looked distraught as he hung up his phone and looked at Margo.

"Well, I have good news and bad news," he said. "I can go to the concert, but my parents said I'll have to find a ride with someone else."

"Well, that's okay," said Margo. "At least you can go. We just have to decide who gets the extra tickets, and maybe they'll be able to drive us to the concert. Any ideas?"

Steven managed to push away gloomy thoughts long enough to rack his brain, as he considered which of his friends would not only appreciate a Half Masters concert, but also would be able to arrange for a ride to Shelbyville. His friend Nate loved The Half Masters, but like Margo, Nate's mom was a single parent who often worked late. His friends James and Elise both had parents who would be willing to provide rides for their kids, but James and Elise were both hip hop fans who didn't care for The Half Masters' sounds.

"I know who would be perfect," exclaimed Margo, suddenly snapping her fingers. "Kevin and Tom both totally love The Half Masters, and I bet Tom's dad would be willing to drive us. He's a great guy!"

"That sounds like an awesome plan, Margo," said Steven. "It might work. Give Tom a call and see if you can arrange it," and he crossed his fingers and waited hopefully.

Steven couldn't believe it. Just like that, Steven and Margo's plan had come together like well-fitted puzzle pieces. Kevin and Tom had been thrilled to get a chance to see the Half Masters, and Tom's dad was more than happy to drive the kids to the concert. Less than 24 hours later, after a brief stop to pick up the tickets at the radio station, Steven, Margo, Kevin and Tom had been dropped off by Tom's dad in front of the Shelbyville Coliseum.

"All right you guys," Tom's dad said, "it's 7:30 now, and the concert ends at 11:00. I'll meet you back here at 11:15. I'm going to find a coffee shop and get some reading done in the meantime. Now stick together and be good! Okay?"

"Okay!" replied everyone in unison, and they clambered out of the car excitedly and ran towards the coliseum entrance.

"Hey, Steven! Hold on a second," Tom's dad yelled. "You're going to burn up if you wear that jacket inside that packed stadium." Steven looked down and realized he was wearing a fairly thick jacket. "Why don't you leave it in the car, so you don't have to tell your parents that you lost it?" Tom's dad suggested.

Steven certainly didn't want to lose yet another expensive jacket and appreciated the help sidestepping a possible problem. "Thanks for the suggestion," he said, smiling. He threw his jacket in the back seat and sprinted up the steps to rejoin his friends.

Steven's little group chatted excitedly as they waited in line for the security guard to take their tickets and discussed which songs they hoped The Half Masters would play. Steven was about to voice his support for a set composed entirely of new material, when he felt a tap on the shoulder. "Tickets please," the guard said, and one by one, Steven's friends produced their tickets and walked through the front doors of the coliseum.

Steven went to grab his ticket when he suddenly had a horrible realization. His ticket was still in his jacket pocket, which was now in the back of Tom's car somewhere in Shelbyville. He should have known things were going way too smoothly. "I'm sorry, I seem to have lost my ticket," Steven said to the guard. "Let me call my friend."

Steven stepped aside and dialed Tom's cell phone, hoping that if he called his dad, he'd be able to shuttle Steven's ticket back to him. Steven listened as his call to Tom rang on and on. He tried again and again but with no success. "He must not be able to hear his phone through all the noise," he reasoned to the guard. "If I could just go in and have him call…"

"Sorry," the guard interrupted. "I can't let you in without a ticket. You'll just have to hope that your friends come out to find you. Sorry."

So there Steven sat, collapsed on the coliseum steps in defeat and heaving exasperated sighs of frustration. He couldn't believe that he'd won tickets to see his favorite band, but was now going to be subjected to listening to them from outside the coliseum. He felt as though he was ready to dissolve into tears. His dad was right, the world wasn't fair, and you could never get a break. His frustration grew so great he jumped up and furiously stomped the ground and screamed. He had believed that his luck couldn't get any worse, but when he stomped the ground, he felt that sticky feeling that comes when you've stepped on a big wad of used chewing gum.

