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An Examination of Standards-Based Education Relative to Research-Based Practices in Instruction and Assessment

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AN EXAMINATION OF STANDARDS-BASED EDUCATION RELATIVE TO RESEARCH-BASED PRACTICES IN INSTRUCTION AND ASSESSMENT

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B.S. Wheelock College, 1995

M.S. University of Southern Maine, 1999

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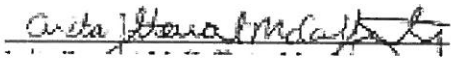

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An Abstract of the Dissertation Presented
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Public schools in the United States face constant political efforts to reform our educational system. One of major reforms, standards-based education, links all aspects of classroom instruction and assessment with identified, measureable, learning targets. Currently, there is a lack of empirical evidence that standards-based education results in improved student achievement. Explanations for that are: a wide variation in implementation across states, regions, districts, schools, and classrooms; the lack of a clear and consistent purpose and understanding of standards-based instruction; and the fact that reporting practices do not always translate into adjustments to classroom instruction. The major findings in this study suggest an additional explanation is a disconnect occurring at the school and district level. As districts attempt to make meaning of standards-based reform as a public policy, the interpretation and implementation vary

substantially. A growing number of school districts are partnering with educational agencies for direction. The result is increased variance across districts.

This qualitative study explores the perceptions of four teachers, from high schools in two different school districts, on the impact of standards-based education on their teaching, and examines whether standards-based education mirrors research-based instructional practices in the instructional practices of those teachers. Each of the subjects participated in a three-part interview process. A *Framework for Research-Based Instructional Practices* was used as a lens for understanding instructional practices in standards-based classrooms.

While the study is based upon a small sample of teachers, the results raise critical issues in the implementation, and promise of, standards-based education. All teachers interviewed are shifting their instructional practices, and continuing to implement the five practices in the framework: learning targets; authenticity; feedback; opportunities for remediation; and opportunities for extension. Three additional key practices emerged: focused instructional time, direct instruction, and technology. While there was commonality and consistency within the same district, distinct differences in understanding and implementation were found between districts. In the absence of specificity and instructional guidance, the interpretation and beliefs of consultants, curriculum leaders, and teachers are leading to differences in instructional implementation. Such a response to the void between policy and implementation has resulted in increased variance across districts.

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CHAPTER 1 -- INTRODUCTION

Statement of the Problem

Public schools in the United States face constant political efforts to reform the educational system. Beginning in 1983 with *A Nation at Risk* and continuing today with the federal No Child Left Behind Act, substantial political attention has been focused on the perceived crisis in public school systems. Over time, many reform efforts have been tried. In the latest era of educational reform, two movements have converged: the need to increase public school accountability and outcomes, and the perceived necessity to improve the skills of teachers.

The most recent reform applies a model of accountability that articulates and measures specific standards of learning based upon adoption of the Common Core State Standards (CCSS), and implementation of standards-based education in the classroom. According to Guskey (2009), "No single issue has dominated education more over the last two decades than to 'get serious about standards' (National Commission on Teaching and America's Future, 1996)…Standards give direction to education reform initiatives by offering consensus about what students should learn and what skills they should acquire" (p. 1). The term standards-based education is also commonly referred to as competency-based or outcome-based education. The state of Maine uses the term "standards-based" interchangeably with "proficiency-based" education in its *Glossary of Terms Related to Proficiency-Based Learning* (Maine Department of Education, 2012). Since standards-based education is common lexicon in the state of Maine, that term is used throughout this study.

Advocates promise that implementation of standards-based education will increase the accountability and outcomes of public schools, and improve the skills of teachers. At state and

national levels, there is an increased expectation that performance on classroom, school, and district-level assessments will serve as indicators of increased student success and improved teaching practices. Such performance has come to be viewed as essential to providing an adequate educational experience for each student, one that prepares them for college and/or careers, and positions them to compete in the global economy. To that end, policymakers and educational theorists hold the implementation of standards-based education as a cornerstone for current national educational reform.

Reauthorization of the Elementary and Secondary Education Act, enacted as the federal No Child left Behind Act (NCLB), has further increased the stakes for accountability in standardized testing measures. According to Reeves, "In the past decade, the use of academic standards has grown from being the foundation for educational reform in about a dozen states to being the foundation for curriculum and assessment in about 50 states" (Reeves, 2004, p.106).

The Case for Standards-Based Education

For the past two decades, educational researchers have criticized the traditional system of letter grades while articulating the benefits of standards-based reporting (Marzano, 2007; Guskey, 2009; Voltz, Simms & Nelson, 2010; Marzano & Helfbower, 2011; Brookhart, 2011; Dean, Hubbell, Pitler, & Stone, 2012). Those researchers link the perceived shortcomings of the current educational system to the acquisition of letter grades based upon an accumulation of various points for work completion, learning behaviors, and homework, averaged together to form an annual letter grade, eventually leading to attainment of a high school diploma. They further argue that students who begin to earn failing grades in classes become less motivated and more disengaged in their educations. Conversely, they suggest that removing failing grades all together increases student motivation and engagement. The researchers further propose that

standards-based reporting methods more accurately demonstrate student mastery of learning targets over time, leading to reporting of true content mastery, and the attainment of a proficiency-based diploma. Standards-based grading procedures are thought to be a more individualized, fairer assessment of student achievement. Many of those systems eliminate a failing grade and seek to move students forward from where they are on a continuum of learning. Brookhart suggests, "Grading on standards for achievement means a shift from thinking that grades are what students *earn* to thinking that grades show what students *learn*" (Brookhart, 2011, p. 13).

The overall intent of standards-based education is to identify what it is that educators want students to know, and be able to do, and to align assessment with the measurement of those standards (Hargrove, Walker, & Huber, 2004). Also referred to as competency-based education, student-centered learning, or outcome-based education, the intent of standards-based education is that: students advance upon mastery of skills; learning objectives are transparent and explicit; and assessment is meaningful to students, and connected with learning standards (Sturgis, Rath, Weisstein, & Patrick, 2010). The RAND Corporation (2014) defines competency-based education as having three defining features: instruction that meets students where they are (flexible pacing); student choice in learning (personalized learning); and evaluation of students based upon evidence of proficiency (mastery of learning). A recent report from Jobs for the Future (2014) identifies eight core elements in student-centered learning: strong relationships; personalization and choice; appropriate levels of challenge; social and emotional growth; anytime, anywhere learning; integration of technology; online learning; clear, timely assessment and support; and fostering autonomy and lifelong learning.

The Proposed Impact of Standards-Based Education on Classroom Instruction

The focus of much of the educational theory on standards-based education surrounds assessment and reporting practices, not changes to instructional techniques. However, one of the assumptions of standards-based education is that learning pathways replace the former age-based and time-based system of education, and that student learning becomes customized and distinctly individualized. Voltz, Simms, and Nelson (2010) posit that movement will: help educators focus on critical knowledge; improve consistency; decrease low expectations for low-income and minority students; and promote collaboration among teachers of students in special education, English language learners, and general education. However, there is little empirical evidence of actual changes to classroom instruction.

Research-Based Instructional Practices

Whitehurst (2009) identifies research-based programs and instructional practices as a common label for evidence-based practice and instruction. In defining those synonymous terms, the International Reading Association identifies an instructional practice as evidence based when it has gone through rigorous research, and demonstrated a record of success (www.reading.org.) There must also be reliable, trustworthy and valid evidence to suggest the program is effective. The No Child Left Behind Act defines scientifically based research as: employing systematic, empirical methods of observation or experiment; involving rigorous data analysis; relying on valid methods of data analysis across multiple evaluators and measurements; and acceptance by a peer-reviewed or comparably rigorous process.

Substantial numbers of empirical research studies that identify the aspects of teaching and learning that result in improved student achievement (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). A recent Google Scholar search of such studies yielded more than

182,000 studies. Whether standards-based education mirrors research-based practice in the classroom is a critical question left unanswered. Ultimately, the success of standards-based education will likely depend upon the extent that research-based instructional practices are employed.

Currently, there is a lack of empirical evidence that standards-based education results in improved student achievement. Explanations for the limited supportive empirical research include:

- a wide variation in implementation across states, regions, districts, schools, and classrooms;
- the lack of a clear and consistent purpose and understanding of standards-based instruction; and
- the fact that reporting practices do not always translate into adjustments to classroom instruction.

A fourth barrier, and the focus of this research, is the potential mismatch between the evidence of best instructional practices, and those found in standards-based classrooms. The goal of this study was to explore the instructional practices in a sample of standards-based classroom.

Wide Variation in Implementation

Across states, regions, districts, schools, and classrooms there is a wide variation in the interpretation and implementation of standards-based education. Goodman (2012) examined correlations between states that had been identified as having the highest standards with the scores of 4th and 8th graders on the National Assessment of Educational Progress (NAEP). The

results showed little evidence that the quality of a state's standards correlated with increased student achievement on standardized testing.

Whitehurst (2009) conducted a similar national study that examined gain scores in student achievement from 2000-2009 as compared with the American Teacher Federation (ATF) quality ratings on state standards. Whitehurst concluded, "States with weak content standards score about the same on the NAEP as those with strong standards" (in Loveless, 2012, pg. 9). He further concluded that student achievement scores varied more widely within states than across them. Those results indicate that the commonality and quality of standards does not correlate well with student achievement.

Welsh and D'Agostino (2007) studied the standards-based grades of third and fifth graders in the same school district and compared those with the results of their standardized test scores on the Arizona Instrument to Measure Standards (AIMS, the Arizona state test). They found low overall agreement rates (16 percent to 26 percent) across reading, writing, and math. They also found wide variation when they looked at the statistics for individual classrooms. There is very little statistical agreement in the study that standards-based grades are indicators of standardized testing results. Further, the variation across classrooms indicates that the alignment of grades and tested standards is much greater in some classrooms than in others, suggesting that differences in instructional practices yields varied results (D'Agostino & Welsh in Brookhart, 2011, p.16).

The lack of clarity that remains at the national and state levels about the implementation of standards-based education continues to result in wide interpretation and variation across the field of education. Further, that variation presents a key barrier in the ability to produce empirical data to support or refute standards-based education as a means to advance student achievement.

Lack of Clear and Consistent Purpose and Understanding

Studies that examine the perceptions of students, teachers, and principals relative to standards-based education highlight the lack of a clear and consistent purpose and/or understanding of standards-based education. D'Agostino and Welsch (2007) found that the more advanced a teacher's perception and understanding of standards-based practices were, the more closely the classroom assessment of his or her students matched performance on the Arizona state assessment. However, those researchers found large variation of perception and understanding among teachers within the same school district. Certo, Cauley, Moxley, and Chafin (2008) found that 72 percent of student comments were negative, 21 percent neutral, and 1percent positive relative to the impact of standards-based learning on their educational experience. Hart Research Associates (1999) found that only 32 percent of teachers and 62 percent of principals strongly supported that approach.

Two recent studies have been requested by the Maine Legislature to assess the initial implementation of public schools toward a standards-based education and proficiency-based diploma system (Silvernail, Stump, Duina & Gunn, 2013; Silvernail, Stump, Hawes, & McCafferty, 2014). Those qualitative studies examine strengths and challenges to implementation at the school and district levels. The authors note:

> Various schools mentioned the transformation of school structures, learning pathways and student grouping methods as an important element of standards-based education reform….However, it appeared that many schools and districts had not yet changed the more traditional structures of their schools, and even classroom instruction appeared to maintain more traditional practices and methods" (Silvernail, Stump, Duina, & Gunn, 2013, p. 23-24).

Broadly, the results mirror the national studies in that there is a lack of clear and consistent understanding of standards-based education, and of the implementation of a proficiency-based diploma system at the district, school, and classroom levels. That lack presents another key barrier in gathering empirical data to support or refute standards-based education.

Reporting Practices and Adjustments to Classroom Instruction

Perhaps most importantly, there is a substantial void in the evidence that standards-based education, and even a shift to standards-based reporting practices, leads to positive adjustments to classroom instruction. Craig (2011) conducted a study of schools in Massachusetts that were using common state curriculum measures and the same state testing measure, Massachusetts Comprehensive Assessment System (CAS). She found that schools that implemented standards-based grading yielded decreased student test scores, and there were varied perceptions on the part of teachers, students, and principals, when compared with those schools using traditional grading systems (Craig, 2011).

Conversely, Haystead (2010), for Marzano Research Laboratories, produced one study that indicates increased student achievement in Re-inventing Schools Coalition (RISC) schools. The non-profit, RISC, was established in rural Alaska in 2002 by the superintendent of a rural, historically challenged school district. The study examined five RISC and six non-RISC schools in Alaska, one of each in Florida, and one of each in Colorado. The sample compared the total number of students in third grade through tenth grade who scored proficient or above on state tests for reading, writing, and mathematics. The results of all participating schools show the odds ratio of a student scoring at or above proficiency in a RISC versus non-RISC school were between 2.3 and 2.5 times higher in reading, writing, and math.

However, the study has some fundamental flaws in its design. The identified RISC schools were selected by RISC, and employed a specific, uniform approach to the implementation of standards-based education. Within the study, Haystead did not report student achievement in any of these schools prior to RISC implementation. The schools may have been higher performing than the non-RISC schools prior to implementation. There may also have been other factors that impacted the scores. The study was conducted as a means to gather data in support of the RISC model. Nonetheless, it is one of the foundational studies cited by proponents of standards-based reform.

In 2014, the RAND Corporation published a study for the Bill & Melinda Gates Foundation of three Project Mastery pilot programs, which were implemented by the Gates Foundation in 2011 to support large schools that serve primarily disadvantaged youth. Near the end of that year, the Gates Foundation asked the RAND Corporation to conduct the study focusing on analysis of implementation, student experience, and student performance. As one part of the study, student performance in Project Mastery schools was compared with student achievement in comparable schools. Results indicate a statistically significant lower score on the first English/Language Arts benchmark assessment in Project Mastery Schools. The authors note that the assessment was administered in November 2012, just two months into the first year of implementation. The second English Language Arts assessment, administered in January 2013, yielded higher overall scores in students enrolled in Project Mastery schools, although the difference was not statistically significant.

In the both those studies, an educational agency (RISC and The Gates Foundation Project Mastery) has entered the void noted above in implementation, understanding, and purpose, in an attempt to provide a specific approach to standards-based education. Such entry is noted to be

both in response to the lack of research, and in effort to establish evidence for the approach that the educational agency is leading. Aside from the Craig study, the existing independent research surrounding the evidence that standards-based education, and even a shift to standards-based reporting practices, leads to adjustments to classroom instruction is limited. With the growing phenomenon of educational agencies stepping into that void and leading cohorts of schools and districts in various directions, it is possible that a fourth barrier to the attainment of empirical evidence will emerge.

A Lack of Supportive Empirical Evidence

Schools across the nation are moving toward standards-based education systems in order to clearly define learning targets, map individual student progress on a scope and sequence of curriculum, and more authentically report student achievement results. In the eyes of stakeholders and policymakers, if public schools follow a curriculum that is aligned with state and federal expectations, student achievement will improve, and that improvement will be reflected by standardized testing results mirroring the letter grade attainment of students. However, research has shown that such results are, at best, moderately aligned.

