

SYSTEMATIC DECISION MAKING AND GROWTH IN READING IN
HIGH-STAKES ACCOUNTABILITY SYSTEMS

by

DESIREE MARIE MARGO

A DISSERTATION

Presented to the Department of Educational Methodology, Policy, and Leadership
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Education

June 2013

DISSERTATION APPROVAL PAGE

Student: Desiree Marie Margo

Title: Systematic Decision Making and Growth in Reading in High-Stakes Accountability Systems

This dissertation has been accepted and approved in partial fulfillment of the requirements for the Doctor of Education degree in the Department of Educational Methodology, Policy, and Leadership by:

Dr. Gerald Tindal	Chair
Dr. Gina Biancarosa	Member
Dr. Julie Alonzo	Member
Dr. Beth Harn	Outside Member

and

Kimberly Andrews Espy	Vice President for Research & Innovation/Dean of the Graduate School
-----------------------	--

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2013

© 2013 Desiree M. Margo

DISSERTATION ABSTRACT

Desiree Marie Margo

Doctor of Education

Department of Educational Methodology, Policy, and Leadership

June 2013

Title: Systematic Decision Making and Growth in Reading in High-Stakes Accountability Systems

The intense focus on standards and accountability is rapidly altering the education environment. Often the gauge for measuring school effectiveness is performance on high-stake state tests. In this retrospective cohort comparison study, I observe the relation between the use of curriculum-based measures (CBMs) for reading and change on a state test for reading after implementation of systematic decision making (SDM).

Over a span of three years, two student cohorts in two elementary schools were observed. In each two-year cohort, students began in third and then moved to fourth grade: Cohort One (2009 – 2011) and Cohort Two (2010 – 2012). Both cohorts participated in fall, winter, and spring [F-W-S] benchmark screening for Passage Reading Fluency (PRF) and took a state test. Additionally, during the 2011-2012 academic year, SDM was implemented for Cohort Two using reading CBMs. This study addressed three questions: (a) What is the affect on reading growth (OAKS-Reading) in the context of SDM with CBMs? (b) What is the correlation between [F-W-S] PRF and OAKS Reading? and (c) What is the relation between within-year growth rates for students at risk and not at risk in the context of SDM with CBMs?

I used an independent samples t-test to examine the across year change in reading for both cohorts (OAKS-Reading) to determine whether the implementation of SDM resulted in a significant difference between cohorts. For Cohort Two (using a SDM model), I correlated benchmark screening within-year measures (easyCBM) and OAKS Reading. Finally, I calculated growth rates for at-risk and not-at-risk students within a SDM model to examine whether that model demonstrated evidence of accelerated growth in at-risk students relative to their not-at-risk peers.

Results did not indicate a strong relation between SDM and the large-scale, outcome assessment (OAKS-Reading). A Pearson product-moment correlation indicated a strong positive correlation between the formative measure PRF and the large-scale, outcome assessment OAKS-Reading. Results showed both risk categories had accelerated growth in reading fluency between fall and winter compared to between winter and spring. Implications for school practice and research are discussed.

CURRICULUM VITAE

NAME OF AUTHOR: Desiree Marie Margo

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, Oregon
San Jose State University, San Jose, California
Bethany University, Scotts Valley, California
Vanguard University, Costa Mesa, California

DEGREES AWARDED:

Doctor of Education, 2013, University of Oregon
Master of Education, 2003, University of Oregon
Bachelor of Arts, Education, 1981, Bethany University

AREAS OF SPECIAL INTEREST:

Instructional Leadership
Systematic Decision Making
Response to Intervention (RTI)
School Transformation
Full Service Community Schools

PROFESSIONAL EXPERIENCE:

Principal M.A. Lynch Elementary School, Redmond School District, 2010-present

Redmond School District Community School Program Coordinator, Redmond School District, 2009-present

Redmond School District Family Access Network (FAN) Program Coordinator, Redmond School District, 2009-present

Adjunct Professor, George Fox University, 2007-present

Assistant Director of Student Services, Redmond School District, 2008-2010

Coordinator of Student Services, Redmond School District, 2007-2008

Classroom Teacher, Redmond School District, 1990-2007

GRANTS, AWARDS, AND HONORS:

Community Learning Center (CLC) Grant, 2009 to present

Children and Family Commission Early Literacy Grant 2009 to present

Oregon Community Foundation Community School Grant 2010 to present

Redmond School District Travel Grant- Project Adventure, California, 2004

Redmond School District Travel Grant, International Storyline Conference, Denmark, 2002

Meyer Memorial Science Grant, 2001

Meyer Memorial Science Grant, 2000

Arte Award, 2012

Prevention School of the Year Award, Redmond School District, 2012

Closing the Achievement Gap Celebrating Student Success Award, 2011

Central Oregon's PBR Teacher of the Year Award, Redmond School District

Service of Excellence Award, Redmond School District, 2004

PUBLICATIONS

Margo, D. M (2000). The storyline method: A great platform for writing and receiving grants to fund projects. *The Storyline Connection*. 3, 7.

Margo, D. M (2000), Field experience enriches storyline topic. *The Storyline Connection*.2, 4

ACKNOWLEDGMENTS

I am grateful for the time and expertise I have received from the incredible professionals I have had the privilege to learn from and work with over the past three years. My learning and experience have increased my knowledge, understanding, and application of the critical work of school improvement and transformation. I have applied my learning, improved my school, and increased outcomes for students.

I am grateful to Dr. Nancy Heapes whose endless passion and commitment helped make this program a reality. Her steady encouragement helped during periods of being overwhelmed. I am grateful to Dr. Julie Alonzo who provided incredible guidance in the area of professional writing. Her constant patience and encouragement along with writing tools were a support. I am grateful to Dr. Aki Kamata and Dr. Paul Yonanoff. They provided invaluable information regarding statistical analyses. I am grateful to the Bend Cohort. We locked arms together early on and never let go. My success in reaching this goal is due in part to their perseverance and encouragement.

Finally, I am grateful to my committee members. Dr. Julie Alonzo provided ongoing encouragement and professional writing support. Dr. Biancarosa shared her expertise in the area of early reading and reading fluency both as an instructor and committee member. Dr. Beth Harn's suggestions provided the opportunity to go deeper with this study. Her expertise in the area of systematic decision making and tools to increase the effectiveness and fidelity of interventions provided application and support. Finally, I am forever grateful to my committee chair, Dr. Gerald Tindal. His wealth of expertise in the area of my research was a constant source of inspiration and knowledge. He provided steady guidance and support throughout the dissertation writing process.

DEDICATION

I dedicate this work to my family whose legacy has made me who I am. My grandmother, Eva Wray, grew up in Borne, Oregon as the daughter of a gold mine supervisor. Her stories of attending school in a one-room schoolhouse and sitting around the campfire with Basque shepherders were inspirational to me as a child. My grandfather, David Wray Sr., left Ireland at 16 to make his way in America. His success was wrought through hard work. My parents, David and Beverly, raised six daughters and provided love, support, encouragement, and opportunity. My ever patient husband, Tony, spent endless hours providing support so I could accomplish this goal. Finally, my two daughters, Erica and Giavana, are already changing their world through education. Though my grandparents are not alive to see this accomplishment, as a second-generation Irish daughter and the first to achieve a doctorate, I know they would be proud.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION.....	1
Reading the Critical Construct.....	1
Policy Influence on Achievement.....	2
Accountability through Large-Scale Assessments.....	3
Use of Formative Assessments	4
Purpose of This Study.....	5
Curriculum Based Measures (CBM) Designed for Reading	7
Historical Perspective of CBM.	8
Problem-Solving Model.....	9
Next Generation CBMs: General Issues	11
Increased Accountability	12
Increased Emphasis on Psychometrics and Alignment	13
Next Generation: Specific Tools (easy CBM).....	15
Movement into General Education RTI.....	16
RTI as a Decision-Making Model.....	17
RTI STEEP Model.....	18
Systematic Monitoring and Evaluation.....	19
Individualizing Support	20
Progress Monitoring as the Critical Element in RTI	21
Systematic Benchmarking and Progress Monitoring.....	21
Systematic Progress Monitoring Informs Teaching and Learning	23

Chapter	Page
Progress Monitoring as Predictor for High-Stake Assessments	25
Standard Alignment Supports Predictability	27
The Need for Systematicity in Decision Making.....	28
II. METHODOLOGY	30
Setting and Participants.....	30
Procedures	32
Measures	35
Oregon Assessment of Knowledge and Skills (OAKS) Reading	35
easyCBM Passage Reading Fluency (PRF).....	36
Training Procedures	37
Training Procedures for OAKS-Reading.....	37
Training Procedures for School-Wide PRF Screening	37
Assessment Administration Procedures.....	38
Assessment Procedures for OAKS-Reading.....	38
Assessment Procedures for PRF	38
Analyses	39
III. RESULTS	40
Cases Included and General Description	40
Research Question One: Across Year Growth (OAKS-Reading) Within SDM....	41
Research Question Two: Strength of Relationship Between PRF and OAKS	41
Research Question Three: Comparing Within-Year Growth Rates.....	43

Chapter	Page
IV. DISCUSSION.....	44
Limitations	44
CBMs Within SDM	46
Variability Within Models	48
Evaluate Implementation	49
Correlation of PRF and OAKS-Reading.....	50
Within-Year Growth Rates for Students At Risk and Not At Risk	51
Practical Implications.....	51
The New High-Stakes Environment	54
Resource Allocation.....	55
Tier I: The Foundation of RTI	56
Future Studies	57
Conclusion	58
APPENDIX: CORRELATION OAKS-READING AND [F-W-S] PRF.....	60
REFERENCES CITED.....	63

LIST OF FIGURES

Figures	Page
1. Study Design.....	6
2 Correlation of OAKS-Reading and Fall PRF	60
3 Correlation of OAKS-Reading and Winter PRF	61
4. Correlation of OAKS-Reading and Spring PRF	62

LIST OF TABLES

Table	Page
1. Demographics for School One and Two.....	33
2. Demographics for Cohort One and Two.....	34
3. Descriptive Statistics OAKS-Reading	40
4. Descriptive Statistics Passage Reading Fluency (PRF)	42
5. Correlation OAKS-Reading and [F-W-S] PRF	43
6. PRF (cwpm) Weekly Growth	43

CHAPTER I

INTRODUCTION

The high rate and cost of high school dropouts is concerning. The cost of one high school dropout is approximately \$260,000 due to the loss of earnings, taxes, and productivity. The dropout rate reduces the number of qualified graduates, availability of skilled workers, students qualified to enter higher education, and young adults able to take on leadership positions or meet the nation's national security needs. The loss of interest and motivation for school starts early, often in middle school due to grade retention and a struggle to learn. Often the failure to learn is due to the inability to read at grade level. The inability to read at grade level is especially striking among low-income children. (Fiester, 2010; Snow, Burns & Griffin, 1998). The 2011 National Assessment of Educational Progress (NAEP) reading test results indicate that 85% of students who attended high poverty schools were not proficient (United States Department of Education, USDOE, 2012).

Reading, The Critical Construct

The construct of reading is foundational to student success. Yet many students in classrooms continue to struggle to learn to read. Simmons and Kame'enui (1998) state, "reading difficulties that arise when the design of regular classroom curriculum, or its delivery, is flawed are sometimes termed curriculum casualties" (p. 42). Pianta and Caldwell (1990) state the importance of effective early instruction and the long-term effects poor instruction has on children. This is not new information. Anderson, Hiebert, Scott, and Wilkinson (1985) indicate in the Report of the Commission on Reading, *A Nation of Readers*, that the critical years are when children are learning to read. They go

on to say, “Without the ability to read, excellence in high school and beyond is unattainable” (pg.12).

Chard et al. (2008) suggest the importance of learning to read. In their study of reading development for students in grades one through three, they state that first grade is a critical benchmark that can predict later performance. They provide hope for students with lagging reading skills, “Through responsive instructional supports we can ruin this prediction and accelerate learning” (p. 84). Simmons et al. (2008) further support this statement by indicating that, “once established, reading proficiency can be sustained” (p. 171). Snow et al. (1998) define academic success by high school graduation. If a student is a proficient reader by third grade, academic success and graduation are likely. They state, “A person who is not at least a modestly skilled reader by that time is unlikely to graduate from high school” (p. 21). The nationwide urgency for increased student achievement has amplified momentum for changes in practice and policy.

Policy Influence on Achievement

In order to address increased concerns regarding student achievement, the nation’s governors and education commissioners moved forward with education reforms (Common Core State Standards Initiative, 2012). Standing in the way were components of No Child Left Behind (NCLB) (2002), the most current version of the Elementary and Secondary Education Act (ESEA). NCLB started a national conversation about student achievement, yet unintended consequences occurred. States lowered standards to receive incentives. Instead of rewarding growth, the USDOE based their evaluation of schools on a pass-fail measure. Schools that failed experienced sanctions. The one-size-fits-all approach was not successful (Oregon Department of Education (ODE), 2012). In March

of 2010, the Obama Administration sent Congress a Blueprint for Reform of the ESEA. It addressed the harmful issues created by NCLB and pursued higher standards. Similar to NCLB, closing the achievement gap remained a focus (USDOE, 2012). Since Congress had not acted to reauthorize ESEA, the administration provided states flexibility within the law that allowed states to pursue comprehensive plans. Plans include: (a) improve educational outcomes for all students, (b) close the achievement gaps, and (c) improve the quality of teaching. Forty-four states and the District of Columbia have applied for and received the ESEA Waiver (USDOE 2011).

Accountability through Large-Scale Assessments

The Obama Blueprint for Reform, the administration's framework for the reauthorization of ESEA, focused attention on measuring instructional effectiveness (USDOE, 2012). Because the gauge for measuring effectiveness is often performance on high-stakes published norm-referenced achievement tests, today's schools are highly focused on these summative assessments. However, it is not feasible to wait until the end of the year to see how a student responds to instruction, as this leaves no time to respond and intervene. Konrad, Helf, and Joseph (2011) suggest teachers need to provide numerous opportunities to measure student learning throughout the year, then respond quickly to these data, and change instruction when change is warranted. Boston (2002) refers to the assessments that would give such data as *formative assessments* or the "diagnostic use of assessment to provide feedback to teachers and students over the course of instruction" (p. 1). Boston suggests that formative assessment "varies from summative assessment which occurs after a period of instruction and requires making a judgment about the learning that has occurred" (p 1).