"Oh, great," Steven said dejectedly, sitting again. "Just what I needed." He slipped off his shoe and, turning it over, saw the wad of gum he was expecting, but he also saw something else. A rectangular piece of paper was sticking to the gum. He looked closer and was stunned to realize that it was a valid ticket to the Half Masters concert. Steven looked around to see who had lost it, but aside from the guard, everyone else had gone into the concert.

The black cloud that had surrounded Steven cleared, and as if in a dream, he climbed the stairs and extended his ticket to the guard. He walked into the coliseum and heard a voice ringing in the air, "This next song is the first song off our new album." A smile spread across his face. Maybe his luck really had changed…just this once.

1. At the start of the story, why did Steven think his friends were going to get a heaping helping of rock and roll and he wasn't?

A. They arrived at the coliseum on time.
B. They had better seats than Steven.
C. They were inside the coliseum.

2. How did Tom's dad feel about helping the kids get to the concert?

A. He was happy to help them get there.
B. He thought it was an imposition.
C. He only did it to make Tom happy.

3. What did Steven do right after he discovered that a ticket was stuck to the gum on his shoe?

A. He took his shoe off to check out what was on the bottom.
B. He ran back to the coliseum to give his ticket to the guard.
C. He looked all around him to see who might have lost.

4. After he and Margo stopped sending text messages, why did Steven think they must not have won?

A. He thought that they hadn't won the tickets because they hadn't started sending messages soon enough.
B. He thought he and Margo must have sent more than the 1000 messages needed for a winner.
C. He thought they lost because they had to stop sending text messages when their thumbs got sore.

5. After winning the tickets, what plan did Margo and Steven come up with to get a ride to the concert?

A. Give the extra tickets to friends whose parents liked the Half Masters and thought their children should see them.

B. Give the extra tickets to their friends who liked the band and had a parent who would be willing to drive them.

C. Figure out which friends had the nicest parents, and give the tickets to the parents to give to their children.

6. How many tickets did Steven win?

A. Four.

B. Two.

C. One.

7. What best describes Steven?

A. He had a negative attitude, even when things seemed to go well for him.

B. He was easily discouraged but mostly managed to keep a positive attitude.

C. He only showed a negative attitude when things were going badly for him.

8. What made a smile spread across Steven's face when he walked into the coliseum to take his seat?

A. He knew he would soon be sitting with his friends.

B. He heard the band playing their newest release.

C. He heard the band announce one of their new songs.

9. What was the main reason Steven agreed to leave his jacket in the car?

A. The jacket was fairly thick and would be too heavy to carry.

B. Tom's dad told Steven he had to leave the jacket in the car.

C. He had lost a jacket before and didn't want to lose another one.

10. What was the biggest problem for Steven in this story?

A. He needed to find a ride to the concert.

B. The jacket with his ticket was left in the car.

C. His attitude kept him from getting things done.

11. How did Steven feel when he first heard on the radio about the prize that was being offered?

A. He knew he might win.

B. He thought he couldn't win.

C. He was positive he could win.

12. How much of Steven's problem of getting to the concert was solved by his phone conversation with his dad?

A. Half of the problem was solved.
B. None of the problem was solved.
C. All of the problem was solved.

13. How was Steven feeling at the end of the story?

A. He was glad that at least one lucky thing had finally happened to him.
B. He believed his luck had changed for the better and would stay that way.
C. He was thankful he had a ticket but thought that something would go wrong.

14. How long would it take for Steven and his friends to get from their town to the coliseum by car?

A. Exactly one hour.
B. More than an hour.
C. Less than an hour.

15. Why was Steven unable to speak when he found out he had won the tickets?

A. He was so excited about winning that he couldn't think of what to say.
B. He knew they had made a mistake, and he didn't want to tell them.
C. He was afraid that something would happen to make the win untrue.

16. What was Margo like?

A. She liked solving problems but got discouraged if they didn't turn out well.
B. She always had a positive attitude about solving any problems that came up.
C. She had a positive attitude, except for when Steven became discouraged.

17. At the start of the story, why did Steven feel tortured?

A. He was waiting for the concert by his favorite band to begin.
B. He could hear the sound of the band inside, but he was outside.
C. He always wanted things that he couldn't have no matter what.