Purpose of the Study

The purpose of this research was to examine assessment and instructional practices in standards-based classrooms relative to research-based practices in education. This study examined the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. To meet this purpose, the researcher examined the philosophy and practices of the teacher in a standards-based educational setting and assessed the impact of change in the practice, thinking, and professional growth of the teacher through this

reform. A framework was developed and used to better understand the extent that standards-based practices align with research-based practices.

Research Questions

The key research questions for this study were:

1. What are the perceptions of teachers about the impacts of standards-based education on their practice?
2. What are the instructional and assessment practices used by teachers in standards-based classrooms? How do those identified practices align with research-based instructional practices?

Significance of the Study

This study contributes to the link between policy and practice in the standards-based education reform movement. Despite having a significant body of evidence about the kinds of best practices in education that lead to improved student learning, there is very little empirical evidence to support the efficacy of standards-based education as it impacts classroom practices and student achievement. In fact, the existing evidence suggests decreased student achievement scores and negative perceptions on the part of teachers, students, and principals. Explanations for the limited supportive empirical research include: a wide variation in implementation across states, regions, districts, schools, and classrooms; the lack of a clear and consistent purpose and understanding of standards-based instruction; and the fact that reporting practices do not always translate into adjustments to classroom instruction. According to Chingos and Whitehurst (2012), "The most likely explanation for the lack of a relationship between standards and student achievement is that standards are a very leaky bucket, with the effect on instructional interactions in the classroom being little more than drips and drabs of the content standards adopted at the

state level" (p. 9).

Research-based instructional practices are a well-studied field. The extent to which standards-based education mirrors research-based instructional and assessment practices is a critical question left unanswered. Policymakers, taxpayers, the educational community, and most importantly, students and families deserve empirical evidence to examine such a major issue, especially since it is proposed to be truly transformational in current educational reform and the pursuit of efficacy in our public schools.

Summary

The national and statewide movement toward standards-based education as a cornerstone of educational reform is presumed to lead to increased student achievement, and to and improved teaching in our public schools. However, there is little, if any, empirical evidence that standards-based education yields such results. In fact there is some evidence that indicates decreased student achievement and negative perceptions of students, teachers, and principals on the implementation of that reform. Existing research points to a lack of common understanding and inconsistent implementation as possible reasons for the lack of empirical support. That lack of understanding and inconsistent implementation results in variation in instructional practices. Research-based instructional practice is a widely studied field. Whether or not standards-based education mirrors research-based instructional practices is a critical question left unanswered. This study contributes to the standards-based movement by providing some insight into instructional practices, understandings, and views of a sample of teachers as they experience standards-based reform.

CHAPTER 2 -- REVIEW OF THE LITERATURE

Introduction

Current national and State of Maine reform efforts relative to standards-based education are reviewed in the first section of this chapter. Studies in the area of standards-based education are then reviewed and organized around the three explanations for the lack of supportive empirical evidence posed in the literature to provide a foundation for the proposed study. The final section compiles meta-analyses of the widely studied field of research-based instructional practices that show a statistically significant relationship with improved student achievement.

National and State of Maine Reform Efforts

National Standards-Based Reform Efforts

Across the nation, substantial political attention has been focused on the perceived crisis in our public school systems. Over time, many reform efforts have been tried. The most recent reform applies a model of accountability that articulates and measures specific standards of learning and implementation of standards-based education in the classroom. Standards-based education has been at the forefront of this movement since the initial iteration of the No Child Left Behind Act, nearly 20 years ago. Zemelman, et al. (2005) notes,

> This is both an exciting and disturbing time for America's schools. For twenty years we have been enduring the most intense period of educational reform this country has ever experienced. Nearly everyone has gotten into the act: politicians, parents, teachers, taxpayers, teacher-educators, social critics, journalists, and researchers – all of them passionately involved in school renewal (p. 1).

Despite the accountability measures inherent to No Child Left Behind, the country has seen little advancement in the academic achievement of our students on PISA and TIMMS international assessments.

State of Maine Standards-Based Reform Efforts

The state of Maine has a fifteen-year history of legislation mandating standards-based education in our schools. According to Educate Maine (2013), during that same time frame, the state also shows a steady decline in student reading test scores, a relatively flat high school graduation rate, and fewer than half its graduates prepared for college and the work force. In 1997, Maine adopted the Maine Learning Results, which set forth standards toward which all students in grades K-12 would work. Teachers and local districts across the state began a long, involved process to "unpack," or make sense of those standards as they related to their students and the existing curriculum. The standards were revised in 2007 to become Maine Learning Results: Parameters for Essential Instruction. During that process, local educational units were mandated to design a series of common assessments, based upon the Maine Learning Results, which were intended to ensure consistent attainment of the standards across grade levels and schools. The process was labor-intensive and eventually resulted in the Department of Education revoking the requirement for a common assessment system. Nevertheless, many districts continued to advance their individual assessment work.

In 2010, Maine became the forty-fifth state to adopt the federal Common Core State Standards, which are intended to provide a clear and consistent set of learning outcomes that will ensure that students are college- and career-ready, and able to compete in the global economy. Those standards will replace the Maine Learning Results in English Language Arts and Mathematics, as the newly required set of standards for Maine students. Additionally, the state is

deciding to adopt the Next Generation Science Standards and is exploring similar sets of national standards in other content areas.

In 2011, Maine's initiative, LD 949: An Act to Require the Department of Education To Submit a Plan for the Implementation of Standards-Based Education, directed the Department of Education to submit a plan for the implementation of standards-based education and proficiency-based graduation to the Joint Standing Committee on Education and Cultural Affairs. The report, *Proficiency-Based Graduation,* was presented to the Joint Committee in January 2012. It included the structural components of an educational system with a proficiency-based graduation requirement, strategies to support standards-based education, a history of the Department of Education's engagement with stakeholders regarding the plan, a proposed timeline for implementation, and draft legislation to require proficiency-based graduation by 2017. This draft became LD 1422: An Act to Prepare Maine People for the Future Economy and was passed in the 125th second legislative session. The legislation wedded standards-based education with a proficiency-based high school diploma system. Absent appropriate state funding, the requirement was deferred to the graduating class of 2018. The legislation also provided authority to Maine's commissioner of education to grant extensions in individual school districts through an application and approval process. Each of the six options for extension varies in length and accountability measures, with the latest adoption date noted as July 2020.

With the passage of that legislation, Maine became the third New England state to require a proficiency-based high school diploma (REL Northeast and Islands, 2012). As a result, *every* student will be expected to demonstrate proficiency of identified standards in eight content areas (including world languages) and five cross-curricular standards (Maine's *Guiding Principles*) prior to receiving a high school diploma. Under Maine law, students who do not attain those

standards will either age out the year that they turn 20, or attain an alternative certificate to be determined by local school districts.

According to the latest Maine Department of Education strategic plan, *Education Evolving: Maine's Plan for Putting Learners First* (2011), one of the biggest challenges is that "Our schools are struggling to accomplish what they need to accomplish" (p. 3) The plan notes:

> The most recent set of results from the National Assessment of Educational Progress, for example, conducted by the National Center for Education Statistics at the United States Department of Education, show that the percentage of fourth graders in Maine scoring proficient or better in reading is lower today than it was 20 years ago (Maine Department of Education, 2011, p. 3).

Further, while math scores have increased slightly, only 39 percent of grade eight students are currently reaching proficiency targets in mathematics. A core priority area in the strategic plan relates to the adoption of standards and curricula, classroom practices, and assessment of student learning.

Silvernail, Walker, and Batista (2011) conducted a study of Maine's high school graduation rates and student preparation for work or college. Overall, eight out of 10 students in Maine graduate from high school within four years, which is better than the national average. However, only one out of three is considered ready for work or college. Statewide, only 39 percent of 2010 graduates demonstrated proficiency in reading and math during their junior year on the state assessment (SAT). Proficiency rates vary widely across the state from 9 percent to 100 percent. Further, the researchers found that 69 percent of students who were not proficient in grade 3 were still not proficient by grade 5, and 88 percent of eighth graders who were not proficient in math were still not proficient in grade 11. Most recent college readiness data (2004)

indicates that 25 percent of entering freshman will need to take remedial courses in the University of Maine System, and the number climbs to 37 percent in the Maine Community College System. The study notes that 90 percent of the fastest growing jobs require post-secondary training or education, and predicts the number of jobs in Maine that require post-secondary education would increase by 15,000 before 2010.

The document *Education Indicators for Maine* (2013) notes that for every 100 entering ninth graders, 85 will graduate from high school, 54 will enroll in college, and 32 will graduate from a two- or four-year college. According to Educate Maine (2013), "The 'graying' of our state, the decline of manufacturing jobs, and the increased demand for highly skilled workers means Maine needs all of its people to graduate from high school prepared for college, career, and citizenship" (p. 10). The group highlights two reform efforts: proficiency-based learning; and adoption of the Common Core State Standards as paramount in that effort.

Organizations like Re-Inventing Schools Coalition (RISC) are beginning to partner with schools to provide training on the translation of standards-based reporting into classroom instructional practices to foster consistent implementation across schools and districts. According to the website, RISC is currently partnered with nine schools in Maine. Additionally, a grassroots effort by teachers and curriculum leaders has developed into the Maine Cohort for Customized Learning (www.MaineCustomizedLearning.org). That cohort now represents 25 school districts and three post-secondary schools across Maine. Those schools vary in location and demographics. The districts involved represent 55,772, or 27 percent, of Maine students. The models, curriculum standards and reporting tools are consistent, and an emphasis is placed on teacher professional development toward standards-based practices. Teachers are part of the curriculum development process, and engaged in inquiry teams around student learning.

However, it is unclear how aligned instructional practices and professional development are with what is known about research-based instructional practice in the classroom.

A Lack of Supportive Empirical Evidence

At state and national levels, there is an increased expectation that performance on classroom, school, and district level assessments will serve as indicators of increased student success and improved teaching practices in public schools. To that end, many policymakers see the implementation of standards-based education as the solution to the perceived crisis in schools. According to Educate Maine (2013),

> Fortunately, important reform efforts like the Common Core State Standards and Proficiency-Based Learning have the potential to give every Maine student, from Calais to Kittery, a high-quality, rigorous education that builds upon a student's mastery of a subject and results in high-school graduates who are better prepared for success in college and career (p. 8).

However, to date, there is very little empirical research to support standards-based education as a "solution." In fact, a few studies indicate decreased student achievement and negative perceptions of students, teachers, and principals on the implementation of that reform.

Wide Variation in Implementation

One possible explanation for the lack of evidence may be the wide variation found in the implementation of standards-based education. Goodman (2012) examined the impact of standards on state test scores across the nation. He conducted a causal-comparative, ex post facto, quantitative study of data of state standards and state achievement testing results from 1994-2011 as judged by the American Federation of Teachers (AFT) and the Thomas Fordham Institute (TFI). He noted that it is difficult to measure the quality of standards and that those

standards are correlated with many other aspects of a school system, making it challenging to explicitly link standards-based practices with improved student achievement.

The AFT is the second largest teachers' union in the United States, and represents more than 1.5 million educational personnel. The organization has issued three reports on the quality of state standards. For each subject and grade level, the ATF rated each state as "meeting" or "failing" their expectations. The TFI is a non-profit think tank based in Washington, D.C. and Dayton, Ohio, with the mission of advancing excellence in education. The TFI has also issued three separate reports on the quality of state standards, rating states on a scale of A to F. An initial portion of Goodman's research sought to determine whether or not the ATF and the TFI agree on the quality of standards. The results indicate that the organizations agreed only somewhat with the highest quality standards in any given year. Overall, they were measuring different aspects of the standards, and disagreed on the quality of standards within the individual states.

Goodman then analyzed scores of fourth and eighth grade students on the National Assessment of Educational Progress (NAEP). The analysis compared individual state results over time in an effort to reduce the impact of other state-level factors in these outcomes. Overall, the results showed little evidence of a link between the quality of state standards and the performance of students on the NAEP. However, in the study, the lowest performing states, which have been identified as having higher-quality standards, eighth graders appear to score somewhat better on the NAEP testing. Further analysis indicated that eighth grade test scores improved with quality standards in the area of mathematics for black and Hispanic students and in English for low-income students. Goodman concludes:

Given the current transition by nearly all U.S. states to adopt Common Core State

> Standards, researchers and policymakers should be thinking quite carefully about the role that standards play in influencing student achievement. The results presented in this paper suggest that, over the last couple of decades, changes in the quality of state standards have had little impact on overall student achievement (p. 7).

He suggests that either the measures of quality are too poor and divergent to evaluate the impact, or that more specificity is needed for the policy to translate into standards-based instruction in the classroom. In essence, policy is interpreted widely, and changes to the reporting system do not necessarily lead to a transformation of instruction.

In the 2012 *Brown Center Report on American Education*, Loveless examined the impact of standards on student achievement both across and within individual states. He predicted that adoption of the Common Core State Standards would have little to no positive impact on increased student achievement. He did suggest that there may be some reduction in the variance of student achievement across states. However, his analysis indicated that achievement scores show greater variance within states, despite already common state standards, than across states. That analysis of state standards was based upon a study conducted by the Fordham Foundation and the student achievement measure used is the National Assessment of Educational Progress (NAEP).

Loveless explains three theorized effects of the implementation of the Common Core State Standards (CCSS). First, the theory is that student achievement will increase because the CCSS are a more rigorous set of standards than those existing in 37 (English / Language Arts) or 39 (Mathematics) states. That theory implies that the strength of a set of standards will correlate with improve student achievement. Second is the theory that the Common Core will end the current discrepancies among state performance results by using one of two assessments to

measure the common standards. Last is the theory that standardizing the curriculum across states will ensure educational alignment and consistency for students who move from state to state. Conversely, opponents of the CCSS movement argue that the national standards are weaker than international and some current state standards (actually decreasing student expectations), declare that a common curriculum runs counter to the fundamental idea of state control of education, and claim that too few students move to other states for that measure to be relevant.

Regarding the theory of the link between the quality of state standards and student achievement, the Brown Center report cites a study conducted by Whitehurst (2009) that investigated whether the quality of state standards correlated with increased student achievement scores on the NAEP. Whitehurst used the two most cited ratings of state standards for his review, those of the American Federation of Teachers, and those of the Fordham Foundation. Student achievement scores on the NAEP were analyzed using results from 2000, 2003, 2005, 2007 and overall gains from 2000 to 2007. He further extended the study to include gain scores from 2003 and 2009 in effort to adjust for any potential achievement dips due to initial implementation. Scores were adjusted to control for demographics specific to each state, including special education, English language learners, and free and reduced lunch numbers. Whitehurst found, "States with weak content standards score about the same on NEAP as those with strong standards" (p.11). Further, Whitehurst analyzed the later data to determine whether the standards impacted student achievement in 2003, 2006 or 2009 (up to nine years after original implementation), to account for "lag time." He found a -0.06 correlation coefficient, indicating that they do not.