Use of Formative Assessments

Formative assessments inform judgments or decisions about learning as it occurs. Though formative assessment is more commonplace in schools today, the systematic use of standardized formative assessments is not common. Historically, curriculum-based measures (CBMs) function as formative assessments. Though early CBMs were not standards-based, the measurement data had potential to inform decision making, improve instructor effectiveness, and increase achievement. Increased psychometrics and computer-based CBMs may increase the effectiveness and utility of CBMs (Fuchs 1998). CBM is often a component of a Response to Intervention (RTI) model. In referring to RTI models, Bradley, Danielson, and Doolittle (2005) state, “there are variations in how levels are operationalized and thus no single model is currently accepted as the ‘gold standard’ of RTI” (p. 486). They identify six core features of RTI: (a) high-quality, research-based classroom instruction, (b) universal screening, (c) continuous progress monitoring, (d) research-based secondary or tertiary interventions, (e) progress monitoring during interventions, and (f) fidelity measures. Decisions about needed services are based on the quality of student responses to research-based interventions. However, precisely how CBM is used within RTI varies. Progress monitoring, a critical component of CBM, also varies. The lack of systematicity in use may decrease the potential of CBM in an RTI model. Increasing systematicity through the implementation of systematic decision making (SDM) using reading CBMs may increase students’ ability to read at grade level and their success with high stakes reading assessments.

Purpose of This Study

The study included a retrospective cohort comparison to observe the relation between the use of curriculum-based measures (CBMs) for reading and change on a state test for reading after implementation of systematic decision making (SDM). Across year, change in OAKS-Reading was observed for Cohorts One and Two. Within-year change (easyCBM) and across-year change (OAKS-Reading) was observed for Cohort Two.

Over a span of three years, I followed two student cohorts in two elementary schools in the Pacific Northwest. In each two-year cohort, students began in third and then moved to fourth grade. Cohort One included data from 2009-2011. Cohort Two included data from 2010-2012. Both cohorts participated in benchmark screening for Passage Reading Fluency (PRF) and took a state test for reading. Additionally, during the 2011-2012 academic year, systematic decision making (SDM) was implemented in both schools using CBMs for reading progress monitoring. This study addressed three questions:

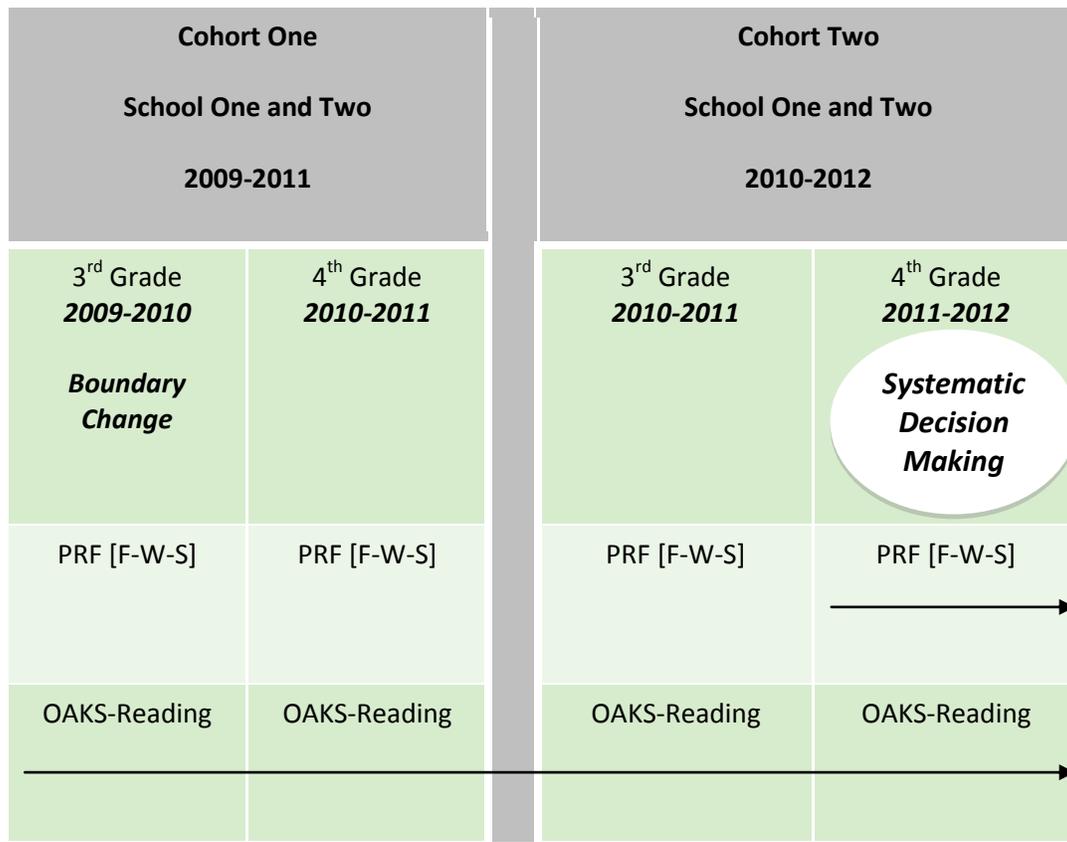
1. What is the affect on reading growth (OAKS-Reading) in the context of systematic decision making (SDM) with CBMs?
2. What is the correlation between [F-W-S] PRF and OAKS Reading?
3. What is the relation between within-year growth rates for students at risk and not at risk in the context of systematic decision making with CBMs?

I used an independent samples t-test to examine the across year change in reading for both cohorts (OAKS-Reading) to determine whether the implementation of SDM results in a significant difference between cohorts. I correlated benchmark screening within-year measures (easyCBM) and OAKS Reading for Cohort Two within a systematic decision-making model. Finally, I calculated growth rates for at-risk and not-

at-risk students within a systematic decision-making model to examine whether that model demonstrates evidence of accelerated growth in at-risk students relative to their not-at-risk peers.

Figure 1

Study Design



I present the literature first broadly, reviewing the initial research on Curriculum-Based Measures (CBM) in the 1980s prior to a systems perspective. Then more narrowly, I argue for increased systems use of CBMs and systematic decision making (SDM) due to the high-stakes accountability in our schools. I address next generation CBMs and Response to Intervention (RTI), both of which reflect this increased focus on

systematicity and systems. The critical components of CBM are the systematic use of progress monitoring and the potential of CBMs as a predictor of performance and proficiency on statewide tests. My research addresses CBMs within a systematic decision-making model and its predictive use in a statewide accountability system.

Curriculum Based Measures (CBM) Designed for Reading

Curriculum Based Measures or (CBM) is a formative assessment approach. CBMs, following a medical model, measure the *vital signs* or *basic skills* related to student achievement, specifically in mathematics and literacy. The terms, *dynamic*, and *indicator*, and *basic skills*, are foundational to understanding the scope of CBM. Shinn and Bamonto (1998) define *dynamic* as “sensitive to differences” (p. 5), both among individuals and within individuals over time. They define *indicators* as “key behaviors that would meet the technical requirements to serve as indicators of an academic performance” (p. 6). Finally, the term, *basic skills*, delimits the scope of what CBM purports to measure. Shinn and Bamonto explain that the intention of the measures’ design was not to assess student performance in science or social studies, for example, but instead, to assess student performance in the basic skill areas of reading, spelling, mathematics computation, and written expression. They compare CBM to a thermometer. A thermometer is a tool that helps identify a health problem that may require additional attention. Like a thermometer, CBM helps identify a potential basic skills problem that may hinder student achievement. In both situations, further investigation is needed.

CBM samples a year of grade-level content skills not directly tied to a specific curriculum. CBM provides a brief analysis of a student’s current proficiency level in a

specific content area. The brief, frequent, formative measures track student progress over time. Data inform teachers about students' response to learning and effectiveness of their instruction (Deno, 2003a, b; Good, Gruba, & Kaminski, 2002). Performance graphs visually represent students' response to instruction. Graphic displays include three metrics to evaluate programs: (a) slope of improvement, (b) variation among successive data values, and (c) immediate change after a program has been introduced (Tindal & Nese, 2011). Visual displays give teachers the information they need to evaluate program effectiveness.

Reading CBMs were originally developed to measure reading growth (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Time-limited oral reading samples and oral reading fluency measure the speed with which students translate text into spoken language. Extensive research on reading development reflects the relationship between the speed of translated text and spoken language (LaBerge & Samuels, 1974; Posner & Snyder, 1975). Adams (1990) states that oral reading fluency is one of the most significant characteristics of skillful reading. The National Reading Panel (2000) recommendations refer to oral reading fluency as the speed and accuracy of oral reading. Fuchs et al. (2001); and Jenkins, Fuchs, Van Den Broek, Espin, and Deno, (2002) suggest a close association between rapid and accurate reading of words and comprehension.

Historical Perspective of CBM

Developed at the University of Minnesota Institute for Research on Learning Disabilities (IRLD), CBM originated in the Databased Program Modification (DBPM) model (Deno & Mirkin, 1977). This model detailed how a variety of progress monitoring data could be used to make educational programming decisions for students in special

education. Because of this work, progress-monitoring procedures for reading, spelling, and written expression were developed. Although CBM originated in special education, according to Shinn (1995), both special education and general education teachers historically used CBM primarily to assess the effectiveness of their instructional programs. Deno (1987) explains that curriculum-based assessment includes, “any approach that uses direct observation and recording of a student’s performance in the local school curriculum as a basis for gathering information to make instructional decisions” (p. 41). Deno (2003b) states, “CBM is a procedure that was developed by special educators for special educators” (p. 190). He contends that the model’s design accesses repeated measurement data as a formative assessment of instruction. The focus of his research was whether programs were working or not.

While Deno and Mirkin (1977) were developing CBMs with a focus on formative assessment in the late 1970s, Engelmann, Granzin, and Severson (1979) were also researching instructional effectiveness. Their approach focused attention on the instruction and instructor first and the learner and assessment second. They suggest that before making a determination about a learning deficit, one must first look at the instruction, and rule out that the instruction is the cause. Only then does the focus shift to the learner’s possible difficulty with learning.

Problem-Solving Model

Though recent CBM developments focus attention outside special education, the unique qualities of learners with disabilities have traditionally propelled the development of alternate specialized methods for assessing student learning gaps and needs. Alfred Binet, known for his work on the scaling of intelligence, initiated this work while the

Minister of Public Instruction in France. In his work with Theodore Simon, Binet varied controlled tasks to analyze and advise educational programs for students who needed more than the regular classroom instruction provided (Deno, 2003b). This idea of controlled tasks is evident in the IRLD work. The IRLD established clear progress monitoring procedures. These procedures include: (a) The core outcome tasks on which performance should be measured; (b) the stimulus items, the measurement activities, and the scoring performance to produce technically-adequate data; and (c) the decision rules used to improve educational programs.

Deno (2003b) further clarifies that curriculum-based measures refer to a specific set of standard procedures that include specific characteristics: (a) technical adequacy, (b) standard measurement tasks, (c) prescriptive stimulus materials, (d) administration and scoring, (e) performance sampling, (f) multiple equivalent samples, (g) time efficient, and (h) easy to teach.

Although the original purpose of CBM was to evaluate the effects of basic skills instructional programs for special education students, it also served as a decision-making model (Salvia & Yssledyke, 1978). This model included: (a) screening, (b) eligibility, (c) intervention planning, and (d) progress monitoring. This procedural model was in contrast to what Shinn and Bamato (1998) refer to as the “big bang test-and-place model” (p. 12). A weakness to this early model according to Shinn and Bamato was that it had, “few underlying assumptions, especially with respect to *who* should be assessed and *why*” (p. 12). In response to the weakness in the decision-making model, a shift to a Problem-Solving model occurred. Deno’s (1989) model, like Salvia and Yssledyke’s (1978) is sequential; the five decisions follow in a rational fashion: (a) Problem

Identification, (b) Problem Certification, (c) Exploring Solutions, (d) Evaluation Solutions, and (e) Problem Solution. Whereas the Salvia and Yssledyke model was *atheoretical*, Deno's (1989) model was *theoretical*, supported by underlying assumptions. A critical assumption to this new model was a problem is situational rather than person driven; a problem exists if there is a discrepancy between expected student proficiency and actual proficiency in a specific or situational context (Shinn & Bamato 1998). A problem-solving model assesses both students and situations.

Next Generation CBMs: General Issues

Through the developmental years of CBM in the 1970s to current use of CBM, slight alterations have occurred. The foundational principles established by Deno and Mirkin at the University of Minnesota's IRLD remain in use in 2013. CBMs still provide meaningful information to classroom teachers on student progress using grade-level material. They are still accessible to classroom teachers and are still inherently easy to administer, score, and analyze for practical classroom use (Tindal & Nese 2011).

Additionally, Deno's (1985) nearly three-decade-old statement also remains true:

“Measurement of student achievement is basic to evaluating the success of our educational programs. Despite general agreement that student performance requires routine assessment, systematic measurement procedures do not exist” (p. 219).

However, what has changed is the assessment environment. In 2013, with the Obama Blueprint for Reform, the administration's framework for the reauthorization of the Elementary and Secondary Education Act (ESEA), the focus is clearly on accountability and measuring instructional effectiveness and academic achievement and growth for all students using high-stakes assessments (USODE, 2010).

Increased Accountability

Eignor (2001) states, “One has only to do a casual scan of everyday events in the year 2000 to gain some sense as to how testing has permeated today’s world” (p. 157). He goes on to suggest that the advances in testing led to the joint efforts of the American Educational Research Association (AERA), the American Psychological Association (APA), and the National Council on Measurement in Education (NCME), to refine the 1985 *Standards for Educational and Psychological Testing*. Eignor states that the increase in the number of standards in the revision is due to the need to deal with new developments in testing that have occurred since 1985. The following developments created the need for the revision: (a) increased emphasis on the role of consequences of test use in the validity area, (b) increased emphasis on performance assessment and in particular on portfolio assessment, (c) use of generalizability theory when thinking about reliability issues, (d) use of item response theory (IRT) on an operational level, (e) use of the computer for testing and diagnostic purposes, and (f) increased use of test results for informing policy decisions. The revision reflected recent advances in testing and the expanded use of tests into a number of new areas. Significant in the revision was the total number of pages (194 compared to 100) as well as the increase in the standards (264 compared to 180). This progress in testing has informed next generation CBM.