18. What will probably happen the next time Steven has problems similar to the situation with the concert ticket?

A. He will begin to think that he will never win and that everything will probably go wrong for him just like usual.
B. He will remember the ticket and feel like he might win again so he will trust that everything will turn out okay.
C. He will show a more positive attitude and figure out how to work through problems that might come up.

19. What happened right after the guard at the coliseum asked Steven for his ticket?

A. Steven's friends gave the guard their tickets and went inside.

B. Steven said he was sorry that he had lost his ticket.

C. Steven went to grab his ticket from his jacket pocket

20. What was this story mostly about?

A. How a boy's life of bad luck finally transformed to a life of good luck.

B. The best way to solve problems that come up when trying to get to a concert.

C. The experiences of a boy who thought that things never went well for him.

APPENDIX D

SAMPLE OAKS LITERATURE: GRADE 7

SAMPLE TEST

Reading/Literature

2011-2013

GRADE 7

Vocabulary

Read to Perform a Task

Demonstrate General Understanding

Develop an Interpretation

Examine Content and Structure: Informational Text

Examine Content and Structure: Literary Text

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THE OREGON DEPARTMENT OF EDUCATION

DIRECTIONS

Read each of the passages. Then read the questions that follow and decide on the BEST answer. There are a lot of different kinds of questions, so read each question carefully before marking an answer on your answer sheet.

PUPPY LOVE

Read this true story about a dog who did some amazing things to help a friend.

ERIC SEAL THOUGHT THE scrawny puppy at his feet was perhaps five weeks old. Sometime during the night, the little mixed-breed female had been dumped at the Seals' front gate.

"Before you ask," he told Jeffrey, his wife, "the answer is an absolute no! We are not going to keep it. We don't need another dog. When and if we do, we'll get a purebred."

As though she hadn't heard him, his wife sweetly asked, "What kind do you think it is?"

Eric shook his head. "It's hard to tell. From her color markings and the way she holds her ears in a half-lop, I'd say she's part German shepherd."

"We can't just turn her away," Jeffrey pleaded. "I'll feed her and get her cleaned up. Then we'll find a home for her."

Standing between them, the puppy seemed to sense that her fate was being decided. Her tail wagged tentatively and she looked from one to the other. Eric noticed that although her ribs showed through a dull coat, her eyes were bright and animated.

Finally, he shrugged his shoulders. "Okay, if you want to fool with her, go ahead. But let's get one thing straight: We don't need a Heinz-57 mongrel."

The puppy nestled comfortably in Jeffrey's arms as they walked toward the house. "One other thing," Eric continued. "Let's wait a few days to put her in the pen with Tex. We don't want Tex exposed to anything. He has

all the troubles he can handle."

Tex, the six-year-old cattle dog the Seals had raised from a puppy, was unusually amiable for a blue-heeler, a breed established by ranchers in Australia. So, although he already shared his doghouse with a yellow cat, soon Tex happily moved over and made room for the new puppy the Seals called Heinz.

Not long before Heinz showed up, the Seals had noticed that Tex appeared to be losing his eyesight. Their veterinarian said he thought the dog had cataracts that might be surgically removed.

But when they brought Tex to a specialist in Dallas, he determined that the dog's poor eyesight was only partially due to cataracts. He made an appointment for Tex at the local college's veterinary laboratory.

Doctors there determined that Tex was already blind. They explained that no medical or surgical procedure could have halted or delayed Tex's progressive loss of vision.

As they talked on their way home, the Seals realized that over the last few months, they had watched Tex cope with his blindness. Now they understood why Tex sometimes missed a gate opening or bumped his nose on the chain-link fence. And why he usually stayed on the gravel walkways traveling to and from the house. If he wandered off, he quartered back and forth until he was on the gravel again.

While the couple had been preoccupied with Tex's troubles, Heinz had grown plump and frisky, and her dark brown-and-black coat glowed with health.

It was soon obvious that the little German shepherd crossbreed would be a large dog—too large to continue sharing a doghouse with Tex and the yellow cat. One weekend, the Seals built another doghouse next to the one the dogs had shared.