The theory linking the impact of performance standards on standardized tests with student achievement also yielded a lack of statistically significant correlation overall. The

correlation coefficient in 2005 eighth-grade math is 0.00, and for eighth-grade reading is -0.11. Further, an analysis of those scores between 2005 and 2009, through a period of raising and lowering performance standards in all states, yielded eighth-grade correlations also near zero. However, positive and statistically significant correlation coefficients were found for both fourth-grade math (0.34) and fourth-grade reading (0.35) over that time period. Thus, while the quality of the standards have no correlation on achievement, raising or lowering them accounts for about a 12 percent variation in NAEP scores for students in grade 4 (but not grade 8). In other words, there is only a small, or very moderate, relationship between states with more rigorous standards and higher student achievement scores in grade 4 on the NAEP. In addition, by grade 8, there is no difference in achievement regardless of the rigor of the standard.

A final analysis in the study examined the NEAP scores and standards relative to variation across and within states, and found four to five times more variation in NEAP scores within states than between them. Therefore, while adopting common standards may ensure consistency across states, current data within states that have consistent standards suggests substantial variation in student achievement. The Brown Center report notes: "Schools that score at the top of the world on international assessments are often within a short car trip, sometimes even within a short subway ride, from schools that are at the level of the world's lowest achieving nations" (pp. 11-12)

In a final discussion, Loveless (2012) cautions the field from placing great expectations on the CCSS as a system of "weights and measures" due to vast variation in the field. He discusses the possible impact of the differences between the intended curriculum (perhaps the CCSS), the implemented curriculum and the attained curriculum.

What is crucial is the distance between the intended curriculum and the two curriculums

> below. The implemented curriculum is what teachers teach. Whether that differs from state to state is largely unknown; what is more telling is that it may differ dramatically from classroom to classroom in the same school. Two fourth-grade teachers in classrooms next door to each other may teach multiplication in vastly different ways and with different degrees of effectiveness. State policies rarely touch such differences. The attained curriculum is what students learn. Two students in the same classroom and instructed by the same teacher may acquire completely different skills and knowledge (Loveless, 2012, p. 13).

Welsh and D'Agostino (2007) looked more closely at that variance across schools and classrooms. They conducted a study of 20 schools within the same suburban Arizona school district. Their research examined teacher perceptions and understandings about standards-based assessment and grading practices. It was a causal-comparative study utilizing both qualitative and quantitative methods. The researchers developed a 10-item list of effective strategies, including the use of multiple assessments for grading, creating assessments that are aligned with state standards, and attempting to assess most of the state standards. The researchers conducted interviews with 37 third- and fifth- grade teachers. Each interview lasted approximately two hours. A scale was used to analyze the interviews for teacher knowledge of standards-based assessment and grading. Based upon the results, teachers were grouped into three levels relative to the standards-based assessment practices adopted by the district: not evident; somewhat evident; and clearly evident. The researchers also examined corresponding student scores on the Arizona state assessment and report cards over two years and across the classrooms of those teachers.

Results indicated large variation in teacher understanding and implementation of standards-based assessment and grading, even within the same school district. Some individual student grades mapped very closely to their results on the state assessment while others were quite discrepant. Further analysis yielded that teachers who rated with the highest level of adherence to the district practices of standards-based grading assessed students in a way that most closely matched their performance on the state assessment. Conversely, those with low adherence provided student grades that did not frequently match the state testing results. The findings indicate that teachers who were more aligned with district student assessment practices taught students whose standardized testing scores also more closely aligned with their results on the state standardized testing measure. Additionally, within the same schools there was wide variation in implementation.

Lack of Clear and Consistent Purpose and Understanding

A second potential explanation for the lack of empirical evidence supporting standards-based education may be the lack of clarity and consistency in understanding the reform effort. Despite the fact that the standards-based education movement has become a cornerstone for change, most state policies offer little guidance relative to translation into classroom instruction. Educators are left to interpret state policy and theoretical research as they consider the impact of standards-based education on their practices. In several states, the standards-based movement has become paired with the requirement for a proficiency-based high school diploma. The literature on perceptions of the educational community relative to the impact of standards-based education is limited. A few studies offer some insight into the perceptions of students, teachers, and administrators on the impact of standards-based educational reform on their instruction.

Certo, Cauley, Moxley, and Chafin (2008) conducted a study that explored the perceptions of high school students on what engages them in learning, and how the standards-based movement has affected their learning. The study took place in the commonwealth of Virginia, approximately a decade into the implementation of the Virginia Standards of Learning (SOL). Similar to the new legislation in Maine, high school students in Virginia have been required to demonstrate proficiency in order to earn a standard or advanced studies high school diploma since 2007. Proficiency is measured in part by passing a series of SOL tests.

The researchers interviewed 33 students in tenth, eleventh, and twelfth grade representing seven metropolitan area high schools. In the school districts, central office personnel selected a stratified random sample of students, letters were mailed home inviting participation in the study, and 27 students were selected. Further, six students from the pilot sample were added to the study. Students were interviewed in the spring of 2001 after three years of implementation of the SOL. Thus many students were able to draw comparisons between the current system of SOL and the previous educational experience. Three themes emerged from the interviews: authentic curriculum and classwork; standards of learning impact; and teacher support.

Relative to authentic curriculum and classwork, students reported hands-on activities, debate, and discussion as preferred modes of learning. They noted an increase in activities such as worksheets and note taking since the implementation of SOL. Students expressed a dislike for those modes of learning, a concern that the information seems less relevant to "real-life" and may not "stick with them," and a feeling that the instructional pacing involved in implementation of the SOL had led to the need to "rush through" information without time to check for understanding or apply new knowledge to a context. Relative to the impact of the SOL, 72 percent of comments were negative, 21 percent neutral, and 1percent positive related to the

change in teachers and learning. Within the area of teacher support, students linked the mode of instruction to the level of care that a teacher had for them. They expressed a feeling that a teacher who hands out worksheets cares less about them and their learning than one who engages with them in discussion and inquiry. Caring teachers were described as motivating, helpful, and able to relate to the students. Further, caring teachers were described as those who make learning interesting rather than distribute worksheets or require note taking. Overall, the researchers concluded that, "… and unintended consequence of Standards of Learning may be that the quality of instruction is less engaging to students" (Certo, Cauley, Moxley & Chafin, 2008, pg. 26).

In 1999, Hart Research Associates for the Albert Shanker Institute surveyed public-school teachers and public school principals on the topic of standards-based reform. The teacher survey was conducted by phone with 1,075 teachers from grades K through 12 who belong to the American Federation of Teachers. The sample was nationally representative, with over-sampling in Florida, Texas, New York, and Massachusetts. The principal survey was also conducted by phone with 825 principals representing just Florida, Texas, New York, and Massachusetts fairly equally.

Results indicate that 73 percent of teachers favor a standards-based approach while 19 percent oppose it. However, of the positive responses, only 32 percent indicated that they strongly support it. Further, 67 percent of teachers report that standards-based reform has had a positive impact on their schools, 15 percent report the impact as having been negative, and 16 percent report its being neither positive nor negative. Of the principals surveyed, 92 percent supported standards-based reform and 62 percent reported strong support for it. Unlike the

teachers, who often qualified their ratings, the principals reported fairly universal support for standards-based education.

The researchers conducted further analysis of the components of success associated with perceptions about standards-based reform from those data. They concluded that the longer a school had been implementing standards-based practices, the more positive the perceptions were. Teachers who reported a high level of alignment between the standards and the curriculum reported a more positive rating (72 percent) than those who reported less alignment (56 percent). Interestingly, the majority of teachers (71 percent) and principals (67 percent) reported a need for improvement in the implementation of standards-based practices. Negative features leading to the need for improvement included: pressure on low-achieving students; pace of the change; concerns about testing as a gauge of student learning; time and paperwork pressures on teachers, and too much interpretation of the standards. The study reveals that, while educators consider the premise of standards-based reform as having a generally positive impact on public education in their schools, there continues to be disparate levels of clarity in the purpose and understanding of standards-based education.

Reporting Practices and Adjustments to Classroom Instruction

A third possible explanation for the void in empirical evidence supporting standards-based education may be the lack of changes in classroom practice and reporting. For her doctoral dissertation, Craig (2011) looked more closely at standards-based reporting and student achievement testing results in one region of the commonwealth of Massachusetts. Her study examined student results from schools implementing the same state curriculum standards and using the same measure of student achievement. Specifically, Craig conducted a causal-comparative study of the effects of standards-based report cards on the performance of fourth-

grade students in the area of mathematics on the Massachusetts Comprehensive Assessment System Test.

Results of the study indicated that the schools with a standards-based report card did not have a higher Student Growth Percentile. In fact, the schools with traditional, non-standards report cards yielded the highest Student Growth Percentile. Additionally, the schools with the standards-based report card had the lowest Composite Performance Index. A further review of Student Growth Percentiles indicated that the traditional report cards, which included failing grades, also produced a higher Student Growth Percentile than those in schools that had removed failing grades from their reporting system. Lastly, there was no significant difference found between schools that identified standards on their report cards from those with traditional report cards that yield an overall letter grade.

As part of the data analysis, Craig examined the results of subgroups, including the percentage in each school that were identified as low income, having an identified special education disability, and those identified with limited English proficiency. Results of students in special education indicated a greater Student Growth Percentile using standards-based report cards. There was no difference found between standards-based and traditional report cards for English Language Learners. Lastly, while she found no correlation in the effect of standards-based grading procedure on students in the low-income subgroup, results did indicate a negative growth impact on that subgroup with traditional grading systems. Craig notes that her findings suggest that standards-based grading that includes the removal of failing grades, may improve achievement for students who are at risk for learning.

Craig concludes that she found large variation in the understanding and implementation of standards-based report cards from participating districts. She notes:

> Schools vary not only in the amount of performance levels but also in the representation of letters, numbers, or descriptive phrases that were used to define those performance levels for students and families. This variation makes it difficult to relate the performance of any one school to performance at another school to relate the report card grade to performance on the MCAS. Schools also varied widely in the number of indicators reported in mathematics for Grade 4 students, ranging from 1 overall grade to 26 specific indicators of performance (p. 111-112).

Additionally, she states that leaders did not accurately identify their report cards as standards-based, non-standards-based, or mixed. In fact 20 percent of leaders did not report themselves as standards-based when the reporting systems did, in fact, meet the researchers' established criteria. Therefore, the results are more indicative of variation in the field rather than empirical evidence that the reform is ineffective.

Marzano Research Laboratories has produced one study that indicates increased student achievement in RISC schools. In that study, Haystead (2010), conducted a school-level, quantitative, causal-comparative, study comparing the 2009 state standardized test scores of students from seven RISC schools with those of eight non-RISC schools. The non-profit Re-inventing Schools Coalition (RISC) was established in rural Alaska in 2002 by the superintendent of a rural, historically challenged, school-district. According to its website, the RISC model is a standards-based design of teaching and learning with a proficiency-based requirement for each standard. RISC has expanded beyond Alaska and now represents more than 15 districts and 100 schools across the country. Schools were selected for the study based upon comparable demographics in ethnicity, student population and rural/urban characteristics. The study examined five RISC and six non-RISC schools in Alaska, one of each in Florida, and one

of each in Colorado. The sample compared the total number of students in third grade through tenth grade who scored proficient or above on state tests for reading, writing, and mathematics. Three measures were used in the analysis: odds ratio; risk ratio; and phi coefficient. The RISC schools that participated in the study were rated by RISC as being in either the medium stage (first implementation and routine levels) or high stage (refinement and replication levels) of implementation.

The results of all participating schools show the odds ratio of a student scoring at or above proficiency in a RISC versus non-RISC school are 2.3 times higher in reading, 2.5 times higher in writing, and 2.4 times higher in math. Haystead states,

> The risk ratio effect sizes suggest that students at RISC schools are 37% more likely to score proficient or above on state tests for reading, 54% more likely to score proficient or above on state tests for writing, and 55% more likely to score proficient or above on state tests for mathematics than students at non-RISC schools (p 20).

The researcher concluded that, since all correlations were statistically significant at the .001 level, a true difference exists between RISC and non-RISC schools relative to student performance on state standardized tests for reading, writing, and math.

However, the study has some fundamental flaws in its design. The identified RISC schools were selected by RISC, and employed a specific, uniform approach to the implementation of standards-based education. Within the study, Haystead did not report student achievement in any of the schools prior to RISC implementation. The schools may have been higher performing than the non-RISC schools prior to implementation. There may also have been other factors that impacted the scores. Finally, the study was conducted as a means to gather data

in support of the RISC model. Nonetheless, it is one of the foundational studies cited by proponents of standards-based reform.

In 2014, the RAND Corporation published a study for the Bill & Melinda Gates Foundation of three Project Mastery pilot programs, which were implemented by the Gates Foundation in 2011 to support large schools that serve primarily disadvantaged youth. Near the end of that year, the Gates Foundation asked the RAND Corporation to conduct the study focusing on analysis of implementation, student experience, and student performance. As one part of this study, student performance in Project Mastery schools was compared with student achievement in comparable schools. Results indicate a statistically significant lower score on the first English/ Language Arts benchmark assessment in Project Mastery Schools. The authors note that the assessment was administered in November 2012, just two months into the first year of implementation. The second English/Language Arts assessment, administered in January 2013, yielded higher overall scores in students enrolled in Project Mastery schools, although the difference was not statistically significant.

Summary Assessment of Existing Evidence

Overall, those studies represent a growing body of research highlighting the difficulty that variation in understanding, implementation, and practice have on the ability to establish an empirical research base for the efficacy of standards-based education. While the RISC study has become foundational to the plight of such reform, it is specific to the RISC model and presents student proficiency without a set of baseline data to measure student growth. Craig's research indicates better student achievement in schools using traditional grading systems, with the possible exception of some populations of at-risk learners. The Goodman and Brown studies highlight variation within and across districts and states, despite common standards. One major

barrier to attaining supportive empirical data lies in the variation of instructional implementation of the public policy in schools.

The lack of uniformity across the field makes it increasingly challenging to measure the effects of standards-based education on student achievement. There are several reasons why standards-based education is not yielding the desired effect. In addition to those discussed above, one is the possibility that instructional practices do not always reflect research-based practices in the classroom. Again, the above studies suggest the interpretation and implementation of this reform has resulted in a wide variation in instructional practice.

Meta-analyses of Research-Based Instructional and Assessment Practices

Examining instructional and assessment practices in standards-based education is of critical importance in considering the impact of the reform. To do so required a framework for examining classroom practices. Substantial data identify the aspects of teaching and learning that result in improved student achievement. A Google Scholar search on studies of research-based practices in the classroom from 2003 to 2013 yielded 182,000 results. Alternative wording further widens the available primary research studies. A few researchers have conducted meta-analyses of those primary studies and national curriculum reports. They have used the data to establish which instructional techniques are most correlated with improved teaching and learning. Several indicators are most effective.