The current measurement and assessment climate increases scrutiny on the underlying technical adequacy expected of CBMs. Tindal and Nese (2011) state that “next generation CBM needs to reflect the changing educational landscape with its

emphasis on accountability” (p. 37). They suggest that alignment to standards, proper scaling, and documentation of technical adequacy are critical improvements to CBM.

One CBM system is the University of Oregon’s easyCBM learning system. According to its publishers, easyCBM provides one data system to support multiple decisions in addition to predicting performance on high-stakes state assessments. The easyCBM system combines screening measures used to identify students at risk with multiple alternate equivalent formative progress monitoring measures that measure the effectiveness of instructional programs and student response to these programs. This combination supports the multiple decisions needed to meet individual instructional needs (Deno, 1990; Tindal & Nese, 2011).

Saez et al. (2010) state that sophisticated statistical techniques and psychometric properties commonly associated with technically-adequate assessments were not always included in earlier CBMs. Equivalent alternate forms are the basis of the easyCBM progress monitoring design. This design allows teachers to analyze student performance based on progress monitoring data over time. Cross-form equivalence reduces skewed data and decisions. Cross-form equivalence allows teachers to attribute changes in data to a change in student skill and knowledge instead of changes in the test. The authors of easyCBM attribute the Rasch modeling data analysis technique used in the development of the easyCBM assessments as the primary reason for increased measure accuracy.

Increased Emphasis on Psychometrics and Alignment

CBM is also an integral component RTI. RTI includes high-stakes decisions. RTI decision making relies heavily on the technical adequacy of the assessment tools. Since the inception of CBM in the 1970s, instrument development has advanced

immensely, specifically in the area of statistical techniques. Yet according to Alonzo, Lai, Anderson, Park, and Tindal (2012) “the world of CBMs has not always kept pace with these statistical advances” (p. 2). It appears that even though advances in CBM have occurred over time, a need for more improvements remained.

Alonzo et al. (2012) state that equivalent alternate forms are a critical characteristic of progress monitoring assessments. Equivalent forms ensure that analyses of student performance data from one point in time to another are accurate. They explain that if the alternate forms are not equivalent, then the analysis of the data is confounded because it will be difficult to determine if the change in student performance is due to change in the skill or knowledge of the student, or due to a difference in rigor between test forms. Additionally, Alonzo et al. point out that more recently-developed CBMs, such as the easyCBM benchmarking and progress monitoring measures, use improved data analysis techniques, including Rasch modeling. Alonzo et al. state that the new techniques for developing instruments are more precise. Tindal and Nese (2011) also indicate that this shift, in addition to progress in psychometrics, has “significantly altered one perspective: We now realize that the creation of reliable and valid progress monitoring measures requires specialized knowledge beyond what most public school teachers possess” (pp 36-37). It is this realization that propelled the creation of next generation, elementary school reading CBM. Tindal and Nese add that in contrast to prior CBM, the next generation CBM assessments use rigorous statistical modeling analytics, which previously occurred primarily for large-scale assessments. In addition to the development in psychometrics related to CBM, computer applications have also progressed to address earlier implementation difficulties associated with CBM (Fuchs,

1998). This knowledge and expertise have informed the development of a specific next generation CBM system, easyCBM.

Next Generation: Specific Tools (easyCBM)

Designed by researchers at the University of Oregon as an integral part of an RTI model, easyCBM's purpose is to help facilitate good instructional decision making.

According to Alonzo et al. (2012), September 2006 launched the online easyCBM progress monitoring assessment system. This was associated with a Model Demonstration Center on Progress Monitoring. In 2006, the Federal Office of Special Education Programs (OSEP) provided grant funds for the project. The system has demonstrated success, and interest in and access to easyCBM has steadily increased over the six years since its inception. Alonzo et al. report,

As of 2012, there are 92,925 teachers with easyCBM accounts, representing schools and districts spread across every state in the country. During the 2010-2011 school years, the system had an average of 1200 new accounts registered each week, and the popularity of the system continues to grow. In the month of November 2011, alone, 5945 new teachers registered for accounts, with almost two million students active on the system at the end of December 2011. (p. 4)

The online system includes a universal screener with fall, winter, and spring assessments. Progress monitoring is a key component, with multiple alternate forms. easyCBM was designed for use in K-8 school settings and developed for educators interested in monitoring the progress their students make in acquiring skills in the constructs of early literacy (phonemic awareness, phonics), word reading fluency, passage reading fluency, comprehension, and vocabulary, as well as mathematics

conceptual understanding. According to Tindal and Nese (2011), the easyCBM system addresses three concerns related to what was lacking in earlier CBM models: (a) alignment to standards, (b) proper scaling, and (c) documentation of technical adequacy (Alonzo, Park & Tindal, 2012; Alonzo, Tindal, Ulmer & Glasgow, 2006).

The easyCBM assessments incorporate the use of Item Response Theory (IRT) for scaling CBM. Tindal and Nese (2011) state that this critical component provides the potential to assist teachers in, “moving from individual differences to making an individual difference through analysis of item level data in making diagnostic decisions about what to teach and when” (p. 39). Finally, the technical adequacy of easyCBM is robust. Program developers have focused on: (a) alternate form reliability, (b) test-retest reliability, (c) the reliability of growth rates, (d) benchmark standards for performance of growth, and (e) predictive validity with criterion achievement measures (Tindal & Nese). The National Center on Response to Intervention (NCRTI) developed a CBM review process to formalize the technical adequacy of CBM assessments. The easyCBM next generation CBM tool incorporates these critical quality criteria.

Movement into General Education RTI

Though CBM developed in the field of special education for special education, work on increased instructional effectiveness was occurring both in special education and in general education. The convergence served as the foundation and movement of CBM into general education (Deno, 2003b). Groundbreaking provisions occurred within The Individuals with Disabilities Educational Improvement Act (IDEA), and its 2004 reauthorization. The result was a modification of the procedures local education agencies (LEAs) use in the identification of students with specific learning disabilities (SLD).

Noted in the change was the addition of Response-to-Intervention (RTI) procedures. RTI was included not only to improve the identification of and services to SLD but also due to the implications for improving the delivery of effective instructional programs to all students in general and special education (Bradley, Danielson & Doolittle, 2007). The RTI three-tiered model of service delivery is a critical component of RTI implementation (Batsche et al. 2005; Fuchs, 2003; National Association of State Directors of Special Education (NASDSE), 2011).

Increased emphasis and expectations for the inclusion of special education students due to the IDEA least restrictive environment guidelines, led to CBM procedures entering mainstream education. In addition, a critical component of RTI is CBM. RTI was developed as a model for special education identification. Within this model, research-based interventions and systematic assessments distinguish between students who have a learning disability and those who have learning difficulties (Hoover & Love, 2011). Though RTI's original purpose was to improve the identification process of special education students and decrease misdiagnosis, the benefit to general education quickly became apparent.

RTI as a Decision-Making Model

Response to Intervention (RTI) is a decision-making model which does not designate a specific set of procedures (Bradley et al. 2007; Burns & Ysseldyke, 2005; Christ, Burns, & Ysseldyke, 2005; VanDerHeyden, Witt, & Gilbertson, 2007). A variety of procedures have been developed and studied. These procedures generate datasets used in a decision-making model. The fundamental principle of RTI is that when students are provided with effective intervention, analysis of student assessment data can determine

whether a student responded or did not respond adequately to the intervention. This information guides the next steps and development of service delivery decisions. As a problem-solving model, RTI teams make a series of data-based decisions. Intertwined, RTI and CBM are problem-solving models developed by the researchers who developed CBM in an effort to increase outcomes for children, specifically children with special needs. Many states have implemented problem-solving models of assessment with promising results including Iowa (Tilly, 2002) and the Minneapolis public schools (Marston, Muyskens, Lau, & Canter, 2003).

RTI relies on an effective and consistent set of integrated tools, procedures, and decisions (VanDerHeyden, Witt, & Barnett, 2005). To utilize the problem-solving model within an RTI system, the school-based team must: (a) define a problem appropriately, (b) select an intervention that is likely to be effective, (c) implement the intervention, (d) evaluate the effects, and (e) make changes if needed. Theoretically, if the individual components are effective, then the overall RTI process will produce results. The effectiveness of implementation is dependent on the educational professionals in schools. VanDerHeyden et al. (2005) state that, "Implementation is the linchpin of RTI. If there is to be an evaluation of RTI, a series of interventions must be implemented correctly and monitored" (p. 226). One evaluated RTI model is the STEEP model.

RTI STEEP model. One RTI system studied by VanDerHeyden et al. (2005) was the *System to Enhance Educational Performance* (STEER) model. The purpose of the study was to evaluate the referral process, identification process, and student outcomes. Specifically, this study evaluated the use of a systematic research-based RTI model. STEER consists of a series of assessment and intervention procedures with

specific decision rules to identify children who might benefit from an eligibility evaluation. Built upon research in CBA, CBM, and problem solving, STEEP is a data-based decision-making model (Fuchs & Fuchs, 1998; Good & Kaminski, 1996; Shinn, 1989). In the study, overall special education evaluations and qualifications decreased. The results suggest that successful RTI models may potentially reduce the number of students who receive special education services. Following only one year of STEEP implementation, SLD diagnosis decreased from 6% of elementary school children to 3.5% of elementary school children district-wide.

Yet, the lack of needed systematicity is evident as research has yet to determine which set of procedures paired with what set of decision rules and measurement technologies will best identify children for specialized assistance. The effectiveness of any RTI model will rely on decisions based on interpretations of data. Therefore, the degree to which decisions correspond with data is a critical component of studying the validity of RTI models of decision making (VanDerHeyden et al. 2005). Systematicity is critical within an RTI model.

Systematic Monitoring and Evaluation

Patarapichayatham et al. (2011) state, “The key component of any response to intervention (RTI) model is the ability to monitor and evaluate changes in student learning progressions” (p.1). In an RTI model, progress-monitoring assessments are a key component. Within the model, a series of progress monitoring measures provide data to evaluate the effectiveness of the interventions. When students fail to show expected levels of progress, teachers use this information to analyze why the students are not making progress and consider modifying the instruction, intervention, or instructor. The

goal of the analysis and change is to find just the right combination of supports so that each student makes progress toward achieving grade-level proficiency on content standards. This type of system requires trained instructors, research-based interventions and strategies, and reliable measures that assess the specific target construct and are responsive enough to identify improvement in skill over short periods. CBMs and progress monitoring play a critical role in any RTI system because data inform key decisions for individual students.

Individualizing Support

The increased nation-wide focus on measuring instructional effectiveness in order to increase academic achievement for all students creates a need for the application of curriculum-based measures in making decisions not only for special education students, but also for all students at risk for learning failure. Tindal and Nese (2011) describe this as, “The most significant issue in moving from individual differences to making an individual difference is the change in metric from noting where students exist in a group to helping them progress in their learning” (p. 39). They clarify the need for alignment between curriculum standards and formative assessments. They further emphasize the need for organizations to exhibit high levels of systematicity in the implementation of CBMs.

Progress is meaningful when directed, and standards aligned CBMs may provide information that is more useful for teachers about students’ performance and progress. CBM alignment to standards can put the direction and rate of progress into context to best address individual student learning and make informed instructional decisions. (p. 38)

Standards-aligned progress monitoring measures systematically administered may provide the formative assessments needed to inform teachers about the effectiveness of their instruction and student response to instruction.

Progress Monitoring as the Critical Element in RTI

Within a CBM system, progress monitoring can provide ongoing formative assessment data to inform decision making. Fuchs (1989) wrote, “CBM monitoring is an inductive and dynamic, rather than deductive and static, approach to developing instructional programs” (p. 155). CBM progress monitoring information provides data to monitor student progress across the year, adjust instruction during the year to increase student growth, and determine overall effectiveness of instruction and instructional programs. Teachers respond to unique student needs and characteristics by adjusting components in their instruction and in the instructional program to enhance student achievement. Students whose teachers used CBM to monitor academic progress and to make adjustments in their instruction and in instructional programs significantly outperformed comparable students whose teachers did not use CBMs (Fuchs, Deno, & Mirkin, 1984; Fuchs, Fuchs, Hamlett, & Ferguson, 1992; Stecker & Fuchs, 2000).

Systematic Benchmarking and Progress Monitoring

Within a systematic benchmarking and progress monitoring system, CBM progress monitoring data are represented in a graphic display, a goal line illustrates the average rate of progress a student must sustain across the year in order to meet the long-term grade-level goals. Using standard decision rules, teachers evaluate the rate of growth, according to the trend line, for CBM scores against the goal line. This information supports teacher decision making in determining whether student progress

toward the goal appears sufficient for ultimate goal achievement. Steep trajectories above goals lines lead to raised goals. When CBM progress is below the goals line, instruction is modified to meet the student's individual needs. Instructional change is noted on the graph (Tindal & Nese, 2012).

Stecker and Fuchs (2000) found changes to instruction based on individual student performance instead of students with similar profiles, produced greater gains. The researchers in this study suggest that tailored instruction specific to student deficits increases student gains. They further suggest enhanced program effectiveness occurs when program instructional decision making and individual student's assessment profile combine. They go on to say that in addition to linking instructional adjustments to individual student data, using a *steering-group* strategy is questionable. This term refers to the use of representative students to assess teaching effectiveness and to plan instruction for a larger group of similar students, or the practice of monitoring the progress of one student and then generalizing the instructional decisions to the larger instructional groups.

In addition to the need for tailored instruction, frequency of progress monitoring data collection and analysis of data also contribute to the ability of teachers to formulate needed instructional adjustments. Stecker and Fuchs point out that it is not the frequent progress monitoring in itself that seems to support the increased growth, but rather, “teachers need to examine CBM data regularly and to respond to poor patterns of student performance by adjusting instructional programs” (p. 133). Deno (1990) also suggests the need to consider program adjustment based on individual student performance data. Stecker and Fuchs (2002) go on to say that their study, “Buttresses Deno’s argument by

providing empirical support for the importance of collecting progress -monitoring data, formulating interventions, and evaluating instructional effectiveness on a case-by-case basis”(p. 133). CBM is a logical, feasible, and technically-adequate formative evaluation system (Deno, 1985; Shinn, 1989). Administered systematically, CBM progress monitoring can aid teachers in addressing increased accountability for academic achievement.