It was then they recognized that what they had assumed was puppy playfulness—Heinz's pushing and tugging at Tex while romping with him—actually had a purpose. Without any training or coaching, Heinz had become Tex's "seeing eye" dog.

Each evening when the dogs settled in for the night, Heinz gently took Tex's nose in her mouth and led him into his house. In

the morning, she got him up and guided him out of the house again.

When the two dogs approached a gate, Heinz used her shoulder to guide Tex through. When they ran along the fence surrounding their pen, Heinz placed herself between Tex and the wire.

"On sunny days, Tex sleeps stretched out on the driveway asphalt," says Jeffrey. If a car approaches, Heinz will nudge him awake and guide him out of danger.

"Any number of times we've seen Heinz push Tex aside to get him out of the horses' way. What we didn't understand at first was how the two could run side by side, dashing full speed across the pasture. Then one day, the dogs accompanied me while I exercised my horse, and I heard Heinz "talking'—she was making a series of soft grunts to keep Tex on course beside her."

The Seals were awed. Without any training, the young dog had devised whatever means were necessary to help, guide and protect her blind companion. It was clear that Heinz shared more than her eyes with Tex; she shared her heart.

1

What does the word progressive mean as it is used in the story?

A. Modern
B. Complete
C. Increasing
D. Encouraging

2

The two themes most strongly associated with this story would be

A. loyalty and friendship.
B. loss and loneliness.
C. bravery and loss.
D. friendship and ownership.

3

When the two dogs ran along the fence, Heinz placed herself between Tex and the wire to

A. make sure Eric saw her.
B. keep Tex from bumping it.
C. hide Tex‟s blindness from others.
D. show how fast they could run.

4

The image of Heinz guiding Tex in and out of his house is included to show how

A. rough Heinz often is with Tex.
B. understanding Heinz is with Tex.
C. much Tex likes to be in his house.
D. Tex has no idea what his house is for.

5

Eric Seal wanted to wait a few days to put Heinz in the pen with Tex because he

A. didn‟t want the strange dogs to fight.
B. wasn‟t sure if they would fit.
C. didn‟t think it was fair to the yellow cat.
D. didn‟t want Tex exposed to anything.

NOTHING TO SNEEZE AT

In this article, a veteran backpacker gives advice on how to deal with allergies on the trail.

DONNA GRIFFITHS MADE ALLERGY HISTORY when she was 12 years old. Starting in 1981, the British girl sneezed every few minutes for 977 consecutive days. Doctors estimate Griffiths ah-chooed 1 million times the first year; she eventually slowed to a sneeze every 5 minutes.

Fortunately for most of us, battling allergies is a mercifully short springtime affair. Still, there are few things as frustrating as finally getting on the trail only to have your vistas blurred by watery eyes and the smell of evergreens lost in your sniffles. And there‟s plenty of it going around: Researchers at the American Academy of Allergies, Asthma, and Immunology estimate that allergic rhinitis, or hay fever, affects at least 36 million Americans each year. But

don't despair. Doctors agree there's no reason seasonal allergies should keep you from enjoying your favorite backcountry haunts. With the right mix of preparation, knowledge of when plants pollinate, and treatment options, you'll be able to stop and smell the grasses without giving Griffiths a run for her record.

"The first thing you should do is find out what you're allergic to," advises Adela Taylor, M.D., a physician at the North Carolina - based Mountain Allergy Clinic. Although culprits differ regionally, the most common backcountry allergens include mold spores and pollens from grasses, ragweed, and trees, especially birch and oak. Contrary to popular belief, wildflowers probably won't make you sneeze. Their pollen is too sticky and heavy, says Dr. Taylor, to float up your nose.

If you're not sure what's causing your reaction, a simple skin test by your doctor can pinpoint it. "Then you can determine what time of year you should or shouldn't go camping," Dr. Taylor says. Use this timeline as a rough guide.

In the lower 48, grasses start to pollinate in May and June, but can continue through the summer at higher elevations.

Sagebrush, ragweed, and tumbleweed pollinate in the fall.

Trees release billions of pollen cells in early spring, often before leaves appear.