Marzano (1998) conducted a meta-analysis of instructional techniques that resulted in improved student achievement over a 25-year span. In that research, instructional techniques are defined as "...alterable behavior on the part of teachers or students" (pg. 66). The study involved approximately 1,237,000 subjects. Techniques are presented according to the magnitude of their effect size (largest to smallest). According to Marzano (1998), "...an effect size is directly

interpretable in terms of percentile gain for the 'average' subject in the control group (i.e. percentile score in the control group distribution of the mean score on the experimental group distribution)" (pg. 72). Three main implications for classroom instruction emerged:

> *Implication 1*: Teachers should identify knowledge and skills that are targets of instruction.
>
> *Implication 2:* Teachers should identify and use specific instructional techniques for specific instructional goals.
>
> *Implication 3*: Teachers should regularly use instructional techniques that apply to all types of instructional goals (Marzano, 1998, pg. 128).

Marzano, Pickering, and Polack (2001) synthesized the above findings of the alterable behaviors of teachers and students that had the greatest effect size on student achievement into nine categories. In a follow-up study (2010), Dean, Hubbell, Pitler, and Stone (2012) updated their research study to include primary studies, narrative reviews, qualitative research, and theoretical literature. The nine categories with the largest effects sizes were further defined and presented as a framework for instructional planning. The categories are:

- setting objectives and providing feedback;
- reinforcing effort and providing recognition;
- cooperative learning;
- cues, questions, and advance organizers;
- nonlinguistic representations;
- summarizing and note taking;
- assigning homework and providing practice;

- identifying similarities and differences; and
- generating and testing hypotheses.

Dean, et al. (2012) note,

> The nine categories of instructional strategies are 'best bets' for developing 21st century learners because they help students set personal learning goals, self-check for understanding, access tools and resources for enhancing their understanding, and use what they have learned in real-world contexts (p. xix).

Zemelman, Daniels, and Hyde (2005) conducted an analysis of thirty-eight national curriculum reports, spanning sixteen years (1989-2005), on research-based practices. Based upon their analysis, the authors created lists of thirteen principles, clustered into three domains that resulted in improved student achievement. Those include:

- student centered: experimental, holistic, authentic, and challenging;
- cognitive: developmental, constructivist, expressive, and reflective; and
- social: collaborative and democratic.

Hattie (2009) reviewed 337 meta-analyses, including over 180,000 studies representing approximately 50+ million students, examining the effect size of instructional techniques on student achievement. He found that most innovations in schools improve achievement by .40 of a standard deviation, provided that there is a "deliberate change" occurring. However, Hattie suggests that the initial effect size may be a result of 'The Hawthorne Effect," essentially attributable to the excitement of the change, and corresponding focus on instruction, as opposed to the efficacy of the innovation. According to Hattie (2009), data from the National Assessment of Educational Progress (NAEP) data bank indicates an average classroom effect size of .24 per

year across six subject areas in the absence of innovation. That is the average effect of students in classrooms with teachers. He further notes that a .10 effect size is realized simply from student maturation each year. The following factors have a larger than innovative effect size (>.40) on student achievement:

- feedback;
- prior cognitive ability;
- instructional quality;
- direct instruction;
- remediation / feedback; and
- students' disposition to learn.

Therefore, according to Hattie (2009), those practices have the most likely, and most significant, impact on student achievement.

By cross-referencing those four comprehensive, and foundational, meta-analyses of research-based instructional practices, several commonalities emerge. The common practices are explored more deeply in the literature in effort to establish a common definition and framework for research-based instruction that was used in this study.

Learning Targets

Learning targets have been identified by several researchers as having a significant impact on student achievement (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Moss and Brookhart (2012) identify the learning target, or standard, as one part of effective classroom instruction. In defining learning targets for students, they suggest the need to not only define the essential content or skill, but also to identify the reasoning processes that the student

will use, the means that a student will use to demonstrate understanding, and the relevance of the lesson to previous knowledge (p. 38-41). The authors note:

> Learning targets…are key to creating schools where teaching is effective, students are in charge of their own learning, and administrators lead communities of evidence-based decision makers (p. 2).

Moss, Brookhart, and Long (2008) examined the impact of learning targets and formative assessment through a qualitative study of teachers in the Armstrong School District beginning one and a half years after initial implementation. The school district in western Pennsylvania serves 6,308 students: more than 50 percent of them designated as economically disadvantaged and 12 percent designated as special education. The multi-year study involved observations, analysis of teacher journal entries, and a survey. Results indicate "…teachers have seen positive effects on students' learning; on students' feeling of competence (self-efficacy); and on students' perceptions that they have the necessary tools to help advance their own learning (self-regulation)" (pg. 54). Moss, Brookhart, and Long (2011) distinguish learning targets from instructional objectives in that learning targets are framed from the student's point of view and describe exactly what educators expect them to be able to know and do.

Authenticity

While the notion of authentic learning has been studied by several researchers (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012), Newmann, in Herrington, Reeves, and Oliver, (2014) has very current research on the practice. He defines authentic learning as "…a pedagogical approach that situates learning tasks in the context of future use" (pg. 401). Newmann calls for three main elements in authentic lessons: students construct knowledge;

students draw conclusions; and students connect the topic to their own lives or situations outside of school. In an earlier study of the Chicago Public Schools, Newmann and Smith (2001) found that classrooms with high-quality assignments made gains that were 20 percent higher on the Iowa Test of Basic Skills (ITBS) in reading. Classrooms with low didactic instruction gained 3.7 percent more than the average in reading on the ITBS and those with high use of interactive instruction gained 5.2 percent more in reading on the ITBS. That description has been selected for this study.

Feedback

Another instructional practice that arose from the meta-analyses involves feedback and formative assessment practices (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Hattie and Timperley (2007) define feedback as, "information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (pg. 81). In an effort to examine the meaning and impact of feedback on student learning, Hattie (2009) examined 12 previous meta-analyses specific to the research on the types of feedback that have the greatest effect on learning. The highest effect sizes were in the area of students receiving feedback that was informational about how to do a task more effectively. The lowest effect sizes involved praise, rewards, and punishment. According to Hattie and Timperley (2014),

> At one end of the continuum is a clear distinction between providing instruction and providing feedback. However, when feedback is combined with a more correctional review, the feedback and instruction become intertwined… To take on this instructional purpose, feedback needs to provide information specifically relating to the task or process

> of learning that fills a gap between what is understood and what is aimed to be understood, and can do this in a number of ways (p. 82).

Given the instructional nature of that definition, it was selected for the purposes of this study.

Kluger and DeNisi (1996 as cited in Hattie 2014) conducted a meta-analysis of 131 studies involving 12,652 participants and 23,663 observations. The authors found that feedback is most effective when it is linked to performance on a task, provides information about a change or direction of a task, and is based upon correct rather than incorrect responses.

Extension and Remediation

Another key instructional practice that arose from the meta-analyses involves a structure and process for extension and remediation (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). That also arose as a common successful practice in Maine schools that participated in two primary studies on implementation of the Proficiency Diploma law (Silvernail, Stump, Stewart McCafferty, & Hawes 2014; and Silvernail, Stump, Atkinson, & Duina). Based upon Tomlinson's work, Buffum, Mattos, and Weber (2012) state:

> Just as teachers must plan to provide immediate remediation to students who lack prior skills, so should they plan to provide immediate enrichment to students who have already mastered the standard. This can be done in several ways. Teachers can make the actual content more rigorous; make the process or activities in which students engage more rigorous; or make the culminating product, which applies what the students have learned, more rigorous (p.54).

Conversely, the notion of a system for remediation, or intervention, began in the realm of special education and has expanded in research and practice. That system is commonly referred

to as Response to Intervention (RTI). The National Center on Response to Intervention (2010) uses the following definition:

> Response to intervention integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending upon the student's responsiveness, and identify students with learning disabilities (p. 2).

Increasingly, those practices have evolved beyond that of a pre-referral to special education system, and into common practice for students who present with learning and / or behavioral difficulties.

Prewett, Mellard, Deshler, Allen, Alexander, and Stern (2012) conducted a multi-phased collective case study designed to better understand the conceptualizations, implementation, and status of RTI in 82 middle schools. The authors note, "Perhaps the most important finding from this exploratory study is that all middle school administrators' stated purpose for RTI was to close achievement gaps by providing remediation for students struggling in reading and mathematics basics" (pg. 139). They further suggest that RTI has the "… potential to be a practical and effective school-wide framework for ensuring academic and behavioral success for students" (pg. 146).

Summary

Research-based instructional practices are a widely studied area. Three meta-analyses summarize key practices that correlate with student achievement. The field of education lacks sufficient empirical evidence at this time to support the efficacy of standards-based education as

a means to increase student achievement and improve teaching in our public schools. A national review of the quality of state standards compared with student achievement yields no statistically significant comparison. At the state level, policy reports indicate larger variation in achievement within state than across states despite common standards within states. An empirical analysis of regional student data indicates that students performed better in a traditional grading system than in a standards-based educational system. One study specifically of RISC schools indicates higher levels of student achievement than non-RISC schools. However, the study is limited and does not measure study growth from a common baseline. Another study, conducted by the RAND Corporation, suggests a slightly higher performance of students in Project Mastery schools than in comparable schools. However, it was performed only five months into implementation of Project Mastery in those schools, the difference was not statistically significant, and the data are inconsistent with the previous assessment results just three months earlier.

Perceptions of students, teachers, and principals vary as to the impact of standards-based education on classroom practice. Overall, there are issues in effectively studying the standards-based education due to wide variability in teacher understanding and implementation at the classroom level, even within the same school and district. Moreover, there is a lack of existing research to examine the link between standards-based education and research-based instructional practices. The next chapter describes the conceptual inquiry into the above research-based practices and the development of a framework that was used to examine the alignment of research-based instruction and assessment practices in a sample of standards-based classrooms.

CHAPTER 3—METHODOLOGY

Introduction

The primary goal of this study was to understand the perceptions that a sample of teachers have of the impact of standards-based education on their practice and to explore their instructional practices in a standards-based education system as they did or did not reflect research-based best practices in education. As the previous chapter suggests, the intersection between effective instructional practices and standards-based education has not been specifically studied. Further, the research around the topic indicates a disconnect between intended public policy and classroom practices. Explanations for the disconnect include: a wide variation in the implementation across states, regions, districts, schools, and classrooms; the lack of a clear and consistent purpose and understanding of standards-based reporting; and the fact that reporting practices do not always translate into adjustments to classroom instruction.

Teacher perceptions of standards-based education, the disconnect between the intended policy and implementation in classrooms, and the variation in implementation were underlying philosophical assumptions in this study. The key research questions for this study were:

1. What are the perceptions of teachers about the impacts of standards-based education on their practice?
2. What are the instructional and assessment practices used by teachers in standards-based classrooms? How do those identified practices align with research-based instructional practices?

The underlying philosophical assumption of variation in teacher perceptions and implementation called for an analysis of key instructional practices to provide a lens for the empirical inquiry.

This chapter is divided into two sections. Section one is focused on the conceptual inquiry. The instructional practices most commonly noted in the research as having the greatest effect size on student achievement were further investigated in the literature, leading to five specific strategies to be examined: learning targets; authenticity; feedback; opportunities for extension; and opportunities for remediation. A framework of how each applies to classroom instruction follows. That framework was used as a lens for examining teacher perceptions and implementation of standards-based education. Section two of the chapter describes the empirical inquiry that was used in this study. The methodology, research context, operational definitions, and data collection procedures follow. Next, there is a discussion of how the data was analyzed. The chapter concludes with a description of the methods used to ensure the trustworthiness of the research and limitations of the study.

The Conceptual Inquiry

As is noted in the previous chapter, there is a wide research base for the instructional and assessment practices that have the largest effect size on student achievement. In an effort to analyze the extent to which teacher practices in standards-based classrooms align with research-based instruction and assessment practices, a conceptual inquiry into those practices was warranted. Three research groups have recently conducted extensive meta-analyses of the research. Based upon those data, several instructional practices show commonality across the meta-analyses. While many of those are not mutually exclusive of one another in teacher practice, several may be further grouped, and often appear synonymous in theoretical literature. These are: learning targets (clear objectives, success criteria, and student goal setting); authenticity (constructivist, experimental, and expressive/reflective); feedback (formative/frequent feedback, pre/post assessment, self-assessment, and providing recognition,

reinforcing effort); and opportunities for extension / remediation (chances to improve and extend learning).

In sum, a Google Scholar search yielded more than 182,000 primary research studies on effective instructional practices. Researchers have examined those studies and conducted meta-analyses of the practices most highly correlated with student achievement. The instructional practices that show commonality across those three large meta-analyses have been organized into a table and further collapsed into five core strategies. Those strategies have been further unpacked in the literature to establish common definitions, a supportive research base, and description of teacher implementation. Those are organized into a framework for research-based instructional practices, which served as a lens for the empirical inquiry and data analysis in this study.

Table 1

A Framework for Research-Based Instructional Practices

Instruction & Assessment Practice	Definition in the Literature	Teacher Implementation
Learning Targets	Defining the essential content or skill, the reasoning processes that the student will use, the means that the student will use to demonstrate understanding, and the relevance of the lesson to previous knowledge (Moss, Brookhart, & Long 2008).	Learning targets are a clearly articulated 'chunk' of learning that is connected to standards and instructional objectives. These are present throughout the learning task and transparent to students, teachers, and parents.
Authenticity	Students construct knowledge, draw conclusions, and connect learning to their own lives (Newmann, 2001).	Students are actively engaged in learning that connects to current or future "real-world" situations.
Feedback	"…information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (Hattie & Timperley, 2007, p. 81).	Includes pre assessment, benchmark assessment, post assessment, self assessment, and opportunities for correction
Opportunities for Extension	"Teachers can make the actual content more rigorous; make the process or activities in which students engage more rigorous; or make the culminating product, which applies what the students have learned, more rigorous" (Tomlinson as cited in Buffum, Mattos, & Weber, 2012, p.18).	Student learning starts at their level of understanding. They are provided opportunities to go deeper or further with an assignment, project, or activity. This differs from simply moving ahead to the next skill in a sequence.
Opportunities for Remediation	"…schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending upon the student's responsiveness" (NCRTI, 2010, p.2).	A system and structure is in place to assess the need for remediation, provide that opportunity, monitor the efficacy of the remediation, and potentially close the achievement gap.

The Empirical Inquiry

Methodological Overview

Given the existing research and philosophical assumptions, a qualitative interview approach was selected. According to Creswell (2009), qualitative research methods are the best choice for research problems with unknown aspects that need to be explored. Given the existing, albeit limited, research, it was clear that unknown variables in standards-based education include the instructional strategies implemented in the classroom, how well those align with research-based best practices, and teacher perceptions of the impact that the reform effort has had on their practices. Merriam (2009) describes qualitative research as an inductive process where the purpose is to gain an understanding of …"how people make sense of their lives" (p.14). The inductive process in this study explored how teachers are making sense of the substantive public policy. Qualitative interviewing and review of supportive evidence was used to explore the perceptions, understanding, and instructional implementation of standards-based education.