Computerized CBM programs, including easyCBM, contribute to the ease in implementation for teachers (Fuchs, 1998). Computerized programs display and analyze data for individual students, classrooms, schools, and entire districts. Teachers can easily compare ongoing student performance against the individual, as well as the class. Computer feedback provides teachers with class reports that can give a variety of information to inform instruction: (a) summaries of students’ overall achievement, (b) slopes of achievement over time, (d) mastery levels for specific skills, (e) identify students with similar performance profiles, (f) suggest groups of students for a specific intervention, (g) help inform allocation of resources, and (h) help teachers structure interventions and groups to meet the specific student deficits (Fuchs, Fuchs, Mathes, & Simmons, 1997; Stecker & Fuchs, 2000).

Systematic Progress Monitoring Informs Teaching and Learning

Progress monitoring within a systematic CBM model can increase teacher awareness of accurate student achievement levels. In addition, within a systematic model, teachers may structure better teaching procedures and provide specific feedback to help students recognize effective learning strategies (Bandura, 1982a, Rosswork, 1977). However, traditional methods are slow to change. Potter and Mirkin (1982) note

that even though there is both a theoretical and legislative mandate to integrate instruction and assessment, teachers often prefer unsystematic observation to using objective measurement tool Fuchs, Deno, and Mirkin (1984) further add, “Unfortunately, evidence suggests that such observation often leads to spuriously optimistic judgments of achievement” (p. 450). They go on to suggest that research on additional types of decision-making processes also indicates that there is a tendency to have too high a level of confidence in, “highly fallible, typically self-confirming judgments”(450). In a 1984 study, Fuchs, Deno, and Mirkin specifically looked at the effect of the use of frequent curriculum-based measurement and evaluation on pedagogy, student achievement, and student awareness of learning. They found that children whose teachers employed the ongoing measurement and evaluation system Data Based Program Modification, or DBPM, achieved better than students whose teachers used conventional monitoring methods, such as periodic teacher-made tests, informal observation, and workbook samples. These results held not only for passage reading fluency, but also for decoding and comprehension measures. In addition to increased achievement, Fuchs, Deno, and Mirkin (1984) also observed that DBPM affected pedagogy by increasing structure. Additionally responsiveness to the students increased, and teachers had a more realistic view of student progress. Without systematic assessment, teachers may overestimate their effects. This lack of accurate information can hinder decision rules and decrease precise placement of students in the interventions needed to reduce students’ risk of reading failure and ultimately failing high-stakes end-of-year assessments.

Additionally, Fuchs et al. (1984) found that when teachers accurately estimated student growth, students benefited. In their study, students were more knowledgeable

about their own learning because of the systematic measurement and evaluation system. Students were noted to (a) more frequently claim they knew their goals, (b) more often state their goals, (c) be more accurate in their estimates of whether they would meet their goals, and (d) more typically report they relied on data to formulate estimates of whether they would meet their goals. Fuchs et al. suggest that, “These findings are theoretically and socially important. Student knowledge of goals may affect school performance. Increased participation by students in their own education may itself be an important educational goal” (p. 458). Student access to accurate and timely information about their growth toward benchmark targets can support students’ positive response to interventions, decrease risk of reading failure, and ultimately increase the probability of students passing high-stakes end-of-year assessments (Bandura, 1982b; Latham & Baldes, 1975; Rosswork, 1977).

Progress Monitoring as Predictor for High-Stake Assessments

The predictive quality of easyCBM enhances its use beyond identifying student learning deficits or risk level to providing useful information for program planning to enhance the likelihood of students passing high-stakes assessments. Though not developed as screening tools, high stakes summative assessments are often used as an indicator of student risk. In the current high-stakes environment, CBM systematic progress monitoring may be useful to predict student proficiency and identify students at risk for not passing these high-stakes tests while there is still time to intervene (Bradley et al. 2007). Technical adequacy research on easyCBM suggests its utility as a predictor for high-stakes assessments (Tindal, Nese & Alonzo, 2009). Sáez et al. (2010) evaluated the technical adequacy of the easyCBM grades 3-7 progress monitoring reading assessments.

In their technical report, they analyzed the usefulness of easyCBM measurement for instructional decision making, the reliability of the Multiple Choice Reading Comprehension (MCRC) measure, and predictive validity related to the Oregon State Assessment in reading (OAKS). Though limitations exist, measures still appear a viable way to identify students at risk for reading failure due to lagging skills in fluency, reading comprehension, and vocabulary. They found that when teachers administered easyCBM fall reading measures, they could use this data to predict whether students would pass OAKS Reading. This finding suggests that the measures may be reliable and valid for use as screening measures, and if so, easyCBM can be a useful tool for schools looking to improve academic achievement and increase the percentage of students passing the OAKS Reading assessment.

In the current high stakes test environment, the desire for CBM to predict achievement on high stakes assessments is high. Anderson, Alonzo, and Tindal (2011) suggest that part of the purpose of easyCBM is to help educators identify students who may be at risk for academic failure. They indicate that, often, students considered at risk are unlikely to pass the state test. In a 2011 technical report, Anderson et al. studied the relation between the easyCBM reading tests and the reading portion of the Oregon Assessment of Knowledge and Skills (OAKS). The results of this study suggest a strong relation between the easyCBM reading measures and OAKS-Reading. They found that easyCBM, “is less accurate in predicting which students *will* reach proficiency than in predicting which students *will not* reach proficiency” (p. 8). Published studies provide evidence linking performance on CBM reading assessments to performance on standardized tests within several states (Crawford, Tindal, & Stieber, 2001; Hintze &

Silberglitt, 2005; Sibley, Biwer, & Hesch, 2001). These findings add to the evidence that easyCBM reading measures may be predictive of state large-scale assessments of reading and suggest that easyCBM can provide support for a problem-solving model based on standardized formative assessments.

Standard Alignment Supports Predictability

Standard-aligned CBMs provide important information on student progress toward standards. This information supports the likelihood of students passing high stakes tests aligned to standards. For general educators, benchmark screenings can help identify students who may need differentiated instruction in the classroom or an intensive academic intervention. Tracking student learning through growth on successive benchmark assessments and progress-monitoring tests provides a further valuable data source for identifying students whose progress is likely inadequate to meet states' expectations by the time the end-of-the-year large-scale assessment is administered (Nese, Park, Alonzo & Tindal, 2011).

Though still under development, both the Smarter Balance (SBAC) assessment and the Partnership for Assessment of Readiness for College and Careers (PARCC) assessment may likely be a once-a-year, end-of-the-year assessment (ETS 2012). Districts across the nation will be looking for a standardized formative assessment tool to inform decision making throughout the year so interventions can be put into place and student learning trajectories altered while there is time to respond. The easyCBM system provides a comprehensive standardized assessment program with screening tools to determine student risk level as well as formative assessment progress-monitoring tools to assess students' response to intervention. Used systematically, this combination may

inform decision making, support increased student achievement, and predict proficiency and performance on high-stakes assessments.

The Need for Systematicity in Decision Making

The precise method of district or school implementation of CBM varies depending on a variety of factors: (a) use of screeners, (b) use of decision rules, (c) use of progress monitoring, and (d) resource allocation. CBM data use may not be systematic. Decisions rules may or may not be used within a system, and the rules themselves may vary. Progress monitoring may be inconsistent, with some districts and schools implementing progress monitoring and others not. If implemented, progress-monitoring use varies widely. Some teachers may choose to use progress-monitoring measures frequently while others do not access the measures at all. If progress-monitoring measures are used, decision rules around which measure level may vary. Resources allocation based on CBM screener data and or progress monitoring measurement data also varies. Systematicity is needed. When a system is in place, CBM appear to have potential to effect a positive change on student achievement, both for students receiving services in special education and those receiving services exclusively in general education. In addition, progress monitoring, as a standardized formative assessment tool in combination with CBM screening, may provide timely and accurate information for educators and support precise decision-making processes related to specific student deficits in reading. This combination may increase support for teachers in creating targeted instructional interventions for students at risk for reading failure. Students receiving targeted instructional interventions are likely to gain skills, increase growth,

and change from *at risk* to *on target*. Students *on target* are more likely to pass high-stakes assessments

This study addressed three questions:

1. What is the affect on reading growth (OAKS-Reading) in the context of SDM with CBMs?
2. What is the correlation between [F-W-S] PRF and OAKS Reading?
3. What is the relation between within-year growth rates for students at risk and not at risk in the context of SDM with CBMs?

CHAPTER II

METHODOLOGY

Students included in the sample participated in all five assessments: (a) OAKS-Reading 3rd grade, (b) OAKS-Reading 4th grade, (c) F-PRF, (d) W-PRF, and (e) S-PRF. A boundary change occurred for the 2010-2011 year affecting the Cohort One sample size. Fifty-two percent of the enrollment for School One was redirected to other district schools. Due to this boundary change, forty-three now fourth graders who had attended School One as third graders were redirected to another district school other than School Two. Due to this, 43 students from School One were not included in the Cohort One sample. One student did not take all three PRF assessments and was not included in the sample. Five students took the OAKS- Extended Measures assessments and were not included in the sample. This study included data analyses of existing datasets. The specific (a) settings, (b) participants, (c) procedures, (d) measures, and (e) data analyses are described in the following sections.

Setting and Participants

This study took place in two elementary schools in a school district in the Pacific Northwest. The school district served 7,000 students in 13 schools in Kindergarten through 12th grade. Five elementary schools served students in Kindergarten through fifth grade, and two schools served students in Kindergarten through eighth grade. There were two large middle schools and two comprehensive high schools. One Education Center provided various special services and unique alternative programs to Kindergarten through 12th grade students. The district had one charter school serving students in sixth grade through 12th grade. The district had relatively low ethnic diversity. Approximately

79% of the students were non-Hispanic White. Native American, African American/Black, and Asian made up approximately 5% of the total population. In all, 16% of the student population was Hispanic/Latino. Approximately 55% of the students in the district qualified free and reduced price lunch, while 14% received special education services, 49% were female, and 51% male.

Over a span of three years, two student cohorts were followed in two district elementary schools serving Kindergarten through fifth grade: School One and School Two, which served exceedingly similar populations of students. Table 1 provides demographics for School One and School Two. Students in both cohorts began in third and then moved to fourth grade respectively: Cohort One (2009-2011) and Cohort Two (2010-2012). Table 2 includes demographics for the two cohorts in this study. The two cohorts were largely similar, but there were some shifts, including distinctly more males and somewhat more White and Hispanic students in Cohort One as compared to Cohort Two. All demographic data were taken from school records.

The setting included the first year implementation of SDM with CBMs using an RTI model to reflect SDM during the second year of Cohort 2 (2011-2012). SDM elements included: (a) Tier 1 instruction, (b) universal screening, (c) Tier II and Tier III interventions, (d) progress monitoring for students with high or some risk factors, (e) evidence-based decision making, and (f) organizational support. Tier I instruction included a dedicated school-wide 90-minute literacy block. Universal Screening, using easyCBM PRF, occurred three times a year [F-W-S].

Both schools implemented robust Tier II and III reading interventions models. School One implemented a Walk to Strategies (W2S) intensive intervention program for

students at risk while School Two implemented a Walk to Read (W2R) program. The Walk to Strategies and Walk to Read models were inclusive of special education students. Following benchmark screenings, diagnostic assessments were used to further identify and target specific deficits during interventions. Students identified as at risk participated in easyCBM progress monitoring every two to three weeks. Evidence based decision making occurred at both Tier I team meetings and Tier II team meetings.

Tier I team meeting procedures were more developed than Tier II team meetings during this first year of implementation. easyCBM screening and progress monitoring data were used to determine student placement and change of placement in interventions. Finally, organizational support was provided. This occurred for principals during administrator trainings at the district office and for school staff during School Improvement Wednesday (SIW) early release training days. Ongoing support was also provided through a district office staff member dedicated to RTI support for principals and teachers.

Procedures

The fourth grade OAKS-Reading scores for students in Cohort One and Cohort Two were collected. Additionally, for Cohort Two, the [F-W-S] PRF benchmark scores were collected. Cohort One participated in [F-W-S] PRF and OAKS-Reading in the spring of each year, first as third graders during the 2009-2010 year and then as fourth graders during the 2010-2011 school year. Cohort Two participated in OAKS-Reading in the spring of each year, as third graders during the 2010-2011 year and as fourth graders during the 2011-2012 year.

Table 1

Demographics for School One and School Two

	School 1	School 2
Population	464	424
Gender		
Male	51.1	48.3
Female	48.9	51.7
Ethnicity		
White	71.9	65.2
Hispanic	21.6	28.6
Nat Am	1.1	1.8
Multiple Races	3.7	3.4
Asian/ Pacific Island	1.3	0.7
Black	0.4	0.5
Econ/Disadvantaged	84.0	80.0
Limited English Proficient	15.0	16.0
Special Education	10.0	13.0

Table 2

Demographics for Cohort One and Cohort Two

	Cohort 1 2009/10-2010/11	Cohort 2 2010/11-2011/12
Population	68	110
Gender		
Male	45.6	61.0
Female	54.4	39.1
Ethnicity		
White	66.2	70.0
Hispanic	23.5	26.4
Nat Am	2.9	1.8
Multiple Races	5.9	1.8
Black	1.5	0
Econ/Disadv.	73.5	70.9
Special Educ.	11.8	6.4
Limited English Prof.	13.2	8.2

Measures

Oregon Assessment of Knowledge and Skills (OAKS)-Reading. The OAKS is a criterion-referenced computer adaptive assessment based on the 2005-2006 Oregon Content Standards. All students had three test opportunities. The best score was retained as the final score. The OAKS uses an untimed multiple-choice format with each item having a single correct answer and three incorrect answers. Students receive a scale score based on the number of questions answered correctly compared to the total questions. There is no penalty for guessing. The OAKS raw score is converted to a scale score called a Rasch unit or RIT score which is vertically linked across grades 3-10. This equal interval feature makes measuring growth of individual students easy and reliable. The RIT scale is typical of what is used by the SAT and ACT college entrance examinations and the National Assessment of Educational Progress (NAEP).