Molds can release spores for much of the year if their habitat remains moist.

Short of searching the trail for pollen, specific grasses, or those wispy feathers from pollinating cottonwood trees, there's not much you can do to assess allergen levels on your chosen route. You can check daily pollen counts at the National Pollen Network (www.allernet.com/DAILY), but "your eyes and nose will probably tell you first," says Dr. Taylor.

If you get caught hiking in the wrong season, try one of these trail-proven tricks to mitigate your allergy symptoms.

Time hikes for mornings, when plant pollens are heavy with dew.

Sit tight when the wind blows. "Breezy days are going to be worse," says Richard Honsinger, Ph.D., a clinical

professor at the University of New Mexico, "because pollens can drift in the wind for hundreds of miles."

Pick trails and tent sites above treeline. You'll find the fewest irritants on rocky terrain.

Find a lake and pitch camp on the downwind side. The water may collect allergens as the wind blows them across, says Kim Spence, M.D., a family physician and backpacker based in Carbondale, CO.

Avoid the irritants completely. If you're allergic to juniper, head east into forests of oak and elm. Does hickory make you sneeze? Hike in Washington's Olympic National Park. **Load up on antihistamines.** Nondrowsy drugs such as Allegra, Claritin, and even the asthma medication Singulair can work wonders in stopping allergy symptoms. Ask your doctor.

Try saltwater. Caught in the woods without your meds? Flushing your eyes and nose with saline removes the allergens and can dramatically improve your symptoms, says Dr. Spence.

6

Which of the following statements from the article is an opinion, rather than a f act?

A. "Their pollen is too sticky and heavy, says Dr. Taylor, to float up your nose."
B. "Still, there are few things as frustrating as finally getting on the trail only to have your vistas blurred by watery eyes..."
C. "Starting in 1981, the British girl sneezed every few minutes for 977 consecutive days."
D. "Researchers at the American Academy of Allergies, Asthma, and Immunology estimate that allergic rhinitis...affects at least 36 million Americans each year."

7

As used in this selection, the word mitigate means

A. agitate.
B. intensify.
C. lessen.
D. remove.

8

Each of the following is identified by the author as a way to avoid serious allergy problems EXCEPT

A. preparation, or finding out what you're allergic to.
B. knowledge of when plants pollinate.
C. remaining indoors during hot, humid weather.
D. using one or more treatment options.

9

Information in the "timeline" provided as a guide for when you should and shouldn't go camping leads to the conclusion that people with allergies should camp

A. in areas free of sagebrush and ragweed in the fall.
B. in high elevations in the summer.
C. before leaves appear in the spring.
D. at places and times based on their specific allergy.

10

The author probably wrote this article so readers

A. will be more aware of allergies caused by plants.
B. will find out what they're allergic to.
C. know what specific plants cause allergies.
D. know how to deal with allergies while hiking.

11

Which "trail-proven trick" suggests flushing your eyes with saline?

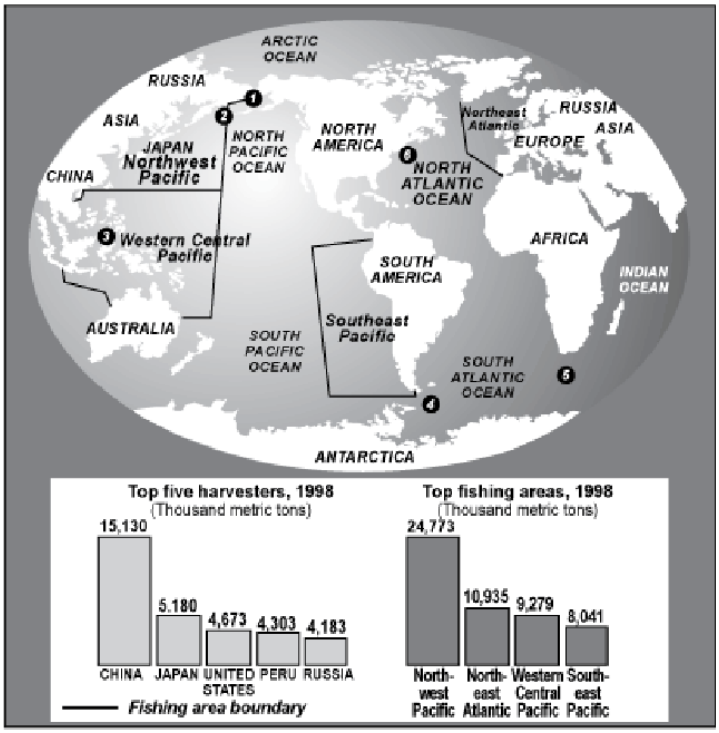
A. Try saltwater
B. Load up on antihistamines
C. Time hikes for mornings
D. Avoid irritants completely