Social Constructivist and Pragmatic Inquiry

The intent of this study was both social constructivist and pragmatic. The goal of social constructivist research is to rely upon the participants' view of a situation, understand their assumptions, and ask questions to assist them in developing meaning. It is defined as understanding multiple participant meanings, social and historical construction, and theory generation. The approach is qualitative in nature. Pragmatic research occurs in social, political, and historical contexts. It is problem-centered, oriented in real-world practice, pluralistic and examines the consequences of actions (Creswell, 2009).

Much consideration was given to determining whether the methodology of focus groups or individual interviews would most effectively meet the purpose of this study. According to

Anol (2012), focus groups generally consist of six to ten members, and are facilitated by a researcher. The groups allow for deeper examination of complex issues. People tend to trigger responses in others that add to the data set. However, during a recent pilot in three school districts, including both focus groups and one-on-one interviews, a review of transcripts indicated that the most relevant information was gathered during the teacher interviews, and that individual interview data was as rich as focus group data on the topic.

Pilot

A two-part pilot was used for this study. The first part of the pilot was used to assist with the determination of the methodology for data collection. It was conducted in conjunction with researchers from The Center for Evaluation of Policy and Research in Education (CEPARE) through the University of Southern Maine and is described below. The second part was used to pilot the specific interview protocols and processes, which involved a three-part interview process with participants as a means to explore the topic more widely, and to establish patterns and trends. It is also described more fully below.

The first part of the pilot was conducted in November and December of 2013. Researchers from CEPARE, piloted potential survey questions and interview formats. The study, *Implementation of a Proficiency-Based Diploma System in Maine: Phase II: District-Level Analysis*, involved 82 individual and focus group interviews in eight school districts.

Transcripts from the interviews were entered into Dedoose, coded, and analyzed to find themes and patterns. Responses to the specific pilot questions, made by classroom teachers in both individual interviews and focus group meetings were analyzed. Results indicated a similar depth of responses from teachers in either format. However, in the individual interviews, teachers were more verbally reflective about the challenges of implementation. In both cases,

artifacts were provided. Given the purpose of that study, the pilot included just one interview with each person.

Based upon the results of the pilot, an individual, multi-part interview process was selected for use in this study. That provided for a deeper understanding of the issue. Seidman (2013) notes, "At the root of in-depth interviewing is an interest in understanding the lived experience of other people and the meaning that they make of that experience" (p. 9). Seidman (2013) builds the case for three-part interviewing,

> The first interview establishes the context of the participants' experience. The second allows participants to reconstruct the details of their experience within the context in which it occurs. And the third encourages the participants to reflect on the meaning their experience holds for them (p. 21).

Overall, the questions piloted yielded the information sought. However, protocols were expanded in this study to reach a greater depth of reflection.

For the second part of the pilot, those protocols were used with two teachers who were nominated by a supervisor. The interviews were audiotaped and listened to several times for initial impressions of validity. Given the pilot, the questions and tools for interviewing were found to provide the kinds of data expected. However, documents that were gathered far exceeded the initial expectation of this researcher. It remains unclear whether or not that is unique to the teachers being interviewed. Regardless, the documents gathered in this study were used to support and triangulate interview data, not to stand separately as data for explicit and extensive analysis.

Overall, the extensive body of research that has successfully demonstrated the approach, the results of a two-part pilot, and the nature and orientation of this study, led to the selection of

that methodology for this study.

Research Context

Introduction

This section describes the research context, including the criterion for selecting participants, a description of each participant, and an analysis of the schools and districts in which the participants are implementing this reform. The unique and complex nature of classroom teaching, paired with the wide variance in interpretation and implementation of the policy, require that level of description for the reader to determine generalizability. Further, the direction that each school district has taken in interpretation, implementation, and the provision of professional development to teachers is described. That information is foundational to the policy implications and recommendations set forth in Chapter 5.

Criteria for Teacher Selection

The first criterion used in this study in the selection of participants was that a teacher was practicing in a school that has made substantial progress toward standards-based education. Therefore, this study was conducted using a purposive sample of four teachers from schools in Maine that are at least two to three years into the implementation of standards-based education. The second criterion was that the participants had been teaching for longer than the initiative had been in place. That was to ensure that they had a reference point for reflecting upon the impact of standards-based education as a shift in their instructional practices. The third was that an administrator had to have identified them as being outstanding teachers, and had recommended them for the study. The final criterion was that the teachers be practicing at the high school level. This was due to the fact that the developmental stage of students and the logistical structure of elementary and middle schools differ substantially from that of high schools. Maine's new

proficiency-based diploma law is applying increased pressure for substantive change at the high school level.

For the sake of convenience, the districts were selected from Cumberland and Androscoggin counties. Based upon the selection criteria, superintendents were asked to recommend two to four teachers each for the study. Ultimately, four teachers from two school districts were selected. Since classroom practices are unique and complex, descriptions of the districts are provided.

Description of Participants and Contexts

District A

According to the Maine Department of Education Data Warehouse, District A served 3,587 students in grades PK through 12 during the 2014-15 school year. At the high school level, there were 987 students that same year. The district employs the equivalent of 308.1 full time teachers, 86 of whom are at the high school level, and 18 full time administrators, six of whom, are at the high school level. Of the teachers, 38.7 percent hold a master's degree or higher district-wide, and 36 percent of high school teachers hold that level of advanced education.

The district is below the state average in overall per-pupil expenditures with only special education dollars exceeding the state average. There is an annual 5.5 percent drop-out rate, a 75 percent four-year graduation rate, and a 94.6 percent average daily attendance rate, based upon 2012-13 data. The latest student assessment results on the state test (2013-14) indicate that in mathematics, 42.7 percent of students in high school and 53.5 percent of students in third through eighth grade met or exceeded the target. In reading, data from the same school year indicate that 34.4 percent of high school students and 61.9 percent of third through eighth grade students met or exceeded the target. It is important to note that the Maine High School

Assessment was the SAT, and that the state assessment used in earlier grades was the NECAP. At the high school level, a three-year average yielded 45.27 percent proficiency in math and 39.92 percent proficiency in reading. Based upon those results, the high school was given a "D" on the state school grading system.

Table 2

A Comparison of District A to State Averages

Demographics	District A	State Average
Total Student Population	3,587	N/A
Total High School Population	987	N/A
District % of Students on Free and Reduced Lunch	51.3%	44.8%
Number of Teachers	308.1 FTE	N/A
Number of Teachers with Master's degrees or Higher	38.7%	N/A
Number of Administrators	18.0 FTE	N/A
Per Pupil Expenditures	$9,409	$11,583
Student Dropout Rate (2012-13)	5.5%	N/A
4-Year Cohort Graduation Rate (2012-13)	79.4%	AYP Target 75%
Average Student Attendance (2013-14)	94.6%	AVP Target 90%
% Meets or Exceeds on MSHA in Math (2013-14)	42.5%	47.83%
% Meets or Exceeds on MSHA in Reading (2013-14)	34.4%	47.72%
% Meets or Exceeds on NECAP in Math (2013-14)	53.5%	AYP Target 60%
% Meets or Exceeds on NECAP in Reading (2013-14)	61.9%	AYP Target 66%
State Letter Grade for 2014	D	C

Two teachers from that high school were selected to participate in this study using the selection criteria above. The first teacher graduated from college in 2000. She attained her current teaching position that same year, and has been in the district for the past 15 years,

teaching high school mathematics. She completed a master's degree in 2011. She reported that her graduate school study was very similar to the professional development that she has participated in through the district, which has included work with the Re-inventing Schools Coalition (RISC) and through the Maine Cohort for Customized Learning (MCCL). Four years ago she began a flipped classroom model, wherein students access direct instruction outside of class, through technology, and use in-class time to seek clarification or demonstrate their learning. The program is in its second year of customized classes.

The second teacher is currently in her twentieth year of teaching high school mathematics. She has worked in two districts, and has spent the majority of her teaching years in the district where she is now employed. She lives in the community and has children in the schools. She also sits on the curriculum committee and has participated in district professional development including RISC, MCCL, and most recently, Marzano's Taxonomy of Learning. She was in her second year teaching fully customized classes.

District B

According to the Maine Department of Education Data Warehouse, District B served 2,146 students in grades K through 12 during the 2014-15 school year. At the high school level, there were 696 students that same year. The district employs the equivalent of 108.7 full time teachers, 62.7 of whom are at the high school level, and 11.7 full time administrators, two of whom are at the high school level. Of the teachers, 39.6 percent hold a master's degree or higher district-wide, and 46.2 percent of high school teachers hold that level of advanced education.

The district is above the state average in overall per-pupil expenditures with only regular education and debt service dollars exceeding the state average. The district is well below the state average for free and reduced lunch eligibility at only 5.6 percent. There is an annual

1percent drop-out rate, a 93.6 percent four-year graduation rate, and a 95.6 percent average daily attendance rate, based upon 2012-13 data. The latest student assessment results on the state test (2013-14) indicate that in mathematics, 87.5 percent of students in high school and 81.5 percent of students in third through eighth grade met or exceeded the target. In reading, data from the same school year indicate that 84.5 percent of high school students and 87.6 percent of students in third through eighth grade met or exceeded the target. It is important to note that the Maine High School Assessment was the SAT, and the state assessment used in earlier grades was the NECAP. At the high school level, a three-year average yielded 81.79 percent proficiency in math and 80.85 percent proficiency in reading. Based upon those results, the high school was given an "A" on the state school grading system.

Table 3

A Comparison of District B to State Averages

Demographics	District B	State Average
Total Student Population	2,146	N/A
Total High School Population	696	N/A
District % of Students on Free and Reduced Lunch	5.6%	44.8%
Number of Teachers	108.7 FTE	N/A
Number of Teachers with Master's degrees or Higher	39.6%	N/A
Number of Administrators	11.7 FTE	N/A
Per Pupil Expenditures	$13,496	$11,583
Student Dropout Rate (2012-13)	1%	N/A
4-Year Cohort Graduation Rate (2012-13)	93.6%	AYP Target 75%
Average Student Attendance (2013-14)	95.6%	AVP Target 90%
% Meets or Exceeds on MSHA in Math (2013-14)	87.5%	47.83%
% Meets or Exceeds on MSHA in Reading (2013-14)	84.5%	47.72%
% Meets or Exceeds on NECAP in Math (2013-14)	81.5%	AYP Target 60%
% Meets or Exceeds on NECAP in Reading (2013-14)	87.6%	AYP Target 66%
State Letter Grade for 2014	A	C

Two teachers from the school were selected to participate in this study, based upon the selection criteria above. The first graduated from college in 2003. Her student teaching was in a very traditional classroom in northern Maine. She has been teaching for eleven years in Massachusetts and Maine at the middle and high school levels, the past six at the participating

school. Following a League of Innovative Schools conference, she offered to pilot a standards-based model. She describes virtually all of the recent professional development supported by the district as focused on standards-based practices. Overall, the teacher sees this movement as "a natural process of learning how to teach better," further noting, "It's been a natural progression and then this legislative piece came down."

The second teacher from District B has been teaching since 1978. She has taught at many levels: elementary school, middle school, high school, and adult education. She began teaching in her current district at the elementary level nearly 18 years ago. Six years ago, she moved up to the high school and started mapping K through 12 standards for her content area, world languages. She has employed standards-based technics for three years. For three summers, the teacher has participated in four-day "train the trainer" seminars focused on backwards planning, standards-based instruction, formative assessments, and using essential questions. Those seminars have led to teaching similar seminars in the district, and across Cumberland County, each summer. The teacher also noted that the professional development for the district has been very focused on standards-based instruction. She described the professional goal setting process for teachers as one that is linked with standards-based practices.

Overall, the teachers selected for this study have been teaching for between 11 and 37 years. They brought varied professional experiences to the districts in which they work, with District A having teachers who have spent the majority of their careers there, and District B having some variation in the states, districts, and grade levels taught. In all four cases, the teachers reported an almost exclusive focus on standards-based instruction during their recent professional development as designed and supported by the district.

The districts themselves differ in a few areas. Demographically, there are notable differences in size (3,987 compared with 2,146), the percent of students eligible for free and reduced lunch (51.3 percent compared with 5.6 percent), and annual per-pupil expenditures ($9,409 compared with $13,496). There were not discernible differences in the percentage of teachers with masters degrees or higher (38.7 percent compared with 39.6 percent). From a student achievement perspective, there is a substantive difference in reading and math proficiencies on the high school state tests over the past three years (math 45.27 percent compared to 81.79 percent, and reading 39.92 percent compared to 98.3 percent); graduation rates (79.4 percent compared to 93.6 percent) and student dropout rates (5.5 percent compared to 1 percent). There is not a vast difference in the average daily attendance rates (94.6 percent compared to 95.6 percent).

Operational Definitions

For the purpose of this study, several key concepts were operationally defined as follows:

- *Research-Based Instructional Practices:* Instructional practices that have gone through rigorous research and demonstrated a record of success. Further, that there is reliable, trustworthy and valid evidence to suggest the practice is effective.
- *School Implementing Standards-Based Education:* Schools that have been implementing standards-based education for at least two to three years as identified through the Maine Department of Education, their colleagues, and/or themselves.
- *Standards-Based Education:* The identification of specific learning standards that describe what students are expected to know and be able to do; the alignment of curriculum, instruction, assessments, and intervention with the standards; targets for

attainment of the standards, and in some cases, for advancement to higher learning levels and graduation; and a public accountability system for schools.

- *Teacher Perceptions:* The understandings, insights, and reflections from teachers on their classroom instruction relative to effective instructional practice and standards-based education.

Data Collection

Data was collected through in-depth, phenomenological interviews. According to Seidman (2013), the goal of in-depth, phenomenological interviews is "… to have the participant reconstruct his or her experience within the topic being studied" (p.14). Teachers were interviewed in a semi-structured, focused format using Seidman's three-part interview process. The first interview collected demographic information about the participant's experience as a teacher in both a standards-based and traditional classroom. The second examined the teacher's understanding of standards-based education including shifts in their curriculum, assessment, and instructional practices and philosophy of teaching. The interview concluded with a deeper discussion of any relevant documents (e.g. report cards, transcripts, work samples) that the teacher provided. The third interview explored perception of the impact on student achievement, the change process, and the types of professional development that the teacher had experienced. (Copies of the Semi-Structured Interview Protocols are included in Appendices D, E, and F.)

Interviews were held individually with each teacher in her school. Each interview lasted 45 to 60 minutes and included a member check of information gathered during the previous interview (as applicable). All respondents agreed to further clarification and member checks during the data analysis and interpretation phases of this study. According to Maxwell (2005), "This is the single most important way of ruling out the possibility of misinterpreting the

meaning of what participants say and do and the perspective that they have on what is going on, as well as being an important way of identifying your own biases and misunderstandings of what you observed" (p. 111). All interviews were audiotaped and transcribed verbatim by a human transcriptionist. Interview data were coded, and documents reviewed between interviews in an effort to determine areas to further explore.