Each student had at least two opportunities to take the OAKS-Reading each year, and the best score is retained as the final score. The reading assessment has six categories including: (a) vocabulary, (b) read to perform a task, (c) demonstrate general understanding, (d) develop an interpretation, (e) examine content and structure of informative text, and (f) examine content and structure of literacy text. On the third-grade OAKS Reading test, the distribution of questions in each category is as follows: (a) vocabulary, 28%; (b) read to perform a task, 16%; (c) demonstrate general understanding, 28%; (d) develop an interpretation, 28% (e) examine content and structure of informative text, NA, and (f) examine content and structure of literacy text, NA. On the fourth-grade OAKS-Reading, the distribution of questions in each category is as follows: (a) vocabulary, 25%; (b) read to perform a task, 13%; (c) demonstrate

general understanding, 25%; (d) develop an interpretation, 25% (e) examine content and structure of informative text, 12%, and (f) examine content and structure of literacy text, NA. The state's performance classification for OAKS is meets, exceeds, or does not meet. At the 3rd grade level, the RIT range is 185-225. A score of 211 is considered meeting the benchmark expectation; a score of 224 is considered exceeding the benchmark expectation. At the 4th grade level, the RIT range is 192-232. A score of 216 is considered meeting the benchmark expectation; a score of 226 is considered exceeding the benchmark expectation (ODEc, 2012).

easyCBM passage reading fluency (PFR). EasyCBM PRF is a fluency CBM developed for the *easyCBM* website. Students read a short original narrative passage for 60 seconds. Correct Words per Minute (cwpm) are calculated. The passages were written to be at the middle of the year reading level for each grade. The maximum possible words per passage are approximately 250 in grades three and four. The passages were initially written and revised in an effort to produce 20 alternate forms of grade-level passages to be used as progress monitoring and benchmark passages (Alonzo & Tindal, 2008). The passage developers followed written test specifications. Specifications include that each passage (a) tells a story, (b) does not contain dialogue, and (c) stands alone with no references to other passages. Graduate students attending the University of Oregon's College of Education in 2007 wrote the passages. The passages were reviewed for grammar and grade-level appropriateness by a university professor who is a National Board for Professional Teaching Standards certified English teacher and has a Bachelor's of Arts degree in English. Additionally, two graduate students edited for formatting consistency. These students also determined the readability of the passages using the

Flesch-Kinkaid readability index available on Microsoft Word. Of the 20 passages, three were reserved for fall, winter, and spring benchmark measures. The 17 remaining passages were retained as progress monitoring measures. (Alonzo & Tindal, 2007; Saez et al. 2010).

For the purposes of this study, the district used the following percentiles to determine risk categories: (a) 0-10th Percentile- High Risk, (b) 11th to 24th Percentile Some Risk, (c) 25th to 49th Percentile- Low Risk, and (d) \geq 50th Percentile- On Target. [F-W-S] benchmark assessments were used to identify students at risk and not at risk, Students determined to be at risk or not at risk based on the [F-W-S] PRF benchmark screener participated in PRF progress monitoring at their instructional level.

Training Procedures

Training procedures for OAKS-Reading. The district testing coordinator delivered computer-based OAKS-Reading training sessions for the School One and School Two site assessment coordinator. The site test coordinator delivered the computer-based OAKS-Reading training session to the certified staff.

Training procedures for school-wide PRF screening. The district assessment team participated in a Passage Reading Fluency training in the fall. Refresher trainings occurred prior to the winter and spring assessment days. The assessors were recruited through the Education Service District (ESD). The training session included opportunities to observe and practice administering the assessments. The training included the following procedures: (a) stopwatch and clipboard ready; (b) read directions verbatim; (c) start the stopwatch at the appropriate time; (d) mark the last word read at the end of one minute; (e) if the student hesitates for more than three seconds, supply the

word and count as an error; (f) put a slash through incorrectly read words; (g) if the student self-corrects, write “SC” and count as correct; and (h) record the total number of words read, subtract errors, and calculate the total words read correctly.

Assessment Administration Procedures

Assessment procedures for OAKS-Reading. All students had three test opportunities. The best score was retained as the final score for the purposes of this study; the students’ highest score was used for analyses. The school test coordinator proctored the OAKS-Reading 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 approximately 45-70 minutes. Written documentation and training pertaining to the assessment procedures were provided to all teachers approximately three weeks prior to the first testing opportunity.

Assessment procedures for PRF. The principal and Title I teacher coordinated the PRF benchmark testing schedule for each building. All cohort students were tested on the grade-level measures, which included individually administered Passage Reading Fluency (PRF). A trained assessment team administered the fluency assessments in a designated area in the school (Library, Gym, etc.). This team scheduled a full day at each school, and team members returned to provide a make-up assessment opportunity for students who were absent on their designated day. Standard CBM administration procedures for the PRF assessments occurred. The assessor was seated at a table, and the

student sat next to the assessor. The student could not easily see what the assessor wrote on the copy of the passage. The assessor had the passage on a clipboard with a stopwatch ready. Once the student was seated, the assessor greeted the student and put the student's passage on the table in front of the student. Following the directions on the assessor copy, the assessor pointed to the underlined names in the passage and told the student the names. Then the assessor read the next portion of the directions to the student at the top of the test administrator passage: "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 missed words and words read incorrectly. 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 counted errors made. The assessor then calculated correct words read per minute (CWPM) (Tindal & Alonzo, 2009).

Analyses

Different analyses were used to answer each question: (a) an independent samples t-test was used to compare SDM with no SDM, (b) a Pearson's correlation was computed to document the relation of easyCM with OAKS, and (c) average weekly gain was calculated to document growth in oral reading fluency.

CHAPTER III

RESULTS

Cases Included and General Description

Descriptive statistics are reported in Table 5 for OAKS-Reading for Cohorts One and Two. Descriptive statistics are reported in Table 6 for [F-W-S] PRF for Cohort Two, designating students *at risk* and *not at risk*. I included OAKS-Reading scores only for students who attended both third and fourth grade for the cohorts included. For Cohort Two, I included Passage Reading Fluency (PRF) scores only for students who took all three screenings, [F-W-S]. A boundary change occurred during the 2010-2011 year reducing the sample size of Cohort One by 43 students. Finally, I excluded five students who took the Extended Measures for OAKS- Reading. I also excluded one student who did not take all three PRF measures.

Table 3

Descriptive Statistics for OAKS-Reading

	Cohort One		Cohort Two	
	2009-2010-----2010-2011		2010-2011-----2011-2012	
	Grade 3	Grade 4	Grade 3	Grade 4
Count	68	68	110	110
Mean	212.50	221.09	213.22	222.05
Std. Dev	11.6	9.28	9.64	10.81
Minimum	194	201	193	196
Maximum	234	240	239	261

Research Question One: Across Year Growth (OAKS-Reading) within SDM

To address the first research question, I analyzed the relation of across year reading growth (OAKS-Reading) in the context of SDM with CBMs. Table 4 displays the number of cases, means, standard deviations, minimum scores, and maximum scores for OAKS-Reading. For the analysis, I used an independent samples t- test. I assessed one measure of academic performance (OAKS-Reading fourth grade) for two separate groups of students: Cohort One and Cohort Two to determine if there were differences between the cohorts in achievement.

There was a statistically non-significant difference in the OAKS-Reading scores for Cohort One (221.12 ± 9.21) and Cohort Two (222.05 ± 10.80930); $t(176) = -.500, p = .617$. Due to the statistically non-significant results, I cannot reject the null hypothesis that there is no difference and no relationship, and any change could be due to chance.

Research Question Two: Strength of Relationship Between PRF and OAKS

To address the second research question, I correlated three fluency values [F-W-S] on easyCBM with OAKS-Reading to determine the strength of the relationship between the measures. Table 5 displays the number of cases, means, standard deviations, minimum scores, and maximum scores for [F-W-S] PRF for Cohort Two. For the analysis, I used a Pearson product-moment correlation to assess the relation between [F-W-S] PRF and OAKS Reading and [F-W-S] (see Table 6). There was a strong positive correlation between [F-W-S] PRF and OAKS-Reading, ($r = .69, .67, \text{ and } .68$, respectively). The correlation coefficients were also strong between [F-W-S] PFR with a

range of ($r = .87-.91$). The strongest positive correlation, which would be considered a larger than typical effect size according to Cohen (1988), was between the winter and spring PRF, ($r = .91$).

Table 4
Cohort 2 Descriptive Statistics for Passage Reading Fluency (PRF)

Cohort Two						
<u>At Risk</u>						
[F-W-S]	Count	Mean	Std. Dev.	Minimum	Maximum	
F	29	71.82	13.79	42	86	
W	32	88.78	13.94	50	107	
S	31	92.03	13.37	59	111	
<u>Not At Risk</u>						
[F-W-S]	Count	Mean	Std. Dev.	Minimum	Maximum	
F	81	126.44	23.07	87	189	
W	78	143.48	21.86	109	198	
S	79	158.06	28.38	114	232	

Note: For the purposes of this study, the district used the following percentiles to determine risk categories: (a) 0-10th Percentile- High Risk, (b) 11th to 24th Percentile Some Risk, (c) 25th to 49th Percentile- Low Risk, and (d) $\geq 50^{\text{th}}$ Percentile- On Target

Table 5

Correlation OAKS-Reading and [F-W-S] PRF

Variable	Measure	OAKS-Reading	F- PRF	W-PRF	S-PRF
	F-PRF	.69**			
	W-PRF	.66**	.86**		
	S-PRF	.67**	.87**	.90**	

* $p < .5$, ** $p < .05$.

Research Question Three: Comparing Within-Year Growth Rates

To answer the third research question, I analyzed the calculated within-year growth rates for students at risk and not at risk in the context of SDM with CBMs and correlated three fluency values with OAKS. I prepared [F-W-S] PRF descriptive statistics for students designated at risk and not at risk (see Table 5). I analyzed the means of both groups to determine [F-W] and [W-S] PRF weekly growth (see Table 7).

Table 6

PRF “cwpm” Weekly Growth

PRF “cwpm” At Risk			PRF “cwpm” No Risk		
F-W	W-S	Overall	F-W	W-S	Overall
1.70	.325	1.01	1.70	1.45	1.58

Note: Weekly PRF “cwpm” average growth rates were calculated by dividing the change for fall-winter and winter-spring by the number of weeks between benchmark assessments (approx. 10 weeks). Overall, average weekly growth rate was calculated by dividing the spring mean by 20

CHAPTER IV

DISCUSSION

The purpose of this study was to use a retrospective cohort comparison to observe the relation between the use of curriculum-based measures (CBMs) for reading and change on a state test for reading after implementation of systematic decision making (SDM). Across-year change in OAKS-Reading was observed for Cohorts One and Two. Within-year change (easyCBM) and across-year change (OAKS-Reading) was observed for Cohort Two.

Results were not significant for SDM and the large-scale, outcome assessment (OAKS-Reading) between Cohorts One and Two. Results indicate a strong positive correlation between the formative measure Passage Reading Fluency (PRF) and the large-scale, outcome assessment (OAKS-Reading) for Cohort Two. Anderson et al. (2011), and Sáez et al. (2010) found similar results. Additionally, results for this study indicate that students' at risk and not at risk show accelerated growth between [F-W] PRF. Slower PRF growth was observed between [W-S] for both groups, though there was only a slight change in the growth rate for students' not at risk. Students at risk began the year behind students designated not at risk. These results align with Nese et al. (2011) study that also observed increased cwpm growth between [F-W] compared to [W-S].

Limitations

The primary limitation of this study was mortality largely associated with a change in population due to a boundary change that occurred during the 2009-2010 year. The mortality associated with this study lies in the fact that the students included in the

study were only the cases with scores on all assessments. This required that a student participate in OAKS-Reading as a third grader and then as a fourth grader in either School One or School Two. A boundary change occurred for the 2010-2011 year affecting the Cohort One sample size. School One had 52% of the enrollment redirected to other district schools. This boundary change redirected 43 School One fourth graders to another district school other than School Two. Due to this change, 43 students from School One were not included in the Cohort One sample. Five students who took the Extended Measure Assessment were not included in the sample. Additionally, for Cohort Two, only students who participated in the [F-W-S] easyCBM PRF measures were included. The mortality rate for this group was very small, with a loss of only one student in the sample.

An additional limitation of this study was the measure of instruction. The design of the study did not account for differences in the instructional approach, curriculum selection, or teacher credentials. The study focus was limited to the relation between the use of CBMs for reading and change on a state test for reading after implementation of SDM. Each school's systematicity was noted and observed; however, teacher effectiveness and classroom environment were neither observed nor measured.

Finally, SDM was implemented in the second year for Cohort Two. The limitation of only one year of implementation in addition to the first year of a new implementation was an additional limitation for this study.

The findings need to be considered in light of the study contexts. In this section, I first describe issues with implementation of SDM and the use of CBM to document outcomes within an RTI model that may need better and more detailed specification. I

then discuss the relation between easyCBM and OAKS, an important issue given the stakes in these statewide tests. Finally, I address growth rates for student at risk versus not at risk and the need for both sensitivity and specificity in targeting the right group of students. I conclude with consideration of both the implications from this research and the need for future research.

CBMs Within SDM

Results were not significant for SDM and the large-scale, outcome assessment (OAKS-Reading) between Cohorts One and Two. These results may be attributed to limitations within this study. It is likely that the results are due to the early initial implementation of the SDM RTI three-tiered model and the related lack of experience with this model for both administrators and teachers. Though the use of CBMs was not new to the district or either of the schools in this sample, the systematic use of progress monitoring and the implementation of SDM using the CBM data were new. Though the [F-W-S] benchmark screening data had previously been available to teachers, there was not a consistent pattern of its use to inform instructional decisions in either school prior to this study. It is possible that teachers required more training and support in accessing and using the data to inform their instruction during this first year of SDM implementation. Similar to previous studies (Patarapichayatham et al. 2011, VanDerHeyden et al. 2007; & VanDerHeyden et al. 2005); found that individual components of RTI and SDM need further research and systematicity. More research is needed to understand the relationship between SDM, growth on high-stakes assessments and individual components of RTI.