CONTINUE ON TO THE NEXT PAGE

CONSERVING THE SEA

In the Pacific Northwest, we often hear news reports dealing with the problem of fairly managing the resources of the sea. By reading this article, you'll see that similar issues are being experienced across the world.

HOW MUCH CAN WE TAKE from the sea? How much can the sea take? Bigger boats, with bigger nets and better electronics, plow the ocean for fish. The global harvest soared from 17 million metric tons in 1950 to 78 million tons in the mid-1980s and has leveled off at that figure. In addition, an enormous amount is wasted as bycatch—unwanted species that are caught along with the target. Each year an estimated 20 to 40 million dead fish are thrown back.



❶ Heavily fished Alaska pollock, often sold as imitation crabmeat, is also favored by endangered Steller sea lions. Regulations seek to reduce competition in U.S. waters.

❷ Seabirds, including the rare and endangered short-tailed albatross, become entangled and die on longline hooks of the North Pacific fishery.

❸ Dynamite and cyanide fishing damage reefs. Climate change may spur high temperatures that bleach the Great Barrier Reef.

❹ Sold as Chilean sea bass, Patagonian toothfish draw fleets to the Antarctic. Illegal landings exceed the 14,500- ton limit by at least 7,000 tons.

❺ The bite of longline hooks threaten even great white sharks. They are protected off Austrailia, the Maldives, southern Africa, and parts of the U.S.

❻ Off New England, tough restrictions on Georges Bank are bringing back haddock and yellowtail flounder fisheries.

12

What food do endangered Stellar sea lions favor?

A. Yellow-tail flounder
B. Short-tailed albatross
C. Patagonian toothfish
D. Alaskan pollock

13

What is the result of the situation known as "bycatching"?

A. Countries start "fish wars" because of unclear boundaries.
B. The cost of fish goes up for everyday customers.
C. Companies catch more of the fish than they can sell.
D. Dead and dying fish are thrown back into the ocean.

14

By using the map and the accompanying key, you can tell that the Great Barrier Reef is located in the

A. Northwest Pacific.
B. Western Central Pacific.
C. Southeast Pacific.
D. Northeast Atlantic.

A STICKY SITUATION

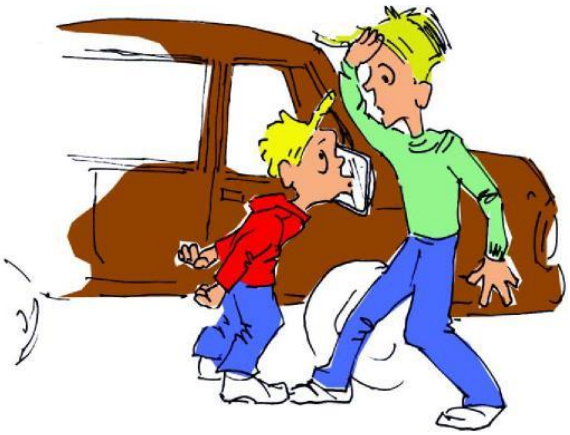
The Watson brothers are scraping the ice off the family car on a cold winter day in weather-bound Flint, Michigan. When big brother Byron gets in a "sticky" situation, it's up to Kenny to save the day. In the end, all is well thanks to the bonds of love and humor that surround this funny family.

BYRON WAS LEANED OVER the outside mirror, looking at something in it real close. Big puffs of steam were coming out of the side of the mirror.