Data Analysis

While the researcher was operating within a conceptual and theoretical framework of best practice, the goal was to find patterns that describe how teachers understand their work, and the impact of the implementation of standards-based education. Interview transcripts were uploaded to Dedoose, a secure, cloud-based, computer-assisted qualitative data analysis software (CAQDAS) and backed up on Word. Quantitative data were coded using an inductive coding process linking specific excerpts and quotes to various codes. Codes were further analyzed to establish themes. Documents were reviewed to gather evidence that either supported or contradicted these themes. The Framework of Research-Based Instruction and Assessment Practices was used as a lens to examine the alignment of teachers' practices in a standards-based setting relative to these research-based practices. Additional data were coded and analyzed to determine further themes, patterns, and outlying data.

Trustworthiness

Given the nature of a qualitative study, substantial effort was taken with regard to the trustworthiness of the data. Guba and Lincoln (1985) offer four criteria for evaluating trustworthiness in qualitative research: credibility – confidence in accuracy of the findings; transferability – applicability of the data in other contexts; dependability – consistency of the findings should the study be replicated; and confirmability – demonstration that the findings are

based upon the data and not the bias, motivation, or interest of the researcher. Those criteria were used as a lens for consistently revisiting the issue of trustworthiness throughout the study.

Credibility

The study was based upon teachers working in schools that have been implementing standards-based education for at least two to three years, have been teaching longer than this reform has been expected in their classroom, and identified by their administrators as implementing highly effective teachers. Those criteria provided a foundation for credibility of the data. Data were triangulated through initial interview transcripts, review of documents, and second and third interview probing questions and transcripts.

Transferability

Rich, thick descriptions allow for transferability to other settings, which is established through by the use of quotes, detailed descriptions of artifacts, and actively listening to the perspectives of teachers. That allows the researcher and reader to determine whether or not the results are applicable to a different context.

Dependability

The framework and semi-structured interview protocols provided a bounded structure, consistency, and replication of the study. However, teacher perceptions of instructional practices are inherently unique and personal. The use of rich, thick description, quotes, and coding provides information to the researcher and reader about whether the findings would be consistent with different teachers.

Confirmability

To ensure that the data gathered during each semi-structured interview accurately reflected the respondent's perspective; a review of key concepts and quotes were provided to the

participants for member checks. Peer review of the data was also used to confirm that the findings are from the data and not altered by researcher bias or intent. Specifically, as part of the process, data samples were reviewed by other researchers and discussed for confirmation of findings.

CHAPTER 4--REVIEW OF THE FINDINGS

Introduction

The purpose of this research was to examine assessment and instructional practices in standards-based classrooms relative to research-based practices in education. This study examined the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. As the previous chapters suggest, the intersection between effective instructional practices and standards-based education has not been specifically studied. A framework was developed and used to better understand the extent that standards-based practices align with research-based practices implemented by the teachers interviewed. This chapter contains the presentation of data and subsequent analysis of findings. The first section answers the research question in this study: What are the perceptions of teachers about the impacts of standards-based education on their practice? The second section answers the research questions: What are the instructional and assessment practices used by teachers in standards-based classrooms? How do those identified practices align with research-based instructional practices? This section reviews the findings relative to the Research-Based Instructional Practices Framework, an original framework based upon existing meta-analyses developed for this study. A third section includes the presentation and analysis of three additional instructional practices that repeatedly emerged across teacher interviews and were key variables in describing what is happening in a sample of standards-based classrooms. The last section of this chapter summarizes the results of this part of the study.

Impacts of Standards-Based Education on Teacher Practice

Across the two school districts reform has led to shifts in the instructional practices of teachers. One teacher noted, "I think it's different, both in my instruction and in the work that I give the kids." A second teacher expanded upon that stating, "In many ways that's a shift though, because we've been having kids do work that hasn't been related, and so they begin to think - What is important?" A third teacher responded, ""And everybody's kinda, I think, on the path. Some are a little further than others; more comfortable than others. And we're still trying to kinda figure it out. " Yet another said, "It's been a really good experience, too, and you know, I can't be stuck in my old ways because I have a long way to go, too." The largest shifts in practice centered on the use of learning targets, assessment practices, and the time needed to individualize, re-teach, and stay ahead of the most advanced learner. Each of those shifts is further explored below.

Learning Targets

According to Dean, et al, "When teachers identify and communicate clear learning objectives, they send the message that there is a focus for the learning activities to come. This reassures students that there is a reason for learning and provides teachers with a focal point for planning instruction" (Dean, Hubbell, Pitler & Stone, 2012, pg. 3). Across teachers and districts in this study, there was commonality and consistency about the use of clearly defined, explicit learning targets and expectations for student demonstration of proficiency. One teacher from District B commented:

> And so I think that changes things because it's not so much about getting it all done by a certain date. It's about actually learning it. Kids have said that to me too. They've said, 'I

> really like the fact that I don't just have to get this done, I actually have to learn it. And you're giving me the time to learn it.'

Another teacher from District A said:

> With our customized class, you are required to go through the process of understanding something, before we let you move on. We want you to understand before it gets applied to something else.

While the standards in both districts derive from the state standards, they differ in number, specificity, and style. A teacher from District A explains,

> So, all algebra one classes, as of next year, all geometry classes will be customized. So we're slowly implementing each year by year, a new class. I'm not sure what's gonna happen beyond Algebra II. Once we get to Algebra II that's what they need for graduation. Anyone who wants to go beyond, I don't know if that'll still be customized. You know, we're implementing things slowly but the grading system is the last to go. So right now, we still don't have targets for pre-calculus. Pre-calculus is not a required course to graduate, it, it's not something that's in the Common Core that has to be done. So the targets aren't in there yet.

A teacher from District B describes the focus in that school,

> And now because of the law and because of the fact that we're not getting an extension, all of us who teach freshmen have to have (standards.) So we've got a system (for reporting) that's kinda working with PowerSchool. I'm hoping that next year's system will be a little bit cleaner, standards based.
>
> And as far as I know we're not getting rid of them (letter grades). . And the grades are still A, B, C, D, E, which is NM, not meets, and so it's confusing for students and parents,

> that they're still getting that symbol, that label, A or B, but it means something completely different now.
>
> And not really understanding that four is like, beyond. In our district, at the elementary level, it's one two three four."
>
> But for some reason I think that I will always have grades. And I think that's because I heard from it the guidance counselor.

Even when becoming clear about the targets and expectation for learning, assessment was identified as another shift in practice across all participants.

Assessment Practices

According to Reeves, "Assessment is the process and product of determining whether students have learned what they were expected to learn from instruction" (Reeves, 2011, pg. 103). While that definition appears logical and simple, Reeves continues to discuss the need to fine-tune assessments in a standards-based classroom. She notes:

> … fine tuning assessments requires ensuring that the associated activities line up with specific objectives rather than just the larger body of content knowledge. Gaps can also occur when "inherited" or habitual learning activities and assessments don't mesh cleanly with standards – a situation that faces experienced teachers, as well as beginners.

In this study, teachers in both districts described the shifts in their practice related to the feedback and opportunities for correction provided to students. A teacher from District A noted:

> So, I think it's made me think about each kid more individually. And how can we reach that kid. And I think it's given me the time to be able to do that. Whereas, you know, when it's a large class, you hand back the quizzes. This is what you got. Okay, you

> can talk with other people. If you have a few questions, let me know. But, hey, we gotta move on.

Another teacher from District A said:

> I mean, I, I've come a long way in what I think, I guess. Because it in the past has been, well, I'm sorry that you didn't do this. But we have to move on. My mind has changed more to, 'Okay, you didn't get this. What can we do to make sure you do get this?'

The teachers noted ongoing challenges to be considered. Relative to the Latin honors system, one teacher from District A noted:

> So I think that's the big difference - we're kind of (in) two worlds right now. And it's hard to say to a kid, you're going to earn honors credit, if you've only done three chapters of honors work. So they have to do the whole year. They are choosing to do honors; it has to be a full commitment. If they do the honors all year, they will get honors credit.

Across districts, inherited and habitual assessment practices were being challenged by the need to fine tune assessments toward the learning targets.

Time

Marzano (2003) identifies "time" as second only to "opportunity to learn" when identifying school level factors that most impact student achievement as found through his meta-analysis. He notes, "estimates of how much class time is actually devoted to instruction vary widely from a low of 21 percent to a high of 69 percent." (Marzano, 2003, pg. 25.)

A teacher from District A commented on the challenge of time given the number of selected standards:

> Finding the time, trying to be ahead of our fastest kid (and) not seeing quite the end yet. Being able to, to go back and revisit and make it stronger and make it better. When I

> teach a class, I'll go through my stuff. I make a note about this and I make a note about that. And I'm changing it, I'm fixing it. I haven't had the chance to do that with this course because this new way of doing things; because I have to be ahead of that [student]. So, to me that's a struggle because there are things I want to do and things I want to change, and I don't have the time to do that yet.

A teacher from District B honestly noted:

> We used to just be able to just say zero. Whether that worked or not, I'm not even sure it did. But it was something we could do. There are some kids, and this is what these other students were saying, there are some kids who are just thinking, I don't have to do this. They'll keep giving me another chance. And that's something we have to really fix.

Another teacher from District B questioned, "And what about parents thinking that their kid should have a four? Because they automatically go to the A, right?"

Teachers from District B further expanded on her concerns:

> There are kids who, there's only so much you can do and they're still not gonna be there. And that doesn't align with, with proficiency based, because proficiency standards based (is) saying everybody's gonna be at this level. But I don't think everybody should be at the same level. For some things. So that part is, is still like well, I, I don't know, it's, hard. When I think of some kids that I know shouldn't be at the same level, that doesn't mean they can't do the basics. But what they're expecting everybody to do, I don't think everybody needs to do.

Offering advice to those beginning this plight, one teacher shared:

> I think first of all they (other teachers) need to know that it's okay to not like it at first. It's okay to be stressed and know that you are going to have to change things along the way.

> We have changed all the time with how we are doing things. We just implemented something new yesterday. I think change has to be inevitable.

In the end, when you put teachers in front of students, classroom culture and relationships support good teaching regardless of the reform. That notion carried through both districts. A teacher in District A noted:

> In having conversations with kids, there are so many tools out there, to get feedback from kids. And we talk with our kids. You know, like that's never been an issue and to have that environment where kids feel safe and for kids to be able to make mistakes, I think that part has been easy and I love doing curriculum stuff.

A teacher from District B reflects:

> I absolutely love kids. The whole learning (process) is fascinating and helping them learn is fascinating, and you know I cringe at the things I used to do. Even if the law ditches, I don't care how the grade book looks. If I go back to 92s, I don't care, I mean, I'd still give 92s to all my seniors and I don't really care. But I really do like the challenge, and the focus that standards-based gives you.

Overall, those results indicate that the teachers interviewed are experiencing a shift in their instructional practice as a result of the reform. The shift is most notable in both districts in the identification of learning targets, assessment practices, and time. However, there is a distinct difference in understanding and implementation between districts. Across the interviews, teachers spoke openly of their challenges and concerns moving forward. Those center on grading practices, student accountability, and the expectation for all students to attain the same level of proficiency despite natural occurring differences. However, in the end, teachers return to the importance of classroom culture, relationships with students, and their love of teaching as

common anchors in traditional and standards-based classrooms. The specific instructional practices of the teachers are more closely examined below.

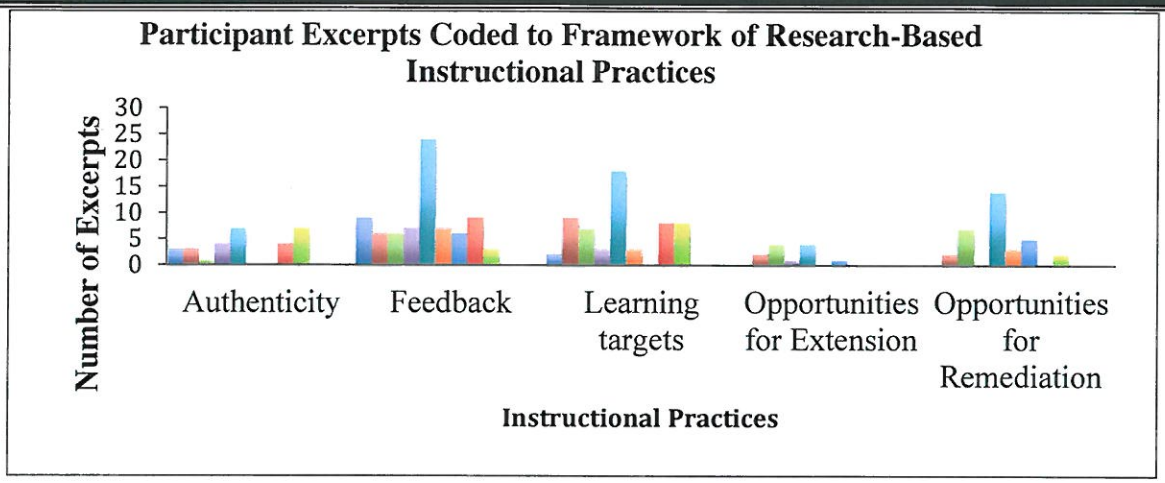
Connections to the Framework of Research-Based Instructional Practices

Examining instructional and assessment practices in standards-based education is of critical importance in considering the impact of the reform. To do so required a review of existing research on effective instructional practices. Three meta-analyses of more than 180,000 primary studies and national curriculum reports were used to establish which instructional practices are most correlated with improved teaching and learning. The instructional practices that show commonality across those three large meta-analyses have been organized into a table and further collapsed into five core practices. The practices were then organized into a Framework for Research-Based Instructional Practices. Participant interview transcripts were then analyzed and coded to the presence or absence of these practices. The results are presented in Figure 1. The colored bars represent each individual interview. While not all five practices were discussed in every interview, participants discussed all five areas to varying degrees and in different ways across the three-part interview process. For example, in the area of Feedback, nine of the twelve total interviews contained excerpts related to feedback as defined in the Framework. The height of the bars across interviews shows that feedback, learning targets, and opportunities for remediation arose most often and across participants. Further, since the first interview focused upon the teacher's context and background and the third on the impacts of standards-based education on their practice and the professional development they had been provided, it was not surprising that many of the highest bars occurs in the middle of each area of the graph. The middle interview examined the teachers' understanding of standards-based education, including shifts in their curriculum, assessment, and instructional practices, and

philosophy of teaching. Most data were found in the areas of Learning Targets and Feedback. Authenticity was noted by all participants but in very different ways. Additionally, many more excerpts focused on Opportunities for Remediation than for Extension.

Figure 1.