Additionally, there may have been a disconnect between Tier I and Tier II instruction. All teachers met in Tier I team meetings three times a year to review and analyze [F-W-S] screening data, but there was less opportunity for teachers to review and analyze Tier II progress monitoring data as Tier II team meetings were not yet on a consistent cycle at this point in the implementation. Though progress monitoring data was consistently collected and analyzed by the Title I teacher in each school and used to adjust interventions for students, the progress monitoring data may have not been used in strategic ways by teachers in classrooms, creating a disconnect between Tier I and Tier II. Coleman, Buysse, and Neitzel (2006) indicate that Tier I in an RTI model includes a “high quality environment with intentional teaching” (p. 3). It is noteworthy that in an RTI research synthesis, only one study (Case, Speece, & Molloy, 2003) included an assessment of the quality of the general education curriculum and instruction. Coleman et al. (2006) indicate that the defining Tier I feature is used to determine whether the majority of students are achieving benchmarks in learning and behavior prior to implementing differentiated instruction.

Finally, There was also a range of teacher response to the RTI implementation with CBMs. Some teachers were observed to show interest in the data and the easyCBM website and tools while other teachers struggled to know how to access the information even when support was provided. This study supports what other studies have also found, system change takes time, and in a tiered intervention system, some tiers may be more developed and systematic than others. This study included one year of SDM implementation. More time may be needed to see a change in large-scale assessments associated with the use of CBMs. Successful RTI implementation depends on teachers.

Regarding teacher implementation of CBMs, Deno (2003a), states that, “CBM developers have painfully learned neither empirically nor technologically valid reasons are enough to persuade many people” (p. 13). Additional barriers to systematic implementation include *face validity* issues for teachers. Yell, Deno, and Marston (1992) noted differences in survey data between teachers and administrators. Though designed as efficient measures, teachers expressed concern over the time needed to give CBMs, while administrators expressed concern regarding the resourcefulness of teachers to respond to the data, modify, and evaluate their instruction. Administrators noted the “single most frequently indentified barrier from the administrators’ perspective was the natural resistance that occurred when any change in practice was required by personnel” (p. 14). District-wide or school wide change in student outcomes based on increased systematicity of RTI and SDM will lag until systems change occurs.

Variability within models. As noted in this study and previous studies, There is a great deal of variability within SDM models. Bradley, Danielson, and Doolittle (2005) describe identified core features of RTI, (a) high-quality, research-based classroom instruction, (b) universal screening, (c) continuous progress monitoring, (d) research-based secondary or tertiary interventions, (e) progress monitoring during interventions, and (f) fidelity measures. Decisions follow depending on students’ response to the research-based interventions. The National Association of State Directors of Special Education (NASDSE) delineates four broad principles that guide RTI implementation. First, when students receive quality instruction, they can learn. If they are not learning, it may not be a deficit in the student, but inadequate instruction. Second, intervention occurs early and is tiered. Third, implementation of research-based, scientifically-

validated interventions occurs. Fourth, data informs decisions in both core instruction and interventions. Liu, Alonzo, and Tindal (2011), refer to six essential components in their RTI model demonstration project. They state that these elements influence student outcomes and generalize across multiple models. The components in their RTI demonstration model include: (a) effective Tier 1 instruction, (b) universal screening, (c) effective Tier 2 and Tier 3 interventions, (d) progress monitoring, (e) evidence-based decision making, and (f) organizational support. Liu et al. go on to indicate that RTI is a systematic change and caution that a change in student outcomes is dependent on the district's adoption of RTI. They point out that an adequate assessment of RTI implementation is dependent on enough teachers implementing the approach with integrity. Bradley et al. (2005) state, "there are variations in how levels are operationalized and thus no single model is currently accepted as the 'gold standard' of RTI" (p. 486).

Evaluate implementation. Chad et al. (2008) suggest that research on reading development and reading difficulties has increased knowledge and the ability to both identify and remediate students at risk for reading failure. They challenge that in addition to a focus on identifying and remediating, "these findings need to be considered in light of the environment in which this knowledge is used" (p. 176). They contend that looking at student characteristics is not enough. The instruction itself as well as the intensity of the instruction is also critical. Ineffective early instruction can also develop poor reading skills. Chad et al. (2008) emphasize the need to evaluate the implementation of system-wide approaches to reading instruction and how they affect students. They suggest that

implementing the components of a problem-solving systematic model is a challenge to schools and can change instructional context in meaningful ways.

Districts and schools hold power to improve student outcomes. This may occur by strengthening systematicity and increasing the fidelity of individual RTI components. The lack of significant results in this study may be attributed to the need to further develop the RTI model in both of the sample schools. Although future research on increasing the systematicity and fidelity of components inherent to RTI implementation is needed, the use of PRF as a predictor for high-stakes assessments is evident.

Correlation of PRF and OAKS-Reading

My study documented further evidence of the strong connection between [F-W-S] PRF and OAKS- Reading. There was a strong positive correlation between [F-W-S] PRF and OAKS-Reading ($r = .69, .67, \text{ and } .68$, respectively). Sáez et al. (2010) evaluated the technical adequacy of the easyCBM grades 3-7 reading progress monitoring reading assessments. They analyzed the predictive validity related to the Oregon State Assessment in reading (OAKS) and they found that teachers could use easyCBM fall measures to predict whether students would pass OAKS. This finding suggests that the measures may be reliable and valid for use as screening measures, and if so, easyCBM can be a useful tool for schools looking to improve academic achievement. Good, Simmons and Kame'enui (2001) also note the use of CBMs in predicting success on high stakes assessments. Nese et al. (2011) suggest that standard-aligned CBMs provide important information on student progress toward standards. This information supports the likelihood of students passing high stakes-tests aligned to standards. Tracking student learning through growth on successive benchmark assessments and progress-monitoring

tests provides a further valuable data source for identifying students whose progress is likely inadequate to meet states' expectations prior to end-of-the-year large-scale assessments.

Within-Year Growth Rates for Students at Risk and Not at Risk

My study documented further evidence that within-year growth for PRF was not linear. I noted an increase for gains in the [F-W] PFR performance as compared to the [W-S] PFR gains. This finding supports the results of Nese et al. (2011) that indicate that a discontinuous growth model fit better than a linear model with greater growth in the [F-W] than [W-S]. Both students at risk and students' not at risk had accelerated growth between [F-W]. These results may be attributed to the fall score being artificially low due to "summer loss," and thus appear to be a lot greater gain. Additionally, the reduced gain between [W-S] may be related to a shift in the focus of Tier I classroom and Tier II and III intervention instruction from fluency to OAKS-Reading related test items. Finally, for high-performing students, a plateau may be reached after students reach a certain level of fluency. Continued growth in this situation would not be expected. These results provide information that can help inform how resource allocation may be reallocated and instructional focus redirected to provide different results.

Practical Implications

Based on information provided by this and previous studies, school districts and schools should further operationalize RTI, increasing the systematicity and fidelity of the individual components that form the RTI model. High-stakes accountability for student performance continues. NCLB focused attention and accountability for not only the whole student enrollment, but also increased scrutiny and accountability for subgroups.

Schools and districts were required to meet AYP for each of 10 subgroups (students with disabilities, Limited English Proficient, economically disadvantaged, White, Black, Hispanic, Asian/Pacific Islander, American Indian/Alaska Native, and multi-racial/multi-ethnic). Title I schools that failed to meet AYP for two years or more received an *Improvement Status*. Under NCLB, Oregon was projected to have 250 out of 594 or 42% Title I schools in *Improvement Status* for 2012-2013. Under these circumstances, it is no surprise that states, including Oregon, requested ESEA Flexibility Waivers (NCLB, 2002; ORS 329.105; ORS 329.488; ODE, 2009; ODE, 2012).

States granted ESEA Flexibility Waivers have some relief from the more stringent parts of NCLB. Under the waivers, schools and districts continue to report disaggregated data on the performance of all 10 subgroups to determine focus and priority schools. The specific method for this determination varies across states. Oregon will use a method that considers proficiency, growth, subgroup growth, graduation, and subgroup graduation to identify lowest performing Title I schools. The Waivers replace the *In Improvement* language with *Priority or Focus Schools* (ODEb, 2012).

In addition to a change in NCLB requirements, standards and related assessments are changing. Forty-six states and two territories and D.C. have joined the Common Core State Standard (CCSS) Initiative and have fully adopted the new CCSS standards. These states and territories have also joined assessment consortia. The two comprehensive consortia are The Partnership for the Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (Smarter Balanced). Two alternative assessment consortia are the Dynamic Learning Maps (DLM) and the

National Center and State Collaborative (NCSC) (Educational Testing Service (ETS), 2012).

Though the assessment and accountability environment is changing, it is not becoming any less high stakes. The federal Flexibility Waivers require a *Statewide System for Teacher and Leader Effectiveness*. Included is a draft framework to support districts in developing and implementing teacher and leader evaluations. Pilot projects are occurring during the 2012-2013 year with full implementation during the 2013-2014 year. States are also passing new legislation and regulations to further support the federal requirements. The Oregon Legislature passed SB 290 during the 2011 general session. This set in motion changes in teacher and administrator evaluation in Oregon. Through federal requirements and state regulation, Oregon has adopted a statewide framework for educator effectiveness that includes standards and assessment of teacher and administrator effectiveness, and a new focus on students' learning and growth. To balance the use of high-stakes assessments in the new accountability model, Oregon has identified multiple measures for evaluation with "student learning and growth" as a "significant factor." Teachers will develop at least two annual rigorous student-learning goals. Teachers and administrators will collect regular assessment of progress and meet at least twice to note progress toward meeting the goals. Teachers who are responsible for student learning in tested subjects and grades will use state high-stakes assessments as one measure and select one or more additional measures from common national, international, regional, or district-developed measures (ODE, 2012b; ORS.342.805 to 342.937; Chalkboard Project, 2012). New policies and laws have increased the stakes for districts, schools, and educators and potentially the learning opportunities for students.

The new high-stakes environment. RTI, CBMs, and SDM are likely to play an amplified role in this new assessment environment (ETS, 2012). Because of the recent legislation associated with increased scrutiny for student achievement, schools and districts have an increased need for timely and meaningful data by which educators can assess student growth on identified goals and support instructional and programmatic decisions (ORS.342.805 to 342.937). High-stakes summative assessments will continue to be indicators of accountability; however, high-stakes assessment scores alone do not supply adequate information pertaining to students' current academic achievement. High-stakes assessment scores are not timely, and they tend to assess too broad a range of skills to interpret the data for instructional decision-making (Linn, Baker, & Betebenner 2002). The effective use of CBMs and SDM within an operational RTI model provide timely information that may inform student growth on individual student learning goals, predict success on high-stakes tests, and help form strategic instructional and resource allocation decisions.

The result of the information supplied by this and previous studies indicate that school districts should consider taking full advantage of the information gained by reading PRF CBMs, and create strategic assessment schedules that support taking advantage of the data to inform master schedule development as well as intervention schedules and related staff allocation. The fall PRF screening assessments, along with follow up diagnostic and ongoing progress monitoring assessment results, support reading instructors in confidently making instructional intervention decisions for students who are at risk or at some risk for reading failure. Low fall PRF CBM scores alert teachers that specific students are at risk of not meeting benchmarks on high-stakes

assessments. While further analysis of student performance and errors may be required following benchmark PRF screening to determine specific intervention types, the valid and reliable information from CBMs informs decision making for instructional programs at the classroom and building level.

This study, along with others, indicates that students make greater gains in PRF between fall and winter. Districts and schools should analyze their school practices to investigate the reasons students may make greater gains between [F-W]. If further research supports that student accelerate learning early in the year, then districts and schools should take advantage of this growth opportunity by efficiently using the screening and related diagnostic assessment data to implement interventions early in the fall. Alternately, if growth slows between [W-S] due to school practices, this should be investigated. For example, if teachers shift their focus to preparing for high stake-tests and away from practicing reading fluency during the second half of the year, slower PRF growth may be a result. Additionally, the implementation of systematic PRF progress monitoring as a part of the testing schedule ensures monitoring students' skill growth and deficits more closely and supports timely decisions, increasing the potential for PRF growth throughout the year.

Resource allocation. Based on the fall PRF results and diagnostic assessments, building administrators can assuredly make decisions about staff allocations, instructional schedules, and intervention programs. The findings indicate that students who are at risk for reading failure not only need more time for reading instruction, but also need more targeted instruction specific to their identified deficits. Using this assessment information, principals can strategically reallocate existing resources to include staff full

time employment (FTE) as well as time. District administrators likewise can make strategic decisions about staff allocation. Often a ratio model is used to staff buildings with staffing levels following an agreed upon student: staff ratio. This model does not take into account, for example, the unique risk level of the student populations who attend high poverty- schools and therefore does not strategically utilize the resources it has to distribute. Resource allocation used strategically within an RTI model may provide increased opportunity and increased achievement. However, additional resources are not a substitute for the long-term consequences an ineffective teacher has on a student.

Tier I:the foundation of RTI. Poor instruction may have long-term effects. Serious harm occurs when children receive inadequate instruction in the first grade. The dire early learning experiences negatively affect schooling across the years (Chard et al. 2008; Pianta & Caldwell 1990). Low achievement can be persistent and school wide. Though the lack of quality curriculum can be a cause, generally, the explanation is more complex and includes a multitude of conditions that converge, increasing the risk imposed by poor schooling. A slow-paced, unchallenging curriculum may be evidence of pervasive low expectations for students. Additionally, teachers who lack effective methods for teaching reading and have poor classroom management will struggle to meet the learning needs of students. In the three-tiered system of RTI, if Tier I is the foundation, then an effective classroom teacher and instruction is critical (Bradley et al. 2007). Research by Engelmann et al. (1979) supports this premise. They suggest the importance of focusing attention on the instruction and instructor first and the learner and assessment second. They suggest that before making a determination about a learning

deficit, one must first look at the instruction, and rule out that the instruction is the cause. Only then does the focus shift to the learner's possible difficulty with learning. Delivering effective Tier I instruction includes many critical aspects. Effective classroom management, positive classroom environment, high expectations for students, quality instruction, and strong content knowledge contribute to an effective Tier I. Systematicity without a strong Tier I foundation will have limited benefit.