I picked up a big, hard chunk of ice to get ready for Byron's trick.

"Keh-ee! Keh-ee! Hel' me! Hel' me! Go geh Mom-ma! Go geh Mom-ma! Huwwy uh!"

"I'm not playing, Byron! I'm not that stupid! You'd better start doing your side of the car or I'll tear you up with this iceball."



He banged his hand against the car harder and started stomping his feet. “Oh, please, Keh-ee! Hel' me, go geh Mom-ma!”

I raised the ice chunk over my head. “I'm not playing, By, you better get busy or I'm telling Dad.”

I moved closer and when I got right next to him I could see boogers running out of his nose and tears running down his cheeks. These weren't tears from the cold either, these were big juicy crybaby tears! I dropped my ice chunk.

“By! What's wrong?”

“Hel' me! Keh-ee! Go geh hel'!”

I moved closer. I couldn't believe my eyes! Byron's mouth was frozen on the mirror! He was as stuck as a fly on flypaper!

I could have done a lot of stuff to him. If it had been me with my lips stuck on something like this he' d have tortured me for a couple of days before he got help. Not me, though, I nearly broke my neck trying to get into the house to rescue Byron.

As soon as I ran through the front door Momma, Dad and Joey all yelled, “Close that door!”

“Momma, quick! It's By! He's froze up outside!” No one seemed too impressed.

I screamed, “Really! He's froze to the car! Help! He's crying!”

That shook them up. You could cut Byron's head off and he probably wouldn't cry.

“Kenneth Bernard Watson, what on earth are you talking about?”

“Momma, please hurry up!”

Momma, Dad and Joey threw on some extra coats and followed me to the Brown Bomber.

The fly was still stuck and buzzing. “Oh, Mom-ma! Hel' me! Geh me offa ere!”

"Oh my!" Momma screamed, and I thought she was going to do one of those movie-style faints, she even put her hand over her forehead and staggered back a little bit.

Joey, of course, started crying right along with Byron.

Dad was doing his best not to explode laughing. Big puffs of smoke were coming out of his nose and mouth as he tried to squeeze his laughs down. Finally he put his head on his arms and leaned against the car's hood and howled.

"Byron," Momma said, gently wiping tears off his cheeks with the end of her scarf, "it's O.K., sweetheart, how'd this happen?" She sounded like she was going to be crying in a minute herself.

Dad raised his head and said, "Why are you asking how it happened? Can't you tell, Wilona? This little knucklehead was kissing his reflection in the mirror and got his lips stuck!" Dad thought that was hilarious and put his head back on his arms.

Momma didn't see anything funny. "Daniel Watson! What are we gonna do? What do y'all do when this happens up he-uh?" Momma started talking Southern-style when she got worried. Instead of saying "here" she said "he-uh" and instead of saying "you all" she said "y'all".

Dad stopped laughing long enough to say, "Wilona, I've lived in Flint all my life, thirty-five years, and I swear this is the first time I've ever seen anyone with their lips frozen to a mirror. Honey, I don't know what to do, wait till he thaws out?"

"Pull him off, Dad," I suggested. Byron went nuts! He started banging his hands on the Brown Bomber's doors again and mumbling, "No! No! Mom-ma, doe leh him!"

Momma asked Dad, "What about hot water? Couldn't we pour enough hot water on the mirror so it would warm up and he could get off?" She kept wiping tears off By's cheeks and said, "Don't you worry, Baby, we gonna get you off of this." But her voice was so shaky and Southern that I wondered if we'd be driving around in the summer with a skeleton dangling from the outside mirror by its lips.

15

"The fly was still stuck and buzzing" describes

A. the noise Byron makes while he awaits rescue.
B. an insect circling Byron's head.
C. the noise the Watsons make in freeing Bryon.
D. the worried hum that Kenny makes while getting help.

16

The author includes the father's dialogue mostly to show Dad's

A. sense of humor.
B. frustration with Byron.
C. attachment to his car.
D. confusion about how to help.

17

Why does Kenny wonder if they'd be "driving around in the summer with a skeleton dangling from the outside mirror by its lips"?