Participant Excerpts Coded to the Framework



Authenticity

While the notion of authentic learning has been studied by several researchers (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012), Newmann, in Herrington, Reeves, and Oliver, (2014) has very current research on the practice. He defines authentic learning as "…a pedagogical approach that situates learning tasks in the context of future use" (pg. 401). Newmann calls for three main elements in authentic lessons: students construct knowledge; students draw conclusions; and students connect the topic to their own lives or situations outside of school. For the purposes of this study, this definition was adopted and translated into the

following teacher implementation actions in the framework: Students are actively engaged in learning that connects to current or future "real-world" situations.

Teachers across all settings discussed authenticity in learning. One teacher from District B notes:

> I was taught very traditionally. There are very, very few things that I remember from my own high school career that stand out. There's a few things, and those were where I was actively participating and that was like a debate or, was a play, or something like that, you know, where you're actually hands-on. And, of course they all teach that hands-on is the way to get people to remember stuff.

Another teacher from District A indicated:

> I think it's important and I think it's missing and I don't know the answer to that. Because it's been an ongoing frustration. No matter what. No matter whether it's traditional or whether it's customized…

While all teachers reported an understanding of the importance of authenticity in learning, again variation existed across settings and commonality emerged in teachers within the same setting. One teacher from District A responded:

> I think (at) this point in the customized work, here and there we have applications, but not as much as we'd like. We do try, where we can, to integrate things. I think, once we get through the process of the customized learning sequence, our goal would be to go back and add those things in. Because I definitely think some of the application and some of the connections may not be there right now.

Upon further reflection, a second teacher from District A noted, 'Like, when we get into systems of equations. We'll have a graph, Here's your salary, when will you reach this goal of saving money? So we do try to do that when it, when it fits." That teacher describes the lesson process:

> Well in our customized class, it's just, you have to do this in order to get the quiz. So you have to do the assignment, in order to get the quiz, in order to move on. You have to get a certain grade on the quiz. It's their ticket to getting their results back, to being able to move on. So the kids need to have Educreation on their iPads. We tell them that you watch the lesson, make any notes on anything you don't really understand. Kids are going at their own pace. It's not like we have a large group of kids that need a lesson at one particular time. So, the kids access (notes and lessons) on the iPads, and they scan it, they take the notes that way, and then they come to us with questions, more individually.

Another teacher in District A noted, "With this class, it's Sue, you don't get it. Let me work with you one-on-one. You know, Tom, this is the only thing you don't understand. Let's fill that gap and then move on. So, it really allows us to get everybody where they're at."

Conversely, a teacher from District B noted:

> (T)here are certain skills like certain content we need to cover, but I think the reason why we're going to more of a customized approach is so that kids have those tools to be able to, to research and explore and to you know, think and work collaboratively, and so it's more about those skills that we're looking at.

Further:

> (M)ostly what we think anyway, is that the skills (are) of researching, applying information. So if they don't learn everything there is to know about China, I don't think that's a problem. I'd rather have them have the skills to look something up specifically

> and completely rather than not know how to write and also, not remember those tests they crammed for. With all those details and dates and people. It's a shift, particularly in history.

This teacher described an upcoming, multi-week, unit of study:

> So, we're doing current events with modern day women talking, and they get to watch clips and debate on about whether you should ban the burka, or ban the hijab, you know, in certain countries. And then we'll go back to the Safavids and the Ottomans in Asia, and then we'll go back to the Addisons and the Umayyads which were the first Islamic empires right after Muhammad's death. And so, you know, we won't spend much time on them and we're not gonna go into details, you're not gonna have to know everything about them. But we'll pick out certain bits that we can then, hopefully apply to the final project which will be using that same rubric. They'll research an aspect of Islam and they'll have to show how it's stayed the same or changed."

Another teacher from District B noted:

> They have to start finding authentic texts from which to bounce off of and have chitchats around and build vocab off of. And we have to, you know, throw our kids into all sorts of things, giving them little different jobs to do with each other and negotiate (and) report back so it takes a lot of time and it's messy. So that's the biggest thing, we can't just give them worksheets. You got to get it off the paper.

Further, she noted, "I never, I never teach them the rules in grammar. They always have to look at a text, and figure out what it is." She goes on to describe a multi-week unit in which small groups of students are expected to design a French café in Paris.

> They have to have a street. They have to have the ZIP code correctly. They to have the address written correctly. They have to make up a phone number, but the phone number as to be correctly laid out. And then they have to in their presentation explain why they chose that particular spot. So if they tell me that they chose (a spot) because the Eiffel Tower is there, I know that they didn't pay attention because the Eiffel Tower's not in there. The drinks, I want them to stretch. I don't want them to always say Coca-Cola and hot dog even though you can find those things in France, I want them to have a French menu, and the Euros have to be accurate.

In sum, the participants in this study all recognized the need for authenticity in learning. Equally, they each struggle with finding ways to make lessons more authentic.

In District A, the teachers view authenticity in part through a definitive measure of student attainment of Common Core State Standards. They saw the flipped classroom model as an example of the way the world is changing: using technology to access information, seeking follow-up clarification, and customizing work. Further, they see that aspect as under development as they continue to transition to a standards-based system. A mathematics teacher notes, "I mean, we are basically ensuring that our kids understand what we're teaching them. We are making sure that they're not leaving here with a 'yes, I saw it, but I don't get it kind of grade.'" Whereas, in District B, teachers view authenticity in a collaborative, project-based learning, manner. A world languages teacher notes:

> That we really focus on basic, basic survival skills, because an intermediate medium (on the standards) is a survivor in that sense of being able to function on a very basic level. If they miss their plane they won't be able to deal with that, but they can deal with finding a cafe.

Again, those diverse perspectives are consistent across teachers within the same setting.

Feedback

Another instructional practice that arose from the meta-analyses involves feedback and formative assessment practices (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Hattie and Timperley (2007) define feedback as, "information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (pg. 81). In an effort to examine the meaning and impact of feedback on student learning, Hattie (2009) examined 12 previous meta-analyses specific to the research on the types of feedback that have the greatest effect on learning. According to Hattie and Timperley (2014),

> At one end of the continuum is a clear distinction between providing instruction and providing feedback. However, when feedback is combined with a more correctional review, the feedback and instruction become intertwined… To take on this instructional purpose, feedback needs to provide information specifically relating to the task or process of learning that fills a gap between what is understood and what is aimed to be understood, and can do this in a number of ways (p. 82).

Given the instructional nature of this definition, it was selected for the purposes of this study. Within the framework, the following description of teacher implementation was identified: Includes pre assessment, benchmark assessment, post-assessment, self- assessment, and opportunities for correction.

Common opportunities for pre assessment, benchmark assessment, post assessment and self-assessment were present in interviews with all four teachers. Additionally, for each of them

pre-assessment and self-assessment are new shifts in their practice. One teacher from District A summed it up by stating:

> I was like well, I'm not gonna tell them everything that's going on the test! But (I've) come around. And so I started giving them a practice quiz that is very much like the quiz. And it really helps them focus in. I'm like, well, I want them to know what they're going to be assessed on. So, why not?"

A teacher from District B noted,

> They're 14-year-old kids and I think when they see it, they know what to push for, (and) they'll push. But if I don't show it to them, they'll go, Oh I forgot that that's what I was supposed to do."

Again, differences in assessment types and measures emerged across settings with commonalities within each setting.

In District A students pre-test using the exact post-test to be given, "We actually give them a copy of the test at the end, and we just change it to pre-assessment." Based upon the results, each student can customize which aspects they need to learn. One teacher notes,

> Now they know that hey, I can skip this, because I just showed my teacher I already know it, so now I can start here. And, and it's just nice, you know, because they're working on what they don't know and they're not doing the same old, same old."

In the district, the full course grade stems from the tests and quizzes.

> Assessments are still 40/ 60, quizzes and tests. And that's all they take is quizzes and tests. That's their whole grade. They're required to do homework in order to assess. That's kinda like their ticket to say, okay I'm ready to assess but it's not a grade.

That type of formative assessment includes an opportunity for self-assessment and teacher feedback, regardless of the result. Another teacher from District A noted:

> Well first they pre-assess themselves. They have a list to go through. Okay, can I justify that this is a square using distance formulas slope. They'll check it off - I know what that means I can do that. Or maybe I'm not quite sure - I'll go back and look at my notes or I'll ask the teacher for help. So they self-assess, they take a quiz, and we always, always, always, have a moment to say, Okay can you come sit with me for a second. Even if it's a great grade.

Both teachers in this district are seeing increased student results using that method. One teacher noted:

> But I think in the end, we're producing stronger math kids. The kids that are doing the math that we're asking are kids that in a traditional class, I think would have been lost. So, they have had a chance to really get their base down, because it's not skewed thing. They're doing some pretty great things.

In District B, rubrics and benchmarks for summative assessments are posted and referred to as learning occurs. One teacher described a self-assessment process used:

> When I do something like this, where we have the Can Do statements. I'll say, do you think we're ready for the summative? And I actually have them working in groups. No, we're not. We need to do x, y and z. I ask them because I want them to be engaged in, when they're going to be ready. I want them to know that we are moving towards this target.

Both of the teachers in District B described a shift to a less concrete system of grading using rubrics as opposed to a numerical system. One teacher reflected:

> And I think the grading is, in some ways, something I have to work on. Even though my, my rubrics are as careful as I can write them, there are times when I feel I'm being subjective. Because it's more holistic, and because it's kinda like check, check, check, check, plus A. That's a piece that I'm sometimes a little uncomfortable, but I'm hoping that with the practice, and with the rubrics, or even, even reminding myself that a 97 and a 96 was precise, but what did it really say?

The other teacher in the district relies upon rubrics for ongoing assessment work:

> When they're chit chatting with each other. Or when they're doing an oral presentation. Or they're writing, free writing. Or when they're, when they're reading something. I have the right rubrics, so I can respond in a standards-based way.

Teachers in District B also report a positive impact on student achievement in a somewhat different skill set. One teacher recalled a conversation among students,

> I was watching these girls. So cute. Talking about another class. One said, Oh yeah I was surprised because my formatives weren't that great but you know, I did even better on my summative assessment. So I'm really glad I did those formatives.

She further noted a shift in students to "…doing things to learn as opposed to always doing things for a grade." The other teacher in District B reflects upon the impact on student growth in their community stating:

> I just like the idea that it's practice. School is about practice and you get there when you get there. I think here in (District B) that's really hard, because kids want to be there before they start. They want to show up and be able to do it right away or do the work, read you know, understand, and be able to spit it back out and be able to be good writers

now on the first assignment, which is hard. Because that's not what I think school's about. So I think that the standards really sort of make that okay.

Overall, results indicate commonality in the aspects of feedback and formative assessment that are linked to research-based instructional practices and all teachers are seeing a positive impact on students. However, the types and measure of assessment vary across settings with far greater consistency within settings.

Learning Targets

Learning targets have been identified by several researchers as having a significant impact on student achievement (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Moss and Brookhart (2012) identify the learning target, or standard, as one part of effective classroom instruction. In defining learning targets for students, they suggest the need to not only define the essential content or skill but also identify the reasoning processes that the student will use, the means that the student will use to demonstrate understanding, and the relevance of the lesson to previous knowledge (p. 38-41). Moss, Brookhart, and Long (2011) distinguish learning targets from instructional objectives in that learning targets are framed from the student's point of view and describe exactly what we expect them to be able to know and do. For the purposes of this study, teacher implementation was defined as follows: Learning targets are a clearly articulated "chunk" of learning that is connected to standards and instructional objectives. They are present throughout the learning task and transparent to students, teachers, and parents.

All four teachers discussed the clarity of learning targets for students, parents, and teachers. One teacher from District A noted, "I think from the perspective of the students, I think they know where they're going. And they know why." In District B another commented:

> I think for myself as a teacher, my goal is to make sure everybody understands what they're doing. In many ways that's a shift though, because we've been having kids do work that hasn't been related, and so they begin to think about what is important.

With respect to teacher clarity, yet another teacher from District B shared, "I keep reminding, and I have the unit learning targets up on the board all the time, so that it's like this is where we're headed, folks this is what we're gonna prove." Both interview sites have a student information system allowing for a parent portal to view student grades and assignments. Additionally, a teacher from District A commented, "However, again, if the parents wanted to know what target it is, it's all on the syllabus. It's listed right there."

While there is commonality and consistency across teachers and settings about the use of clearly defined learning targets and expectations for student demonstration of proficiency, variation existed in the identification of those learning targets at the setting or district level.

District A

In District A one teacher noted:

> Our syllabi for geometry have learning targets right on the top of them. It tells exactly which learning targets from the Common Core they would have met. Every assessment is coded to that syllabus, meaning the specific topic. It might have like one question. It might say, Concept A-1. Which means if you go to your syllabus, it's Concept A, Part 1. And we have it broken down very clearly for them, for exactly what they're, they're being asked to do.

That district has targeted all standards on the Common Core by each course. In those classrooms, the teachers have paired unit assessments with each set of standards and organized them into milk crates below. Students move squares with their names on them from one standard to another

as they meet proficiency on the assessments. In District A, the means of demonstrating knowledge is exclusively through assessment, and the connection to previous knowledge is based upon the linear nature of the standards. Each of those is further examined relative to authenticity and feedback later in this chapter.

District B

Conversely, District B has teams of teachers developing fewer, broader learning targets based upon state and national standards. A teacher explained:

> They're (the learning targets) generally on the board right at the beginning. And, then with the summatives and the course learning targets. You know, I say this is what we're going to be working on now. We're going to answer the question, how has British rule impacted India? And so they know that's where they're headed.

In that district, the learning targets are different from the standards:

> I can't say we always have the same unit learning targets because we teach differently. But it's all aiming towards the same skills. And I don't think it matters, content-wise, as much as it does that we have the same skills that we're trying to impart. So whether it's Mughal rule or Hinduism or Buddhism or Confucianism or whatever it is that.

When asked how many standards have been identified for social studies at the high school level, the same teacher responded, "Right now only three, but we're going to add one."

Paired with those broad standards are common assessments and rubrics that specify the means and reasoning skills needed to attain the standard. A world languages teacher in District B explains:

> When I do my, when I do my IPAs, my Integrated Performance Assessments, I have the right rubrics for that. In fact, even before some of the assessments, I show them rubrics.

> Again, the rubrics are on my website. I show them the rubrics. Let's talk about the rubrics for a second here. Read the meets. We don't need to read it down there, read the meets, read the exceeds.

Overall, across participants and settings there is commonality in the presence of clear learning targets and information provided to students about how to demonstrate proficiency. There is a wide divergence between settings in both the number and scope of the standards, as well as in the actual assessment practices. That said, there is commonality in each of those areas across teachers within the same setting.

Opportunities for Extension

A key instructional practice that arose from the meta-analyses involves a structure and process for both extension and remediation (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Buffum, Mattos, and Weber (2012) state:

> Just as teachers must plan to provide immediate remediation to students who lack prior skills, so should they plan to provide immediate enrichment to students who have already mastered the standard. This can be done in several ways. Teachers can make the actual content more rigorous; make the process or activities in which students engage more rigorous; or make the culminating product, which applies what the students have learned, more rigorous. (p.54)

For the purposes of this framework, the following implementation description was applied: student learning starts at their level of understanding. They are provided opportunities to go deeper or further with an assignment, project, or activity. That differs from simply moving ahead to the next skill in a sequence.