Future Studies

Several prior studies indicate that CBMs within the SDM model RTI can inform instruction and increase outcomes for students at risk for reading failure. The insignificant findings in the current study indicate a need for future research in the components of RTI that have the highest impact on student achievement and the level of systematicity needed to see school-wide change in high-stakes assessments. The effectiveness of implementation is dependent on the educational professionals in schools. VanDerHeyden et al. (2005) state that, "Implementation is the linchpin of RTI. If there is to be an evaluation of RTI, a series of interventions must be implemented correctly and monitored" (p. 226).

Future research should focus on further developing and evaluating each component as part of an integrated system, particularly with respect to identifying the specific assessment and instructional strategies within each of the tiers in the intervention hierarchy. Several studies indicate a range in the implementation of RTI. Future research should focus on further development of RTI by specifying in more detail each of the four components: (a) screening, assessment, and progress monitoring; (b) research-based curriculum, instruction, and focused interventions; (c) collaborative problem

solving process for decision making, and (d) creating the tools and resources related to implementing each component (Coleman, Buysse, & Neitzel, 2006). Additionally, additional research is needed on large-scale implementation and implementation across all academic areas and age levels as well as the role parents play in the process (Bradley et al. 2007).

The strong positive correlation between PRF and OAKS-Reading reinforces the importance of oral reading fluency as a predictor of future success in reading and success on high-stakes reading assessments. Future research should expand upon the evidence that PRF is closely associated with performance on OAKS-Reading. Future research should expand knowledge of within-year PRF growth within a SDM model for students at risk and not at risk. This study and other studies have found that PRF growth is not linear, with more growth between [F-W] than between [W-S]. This finding can support strategic resource allocation and minimize incorrect decisions based on growth expectancy rates.

Conclusion

The current study contributes to our building understanding of how SDM with CBMs are critical components of RTI. In this study, increased systematicity was not found to increase change on a high-stakes test. A longitudinal study may be warranted, as system change takes time. Whether future research more clearly demonstrates the essential need for fidelity with each component within each RTI tier, this study adds to the evidence that CBMs can provide critical information to increase effective systematic decision making. In addition, the current results indicate that CBMs for reading can predict outcomes on a high-stakes reading assessment. Districts and schools hold power

to improve student outcomes. This may occur by strengthening systematicity and increasing the fidelity of individual RTI components.

APPENDIX
CORRELATION OF [F-W-S] PRF
AND OAKS-READING FOR COHORT TWO
4TH GRADE

Figure 2

Correlation of OAKS-Reading and Fall PRF

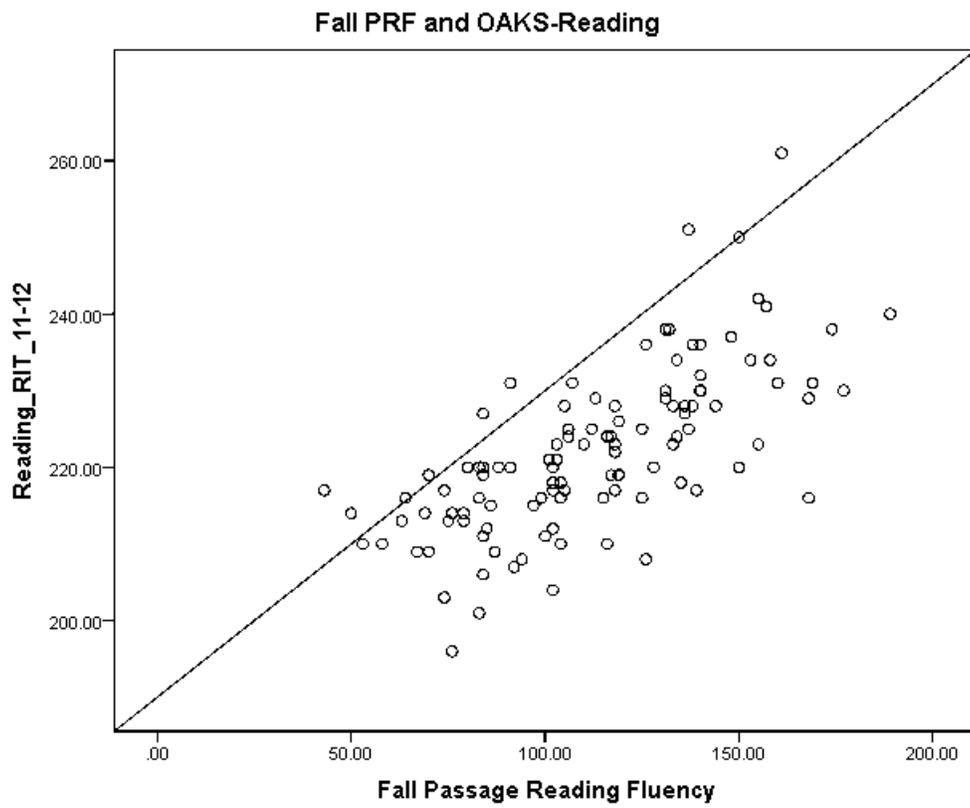


Figure 3

Correlation of OAKS-Reading and Winter PRF.

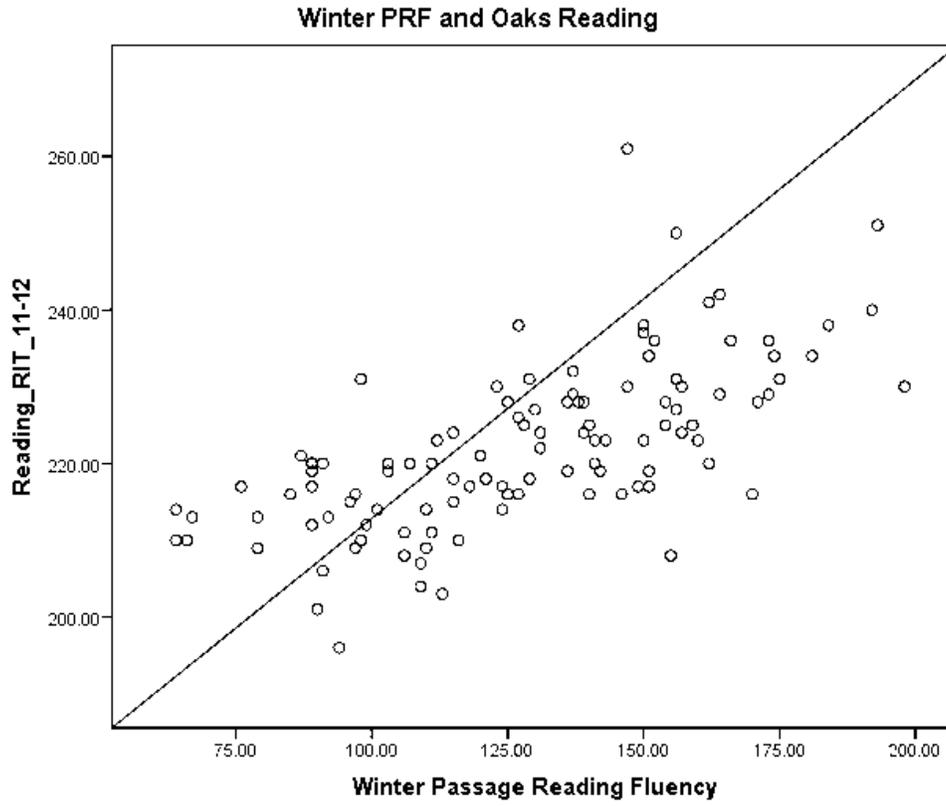
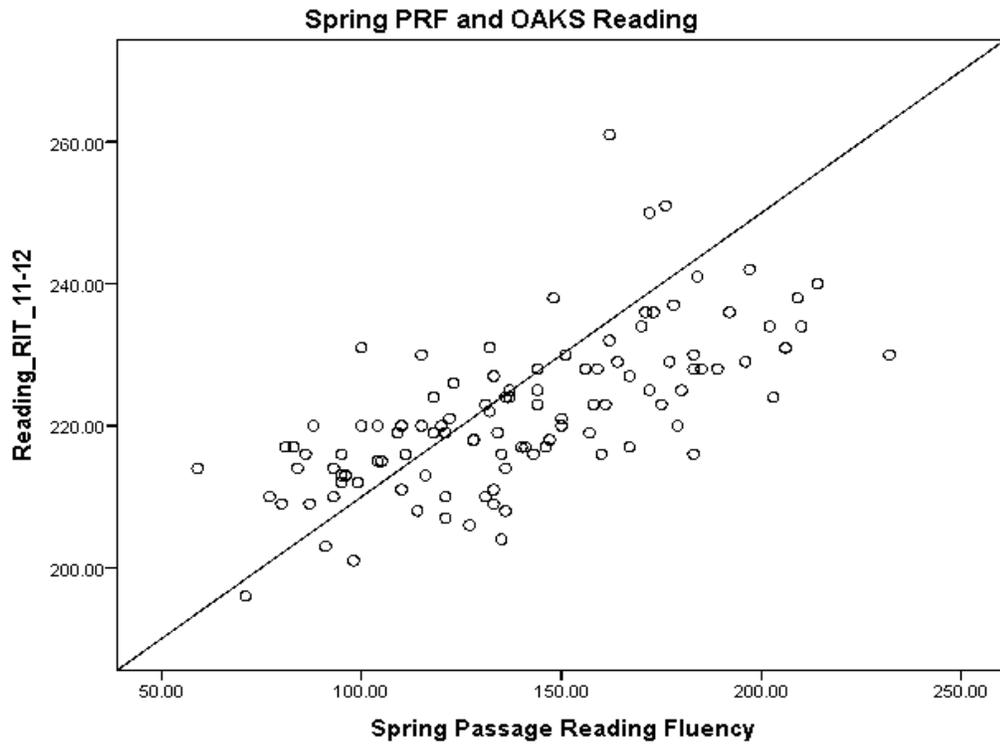


Figure 4

Correlation of OAKS-Reading and Spring PRF



REFERENCES CITED

- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Anderson, D., Alonzo, J., & Tindal, G. (2011). *easycbm reading criterion related validity evidence: Washington state test 2009-2010 (Technical Report # 1101)*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., Lai, C. F., Anderson, D., Park, B. J., & Tindal, G. (2012). *An examination of test-retest, alternate form reliability, and generalizability theory study of the easycbm reading assessments: Grade 4 (Technical Report #1219)*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., Park, B.J., & Tindal, G (2012) *The development of easycbm reading assessments. (Technical Report # 1222)*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., & Tindal, G. (2007) *The development of word and passage reading fluency measures for use in a progress monitoring assessment system (Technical Report No #40)*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., & Tindal, G. (2008). *Examining the technical adequacy of fifth-grade reading Comprehension measures in a progress monitoring assessment system (Technical Report# 45)*.Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., & Tindal, G. (2010) *Teachers' manual for district easycbm: Getting the most out of the system*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., & Tindal, G (2012) *Interpreting the easy cbm progress monitoring test results*. Eugene, OR: Behavioral Research and Teaching.
- Alonzo, J., Tindal, G., Ulmer, K., & Glasgow, A. (2006). *EasyCBM online progress monitoring assessment system*. Eugene, OR: Behavioral Research and Teaching.
- Anderson, R. C., Hiebert, E. H., & Scott, J. A. Wilkinson, IAG (1985). *Becoming a nation of readers: The report of the commission on reading*. Newark, DE: International Reading Association.
- Bandura, A. (1982a). The assessment and predictive generality of self-percepts of efficacy. *Journal of Behavioral Theory Experimental Psychiatry*, 13, 195-199.
- Bandura, A. (1982b). Self-efficacy in human agency. *American Psychology*, 37, 122-147.

- Batsche, G., Elliott, J. L., Grimes, J., Kovaleski, J. F., Prasse, D., & Tilly III, W. D. (2005). *Response to intervention*. Alexandria, VA: National Association of State Directors of Special Education, Inc.
- Batsche, G. M., Kavale, K. A., & Kovaleski, J. F. (2006). Competing views: A dialogue on response to intervention. *Assessment for Effective Intervention, 32*, 6-19.
- Boston, C. (2002). The concept of formative assessment. *Practical Assessment, Research & Evaluation, 8*, 1-5.
- Bradley, R., Danielson, L., & Doolittle, J. (2005). Response to intervention. *Journal of Learning Disabilities, 38*, 485-486
- Bradley, R., Danielson, L., & Doolittle, J. (2007). Responsiveness to intervention. *Teaching Exceptional Children, 39*, 8-12.
- Burns, M. K., & Ysseldyke, J.E. (2005). Comparison of existing response to intervention models to identify and answer implementation questions. *The California School Psychologist, 10*, 9-20.
- Case, L. P., Speece, D. L., & Molloy, D.E. (2003). The validity of a response-to-instruction paradigm to identify reading disabilities: A longitudinal analysis of individual differences and contextual factors. *School Psychology Review, 32*, 557-582
- Chalkboard Project, The (2012)) *Oregon's Senate Bill 290: A Primer*. (n.d.) Retrieved March 30, 2013 from: <http://chalkboardproject.org/wp-2012/08/FinalSB290PrimerExport8.8.pdf>
- Chard, D. J., Stoolmiller, M., Harn, B. A., Wanzek, J., Vaughn, S., Linan-Thompson, S., & Kame'enui, E. J. (2008). Predicting reading success in a multilevel schoolwide reading model: A retrospective analysis. *Journal of Learning Disabilities, 41*, 174-187.
- The Childrens' Reading Foundation. (n.d.). Retrieved on April 7, 2013 from, <http://www.readingfoundation.org/>.
- Christ, T. J., Burns, M. K., & Ysseldyke, J. E. (2005). Conceptual confusion within Response-to-intervention vernacular: Clarifying meaningful differences. *NASP Communiqué, 34*, 1.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Routledge Academic.

Coleman, M. R., Buysse, V., & Neitzel, J. (2006). *Recognition and response: An early Intervening system for young children at-risk for learning disabilities (fullreport)*. Chapel Hill: University of North Carolina, Frank Porter Graham Child Development Institute

Common Core State Initiative. (n.d.). Retrieved on April 7, 2013 from:
<http://www.corestandards.org/>

Crawford, L., Tindal, G., & Stieber, S (2001). Using oral reading rate to predict student performance on statewide achievement tests. *Educational Assessment*, 7, 303-323.

Deno, S. L. (1985) Curriculum-based measurement: The emerging alternative. *Exceptional Children*, 52, 219-232.

Deno, S.L (1987). Curriculum- based measurement. *Teaching Exceptional Children*, 37, 41-47.