A. Because he knows his father isn't serious about getting Byron loose
B. Because Momma seems so unsure about getting Byron free
C. Because the winters in Flint are so long they never seem to end
D. Because he wants everyone to see how silly Byron looks

18

Which statement is true about Kenny's parents?

A. Both parents have lived in this area most of their lives.
B. Each parent has come to Flint after growing up somewhere else.
C. This section doesn't provide information about their backgrounds.
D. Dad is a Flint native, but Momma is somewhat new to the area.

19

The author most likely chose the simile "He was as stuck as a fly on flypaper!" in order to

A. show how serious Byron's situation is.
B. provide a vivid humorous image.
C. reveal Kenny's low opinion of Byron.
D. give hope that Byron can get loose.

IGUANADON

Dinosaurs have fascinated old and young alike since fossils of these creatures were first discovered in the 1800s. Read this passage about the first reported discovery of a dinosaur that came to be known as Iguanodon.

UNTIL THE 19TH CENTURY, no one had the slightest idea that dinosaurs once lived on earth. The first remains of such an animal were unearthed in a quarry in Oxfordshire, England, in 1822. The creature to which the remains belonged was named *Megalosaurus*, which means "big lizard." (The word "dinosaur" means "terrible lizard.")

Since then, over 800 fossils of the long-extinct dinosaurs have been discovered and studied. We now know that although some of the dinosaurs were fierce hunters, there were many others which were harmless plant-eaters.

Iguanodon is unearthed

In 1822, the remains of a plant-eating dinosaur were found in England by Dr. and Mrs. Gideon Mantell. The Mantells were traveling in Sussex, and made a stop near Cuckfield so that Dr. Mantell could attend to a patient. Mrs. Mantell wandered into the trees nearby, and noticed some teeth sticking out of the ground. She took them to show to her husband.

Although he was a keen fossil collector, he had never seen anything like them before. He sent them to an expert in Paris to find out which animal they came from.

Iguanodon gets its name

The expert identified them as being the upper front teeth of a rhinoceros. Dr. Mantell refused to believe this, and took the fossils to the Museum in the Royal College of Surgeons, in London. There, they were compared with the teeth of a South American iguana, a type of lizard. They were much larger than the iguana's teeth, but the similarity was unmistakable. Dr. Mantell decided, therefore, to call his discovery "*Iguanodon,"* which means "iguana tooth."

Reconstructing the monster

Dr. Mantell spent five years searching for more evidence of *Iguanodon*. Eventually he found part of a skeleton, and from it a life-size model was built and displayed. It was not until 1878 that the model was discovered to be completely wrong.

In that year, some Belgian coal miners found a pit into which 31 *Iguanodon* had fallen to their deaths millions of years before. Their skeletons helped scientists to reconstruct a more accurate model of *Iguanodon*.

About the exhibit

In 1851, life-size models of dinosaurs were exhibited in London. They were based on fossils, and *Iguanodon* was based on Dr. Mantell's evidence. It was mistakenly shown walking on four legs. The horn placed on its snout was really a thumb-bone. Before the exhibition, a dinner was held inside the model's stomach. Twenty-one scientists and other guests drank a toast to *Iguanodon*'s restoration.

20

"The first remains of such an animal were unearthed in a quarry..." The word *quarry* means

A. an open pit.
B. hunted prey.
C. an historical site.
D. a museum warehouse.

21

Where were the first true remains of a dinosaur found?

A. South America
B. Sussex, England
C. Oxfordshire, England
D. Belgium

22

Why would the people in charge of the exhibit hold the dinner inside the model's stomach?

A. To give the people a close look
B. To get more people to attend
C. To show off the dinosaur's size
D. To make the best use of the available room

23

The best synonym for unmistakable as it is used in this article would be

A. lacking.
B. identical.
C. incorrect.
D. obvious.

24

The author most likely wrote the first two paragraphs to

A. establish that the focus of this article would be Megalosaurus.
B. provide background information on dinosaurs.
C. show why there was so much difficulty creating an accurate dinosaur model.
D. establish that the setting of this story would be England.

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