Deno, S. L. (1989). Curriculum-based measurement and special education services: A Fundamental and direct relationship. In M. R. Shinn (Ed.), *Curriculum-based measurement: Assessing special children* (pp. 1-17). New York: Guilford.

Deno, S. L. (1990). Individual differences and individual difference: The essential difference of special education. *Journal of Special Education*, 24, 160-173.

Deno, S. L. (2003a). Curriculum-based measurement: development and perspectives. *Journal of Special Education*, 28, 3-12.

Deno, S. L. (2003b). Developments in curriculum-based measurement. *Journal of Special Education*, 37, 184-192.

Deno, S. L., & Mirkin, P. K. (1977). *Databased Program Modification: A Manual*. Reston, VA: Council for Exceptional Children.

Educational Testing Service (2012) *Coming Together to Raise Achievement New Assessments for the Common Core State Standards*. (n.d.) Retrieved on April 7, 2013 from http://www.k12center.org/rsc/pdf/20847_consortiaguide_sept2012.pdf

Eignor, D. R. (2001). Standards for the development and use of tests: the standards for educational and psychological testing. *European Journal of Psychological Assessment*, 17, 157-163.

Engelmann, S., Granzin, A., & Severson, H. (1979). Diagnosing instruction. *The Journal of Special Education*, 13, 355-363.

- Fiester, L. (2010). Early warning! Why reading by the end of third grade matters. (KIDS COUNT Special Report). Baltimore, M.D: *Annie E. Casey Foundation.*
- Fuchs, D., Fuchs, L. S., Mathes P. G., & Simmons, D. C. (1997) Peer-assisted learning strategies: Making classrooms more responsive to diversity *American Educational Research Journal*, 34, 174-206.
- Fuchs, L. S. (1989) Evaluating solutions monitoring progress and revising intervention plans. In M. R. Shinn, (Ed) *Curriculum-based measurement: Assessing special children* (pp. 153-181) New York: Guilford
- Fuchs, L. S. (1998). Computer applications to address implementation difficulties associated with curriculum-based measurement. In M. R. Shinn, (Ed.) *Advanced applications of curriculum-based measurement* (pp. 89-112) New York: Guilford.
- Fuchs, L. S. Deno, S. L., & Mirkin, P. (1984). The effects of frequent curriculum-based measurement and evaluation on pedagogy, student achievement, and student awareness of learning. *American Educational Research Journal*, 21, 449-460.
- Fuchs, L. S. Fuchs, D. Hamlett, C. & Ferguson, C. (1992). Effects of expert system consultation within curriculum-based measurement, using a reading maze task. *Exceptional Children*, 58, 436-450.
- Fuchs, L. S., & Fuchs, D. (1998). Treatment validity: A unifying concept for reconceptualizing the identification of learning disabilities. *Learning Disabilities Research and Practice*, 13, 204-219.
- Fuchs L. S., Fuchs D., Hosp M. K., & Jenkins J. R. (2001) Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, 5, 239-256.
- Glover, T. A., & Vaughn, S. (2010). *The Promise of Response to Intervention: Evaluating Current Science and Practice*. New York, NY: Guilford
- Good, R. H., Simmons, D. C., & Kame'enui, E. J. (2001). The importance and decision-making utility of a continuum of fluency-based indicators of foundational reading skills for third-grade high stakes outcomes. *Scientific Studies of Reading*, 5, 257-288.
- Good III, R. H., & Kaminski, R.A. (1996). Assessment for instructional decisions: Toward a proactive/prevention model of decision making for early literacy skills. *School Psychology Quarterly*, 11, 326

- Good, R. H., Gruba, J., & Kaminski, R. A. (2002). Best practices in using dynamic indicators of basic early literacy skills (DIBELS) in an outcomes-driven model. In A. Thomas J. Grimes (Eds.), *Best practices in school psychology* (4th ed., pp. 699-720). Washington, DC: National Association of School Psychologists.
- Graney, S. B., Missall, K. N., Martínez, R. S., & Bergstrom, M. (2009). A preliminary investigation of within-year growth patterns in reading and mathematics curriculum-based measures. *Journal of School Psychology, 47*, 121-142.
- Hasbrouck, J., & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher, 59*, 636-644.
- Hintze, J. M., & Silbergitt, B. (2005). A longitudinal examination of the diagnostic accuracy and predictive validity of R-CBM and high-stakes testing. *School Psychology Review, 34*, 372.
- Hoover, J. J., & Love, E. (2011) Supporting school –based response to intervention: A practitioner’s model. *Teaching Exceptional Children, 43*, 40-48.
- Jenkins, J. R., Fuchs, L. S., Van Den Broek, P., Espin, C. A., & Deno, S. L. (2003). Accuracy and fluency in list and context reading of skilled and RD groups: Absolute and relative performance levels. *Learning Disabilities Research and Practice, 18*, 222-236.
- Konrad, M., Helf, S., & Joseph, L. M. (2011). Evidence-based instruction is not enough: Strategies for increasing instructional efficiency. *Intervention in School and Clinic, 47*, 67-74.
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293-323.
- Latham, G. P., & Baldes, J. J. (1975). The 'practical significance' of Locke's theory of goal setting. *Journal of Applied Psychology, 60*, 122-124.
- Linn, R. L., Baker, E. L., & Betebenner, D. W. (2002). Accountability systems: Implications of requirements of the no child left behind act of 2001. *Educational Researcher, 31*, 3-16.
- Liu, K., Alonzo, J., & Tindal, G. (2011). Implementation and outcomes. In Shapiro, P.E. S., Zigmond, N., & Wallace, T (Eds.) *Models for implementing response to intervention: Tools, outcomes, and implications*. (pp. 341-368). New York, NY: Guilford
- Marston, D., Muyskens, P., Lau, M., Canter, A. (2003). Problem-solving model for decision making with high-incidence disabilities: The Minneapolis experience. *Learning Disabilities Research and Practice, 18*, 187-200.

- National Association of State Directors of Special Education (NASDSE) (2011) *Response to intervention: Blueprints for implementation*. (n.d.) Retrieved on April 7 2013 from: <http://www.nasdse.org/>
- National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office (US).
- Nese, J. F. T., Park, B. J., Alonzo, J., & Tindal, G. (2011) Applied curriculum-based measurement as a predictor of high-stakes assessment: Implications for researchers and teachers. *The Elementary School Journal*, 111, 608-624.
- Nese, J. F. T., Biancarosa, G., Anderson, D., Cheng- Fei, L., Alonzo, & J., Tindal, G. (2012) Within-year oral reading fluency with cbm: a comparison of models. *Reading and Writing: An Interdisciplinary Journal*, 25, 887-915.
- No Child Left Behind Act of 2001 (2002). Public Law #107-110, 115 Stat. 1425. (n.d.) Retrieved on April 7, 2013 from: <http://www.nclb.gov/>
- Oregon Department of Education (2009). *AYP Policy and Technical Manual*. Salem Oregon: Oregon Department of Education, Office of Assessment and Accountability.
- Oregon Department of Education (2012). *Comparing NCLB with Oregon's ESEA Flexibility Request* Salem Oregon: Oregon Department of Education, Office of Assessment, and Accountability.
- Oregon Department of Education (2012) *Oregon Flexibility Waiver*. (n.d.) Retrieved on March 13, 2013 from: http://www.ode.state.or.us/initiatives/nclb/docs/oregons_completed_esea_flexibility_request_abridged.pdf
- Oregon Department of Education. (2012) *Oregon Statewide Assessment Reading/Literature Test Specifications and Blueprints*. Salem, Oregon: Oregon Department of Education, Office of Assessment and Information Services.
- ORS 329.105; ORS 329.488 (n.d) Retrieved on April 7, 2013 from <http://www.oregonlaws.org/ors/chapter/329>
- Patarapichayatham, C., Anderson, D., Irvin, P. S., Kamata, A., Alonzo, J., & Tindal, G. (2011). *Easycbm® slope reliability: letter names, word reading fluency, and passage reading fluency* (Technical Report # 1111). Eugene, OR: Behavioral Research and Teaching.

- Pianta, R. C., & Caldwell, C. B. (1990). Stability of externalizing symptoms from kindergarten to first grade and factors related to instability. *Development and Psychopathology*, 2, 247-258.
- Posner, M. I., & Snyder, C. R. R. (1975). Facilitation and inhibition in the processing of signals. *Attention and performance*, V, 669-682.
- Potter, M., & Mirkin, P. (1982). Instructional planning and implementation practices of elementary and secondary resource room teachers. (Research Report # 65). University of Minnesota, Institute for Research on Learning Disabilities, Minneapolis, MN.
- Rosswork, S. G. (1977). Goal setting: The effects on an academic task with varying magnitudes of incentive. *Journal of Educational Psychology*, 69, 710-715.
- Sáez, L., Park, B. J., Nese, J. F. T., Jamgochian, E. M., Lai, C. F., Anderson, D., Kamata, A., Alonzo, J., & Tindal, G. (2010). *Technical adequacy of the easyCBM reading measures (Grades 3-7), 2009-2010 Version* (Technical Report #.1005). Eugene, OR: Behavioral Research and Teaching.
- Salvia J., & Ysseldyke, J. E. (1978). *Assessment in special and remedial education*. Boston: Houghton-Mifflin
- Salvia, J., Ysseldyke, J. E., & Bolt, S. (2007). *Assessment in special and inclusive education* (10th ed.). Boston: Houghton Mifflin.
- Hintze, J. M., & Silbergliitt, B. (2005). A longitudinal examination of the diagnostic accuracy and predictive validity of R-CBM and high-stakes testing. *School Psychology Review*, 34, 372.
- Shapiro, E. S., Keller, M. A., Lutz, J. G., Santoro, L. E., & Hintze, J. M. (2006). Curriculum-based measures and performance on state assessment and standardized tests reading and math performance in Pennsylvania. *Journal of Psycho educational Assessment*, 24, 19-35.
- Shinn, M. R. (1989). *Curriculum-based measurement: Assessing special children*. New York: Guilford
- Shinn, M. R. (1995). Best practices in curriculum-based measurement and its use in a problem-solving model. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology III* (pp., 546-564). Washington, DC: National Association of School Psychologists.

- Shinn, M. R., & Bamato, S. (1998). Advanced applications of curriculum-based measurement: "big ideas" and avoiding confusion. In M. R. Shinn (Ed.), *Advanced Applications of Curriculum-Based Measurement* (pp. 1-31). New York: Guilford.
- Sibley, D., Biwer, D., & Hesch, A. (2001). Establishing curriculum-based measurement oral reading fluency performance standards to predict success on local and state tests of reading achievement. Paper presented at the annual meeting of the National Association of School Psychologists, Washington, D.C.
- Silberglitt, B., & Hintze, J. (2005). Formative assessment using CBM-R cut scores to track progress toward success on state-mandated achievement tests: A comparison of methods. *Journal of Psycho educational Assessment*, 23, 304-325.
- Silberglitt & Hintze (2007). How much growth can we expect? A conditional analysis of R-CBM growth rates by level of performance. *Council for Exceptional Children*, 74, 71-84.
- Simmons, D.C., Coyne, M.D., Kwok, O.M., McDonagh, S., Harn, B.A., & Kame'enui, E. J. (2008). Indexing response to intervention: A longitudinal study of reading risk from kindergarten through third grade. *Journal of Learning Disabilities*, 41, 158-173.
- Simmons, D.C., & Kame'enui, E.J. (Eds) (1998). What reading research tells us about children with diverse learning needs: Bases and basics. Mahwah, NJ: Lawrence Erlbaum
- Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academies Press.
- Speece, D. L., Case, L. P., & Molloy, D. E. (2003). Responsiveness to general education instruction as the first gate to learning disabilities identification. *Learning Disabilities Research & Practice*, 18, 147-156.
- Stecker, P. M., & Fuchs, L. S. (2000). Effecting superior achievement using curriculum-based measurement: The importance of individual progress monitoring. *Learning Disabilities Research & Practice*, 15, 128-134.
- Tilly, W. D. (2002). Best practices in school psychology as a problem-solving enterprise. In A. Thomas J. Grimes (Eds.), *Best practices in school psychology IV* (Vol. 1, pp. 21-36). Bethesda, MD: National Association of School Psychologists.
- Tindal, G., & Alonzo, J (2009) Fall Benchmark Screener Assessments in Reading Assessor Booklet easyCBM. (n.d.) Retrieved on April 7, 2013 from: <http://easycbm.com/>

- Tindal, G., & Alonzo J (2012) Interpreting the easyCBM Progress Monitoring Test Results. (n.d.) Retrieved on April 7, 2013 from: <http://easycbm.com/>
- Tindal, G., Nese, J. F. T., & Alonzo, J. (2009). *Criterion-related evidence using easyCBM® reading measures and student demographics to predict state test performance in grades 3-8* (Technical Report # 0910) Eugene, OR: Behavioral Research and Teaching.
- Tindal, G., & Nese, J. F. T., (2011). Applications of curriculum-based measures in making decisions with multiple reference points. *Advances in Learning and Behavioral Disabilities, 24*, 31-58.
- Tindal, G., & Nese, J. F. T., (April 2012). Within year achievement growth using curriculum based measurement. Paper presented at the National Council of Measurement in Education, Vancouver, B. C.
- U.S. Department of Education (2012) *The Nations Report Card*. (n.d.) Retrieved on March 30, 2013 from: <http://nces.ed.gov/nationsreportcard/reading/interpret-results.asp>
- U.S. Department of Education (March 2010) *a Blueprint for Reform: The Reauthorization of the Elementary and Secondary Education Act*. (n.d.) Retrieved on May, 2012 from: <http://www2.ed.gov/policy/elsec/leg/blueprint/index/html>
- VanDerHeyden, A. M., Witt, J. C., & Barnett, D. W. (2005). The emergence and possible futures of RTI. *Journal of Psychoeducational Assessment, 23*, 339-361.
- VanDerHeyden, A. M., Witt, J. C., & Gilbertson, D. (2007). A multi-year evaluation of the effects of a response to intervention (RTI) model of identification of children for special education. *Journal of School Psychology, 45*, 225-256
- Yell, M. L., Deno, S. L., & Marston, D. B. (1992). Barriers to implementing curriculum-Based measurement. *Assessment for Effective Intervention, 18*, 99-112.