When asked about providing opportunities for extension, teachers from both districts discussed the notion of depth of knowledge as well as advancement of skills. One teacher from District B discussed the integration of other content areas and knowledge, "Go deeper, integrate more, other knowledge, other content areas, that kind of thing, just take it an extra mile." Another from District A described the option for honors-level questions on tests and quizzes:

> Depending on the student, if the student really wants to deepen their understanding, we do now offer honors-level questions. We do offer more higher-order thinking questions and make them do a little more work with those. It's not mandatory though.

A teacher from District B described conferencing with a parent and explaining her perception that a standards-based system allows for more opportunities for extension:

> Fortunately I just happened to have an essay for this conversation with the parents, it was during the parent teacher conferences and see this, see how the paper, it's got some markings on it, right? Look at the grade on top, she got an A plus. Okay. Now, in the old school, I couldn't have given her 100 because it had markings. But the markings were exactly the things that she fell down (on) because she reached way over here on the rubric. She went in to different kinds of sentences; she did this, she did that. She tried to use a different tense, okay well. Well these were unique little mistakes that don't show a breakdown in, in her skills.

District A created a summer session upon student request.

> Last year in the customized class, we had a lot of kids who were asking us if they could keep working during the summer. And, we kind of were like what? And so they said, yeah, can I take some work home and then when I come back in the fall assess on it. The thought of them going that large of a span of time without checking in; we didn't feel it

> would be in their best interests. So, we were able to get funding for a little bit of time. Not, not a ton of time, but a little bit of time to, to pull this together, and so we offered it to the kids. We gave them a little invitation, you're invited to summer math and they cheered. We were like, did they just cheer for coming to school in the summer? And it wasn't mandatory and we were getting permission slips back the next day, the next class. And, so, they were really enthusiastic about it. And that first day 70 plus kids were in the library with us, and we're just like, wow. This is unbelievable.

While opportunities for extension were beginning to develop, and teachers were figuring out how to provide extension in a standards-based classroom, opportunities for remediation appeared to be more common.

Opportunities for Remediation

A system for remediation began in the realm of special education and has expanded in research and practice. It is commonly referred to as Response to Intervention (RTI). The National Center on Response to Intervention (2010) uses the following definition:

> Response to intervention integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending upon the student's responsiveness, and identify students with learning disabilities (p. 2).

The research-based instructional practice of providing students with opportunities for remediation reaches beyond special education to all students. Based upon their research, Prewett, Mellard, Deshler, Allen, Alexander, and Stern (2012) suggest that RTI has the "… potential to be

a practical and effective school-wide framework for ensuring academic and behavioral success for students" (pg. 146). For the purposes of the framework used in this study, the following implementation actions have been identified: a system and structure is in place to assess the need for remediation, provide that opportunity, monitor the efficacy of the remediation, and potentially close the achievement gap.

Based upon that definition and implementation description, interview results were two-fold: all four teachers identified aspects of their standards-based practices that provided students with opportunities for remediation and correction that were not necessarily common practice in more traditional classrooms; and both districts provided some formal, school-wide structure and support for remediation that was such common practice it was nearly an afterthought during the interview process.

In terms of the difference between standards-based and more traditional classroom practices relative to remediation, one teacher from District A noted, "We have that time, they can go back and fine tune those things." Another from the same district responded, "That it's on the table now that the kids have opportunity for revision. (Because) that used to be, like teacher preference in some ways. Like, well, no you can't revise that." Considering the requirement for a proficiency-based diploma in Maine, one teacher from District B stated:

> And you'll have to go through the remediation process. You know, it's not credit recovery anymore but it's working on your standard and finding a place where you can work on that standard somehow (to) show that you're meeting proficiency at the junior level not at the freshman level. I mean, you may never have gotten the freshman level. You can't change your grade necessarily but you can make yourself proficient so that you can graduate.

As discussed above, District A started a summer session as an option for any math student, an opportunity for either extension or remediation. Nearly 80 students took advantage of that option to move themselves ahead on the progression of standards. One teacher reflected, "We were just surprised that so many kids showed up. And we did have kids trickle in and out throughout the summer because some went on vacation."

Each district approaches a school-wide structure for remediation in a different way. District A provides a lab period based upon content area:

> Well, we do offer Math Labs every period, every day. They can go and work with another math teacher, you know because I have 40 something kids. So we try to get parent involvement, we try to get kids to math lab or after school. We just try to do the intervention that we can to get them where they need to be.

District B provides a whole school "Academic Focus Time" when all teachers are available to all students:

> So a student can choose to go places. We used to code people, so anybody who had a C or lower had to be coded, and then go visit that teacher. But that became a mess, and then we, we did not code, and so now it's just kind of open and it's between teachers and students, you know, where they need to be.

Overall, teachers across districts are approaching the provision of opportunities for remediation in similar ways both at the classroom level and through a school-wide structure.

Relative to the research question, "How do the identified practices align with research-based instructional practices?" the above findings indicate that all teachers interviewed are implementing the five practices in the Framework of Research-Based Instructional Practices. They are implementing most similarly in the practices of extension and remediation, and most

divergently in learning targets, feedback, and authenticity. Across teachers and districts, opportunities are sought for learning to go deeper and further. School-wide structures are in place for remediation and teachers are identifying more opportunities to provide intervention and correction in a standards-based classroom than in a more traditional one. All teachers described the clarity and transparency of learning targets for students, teachers, and parents. The number of targets varied by district. Additionally, all teachers described benchmark assessment, pre-assessment, and post-assessment as key instructional practices. However, the methods and types of those assessments varied across settings. Additionally, while the instructional practices in the framework are represented by the teachers as being core to their practice in a standards-based classroom, the data indicate three additional common instructional practices.

Additional Instructional Practices

In addition to the five instructional practices in the framework, three practices emerged across participants and appeared to be key variables to effective standards-based instructional practices in this sample of teachers:

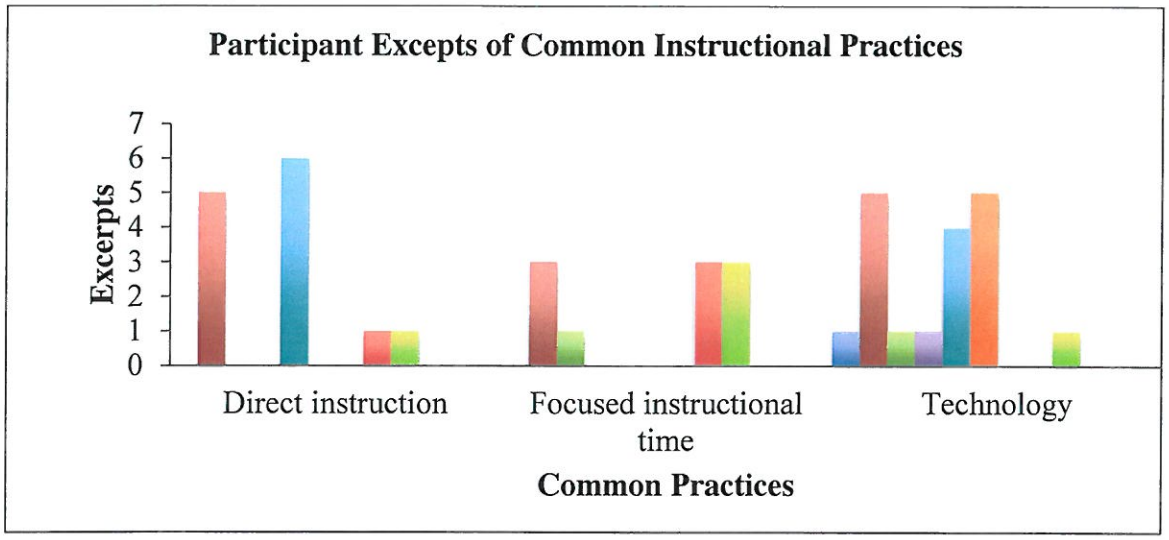
- the necessity for direct instruction on the standards;
- the notion of focused instructional time; and
- an increased reliance on technology for instruction and assessment.

As seen in Figure 2, two interviews of teachers contained substantial excerpts about direct instruction. Technology arose more frequently across interviews, and focused instructional time was a key variable that emerged in the coding data but was viewed more significantly in field notes, given the intonation and cadence of the interviewees' voices and the strengths of statements made.

Overall, in addition to the research-based instructional practices in the framework developed for this study, there appear to be three other key variables to standards-based instructional practice. The variable of focused instructional time is not well studied in the literature and appears to be a key factor to the standards movement. While the use of technology in the classroom is a well-studied area, its use to provide direct instruction through a flipped classroom model is currently being studied. Lastly, while the need for direct instruction is widely studied and supported in the research, teachers are still figuring out how this fits into a standards-based and/or customized classroom. Those practices are further explored in the following section of this chapter.

Figure 2

Additional Practices Common to Standards-based Instruction.



Direct Instruction

Hattie (2009) reviewed 337 meta-analyses, including more than 180,000 studies representing approximately 50+ million students, examining the effect size of instructional

techniques on student achievement. He found that most innovations in schools improve achievement by .40 of a standard deviation, provided that there is a "deliberate change" occurring. However, Hattie suggests that the initial effect size may be a result of 'The Hawthorne Effect," essentially attributable to the excitement of the change, and corresponding focus on instruction, as opposed to the efficacy of the innovation. According to Hattie (2009), data from the National Assessment of Educational Progress data bank indicates an average classroom effect size of .24 per year across six subject areas in the absence of innovation. That is the average effect of students in classrooms with teachers. He further notes that a .10 effect size is realized simply from student maturation each year. Direct instruction was found to have an effect size of .82 on student achievement.

One of the tensions noted by teachers in District A is that of trying to continue to provide direct instruction while customizing their lessons for students. One teacher said, "And I think if we had smaller groups. Let's say we only had to worry about three units. Then I probably could do, okay let's do a little lesson on this. But at this point in time, we have such a huge array of, of units happening that it's just, it's just not possible." Through the use of Edu Creations on the iPad, the teacher is providing a lesson to each student on their current unit of study. One teacher notes, "It is direct instruction to the actual student. The only thing that's not occurring is the conversation during the set of notes. The difference with those types of lessons on their IPads is they ask after. So, they are actually getting direct instruction of a sort, I guess."

In District B the direct instruction occurred mainly through the way each lesson was designed. One teacher shared, "I tell them I don't like to talk at them a lot but there's a lot of discussion, I do ask a lot of questions (to) the whole class. Especially with stuff I don't necessarily think they're gonna be comfortable with or understand. I really like them talking to

each other, because I think that that makes much more sense to them and is more interesting." Another shared her strategy, "Usually it's in Us so that people can more or less see each other. I have people in Socratic seminars, and so they're all in a circle. I've done fish bowls where we have inner circle, outer circle. I try and mix it up a lot. Very rarely do I lecture."

In both districts, the teachers agreed to the need for direct instruction in a standards-based classroom. They are figuring out how to work it into a customized class through the use of technology, and into a more performance-based class through arrangement of the learning environment, discussion prompts, and targeted questions.

Focused Instructional Time

One of the key practices that continually arose during the teacher interviews was that of focused instructional time. A Google Scholar search using various iterations of this concept yielded no empirical (or even theoretical) studies of the impact that a nearly exclusive focus on the standards has on student achievement. Of the four teachers, all explicitly noted that they did not feel they could adequately prepare students to meet standards absent an increased, almost exclusive, focus during instructional time. With each excerpt, the tone of voice, mannerism, and cadence stressed importance. Sentiments from District B included:

> "We can't as teachers waste our time teaching anything that doesn't support those skills. You don't waste time doing a song because it's pretty if it doesn't build the skills. You don't waste time, you know, cooking if it doesn't reach a skill. And if we really focus on that, and not on the other stuff, not bring a movie because it's Friday, then we'll make it, but we can't waste the little time we've got."

> "It's less random. You know you don't bring in things because you like that poem or because you like that activity or that song. It has to be there for a reason. I think that's the biggest thing for me."

Teachers from District A noted:

> "I don't know if the students know this, but for me, because I'm really, really focusing on where they are on the level of proficiency for each of the standards, I am making sure I am not wasting any of their time doing something that's not going to be promoting them to moving them along."
>
> "And so in the past, you could make your quiz or your test up, or your assignments on whatever, if you wanted. And so now we really have to think about well, is this assignment or this homework really leading them towards accomplishing the standards? There have been some things that I don't do anymore."

All four participants reported that the notion of focused instructional time, with all assignments and learning opportunities leading to attainment of the skills and knowledge of the standard, or learning target, is a shift in instructional practice. They consistently noted the need to be ever vigilant in planning their instruction with a sole focus on the standards. That is an area of standards-based education that is currently unstudied.

Technology

In District A the need for focused instructional time, paired with the level of customization and breadth of standards, has led to an increased dependence on technology. According to the Rand Corporation (2014), "Also catalyzing the competency-based movement are new advances in educational technology that have made it easier for students to progress academically at their own pace" (p. 11). Teachers are using online instructional videos like Khan

Academy to supplement their instruction. In some cases, teachers are using online instructional videos for their direct instruction, "flipping" their classrooms. In the "flipped classroom" students watch a video, on their own time and at their own pace, to attain new knowledge and information. Class time is then used to get clarification, or for additional practice.

Hattie (2009) studied the effect sizes of various instructional practices on student achievement. According to that research, the effect of a teacher in front of a class is .4. The provision of direct instruction yields a larger effect size of .82. Conversely, the effect size of computed assisted instruction is .31 and instructional media .30, both below the typical effect size of a teacher in front of a classroom of students. In a flipped classroom model, the technology is used to promote direct instruction, potentially incorporating effect sizes on either side of typical. While the effects of the model have also not yet been proven, a study is underway in Los Alto Unified School District (Edutopia, 2011 as cited in Rand, 2014).

District A uses a flipped classroom approach in which the teachers themselves are recording lessons on Edu Creations. One teacher noted,

> So, it's actually, I mean it's you teaching. Then we attach a QR code to it; we tell them (to) watch the lesson, make any notes on anything you don't really understand and then we can go to it after. So then they can check with us.

Another teacher from District A explained, "It is direct instruction to the actual student. The only thing that's not occurring is the conversation during the set of notes. We do say exactly what we want them to know." The teacher went on to discuss how their students perceive this shift:

> Some kids struggle with that shift even though it's still us on the video. Some kids are loving it, because they love to watch those videos more than once, and they like to pause it and slow it down, but you can't necessarily pause the teacher. And some kids do prefer

> the dialogue piece. That's not happening. I'd like to make sure we incorporate that, but, if a kid's out, they've got the videos, if a kid wants to move ahead, they have the videos. You know, they don't have to wait for us. It's there for them to manage their own pace, as they move through the targets.

A teacher in District A summed it up, saying:

> Well, if we're doing it in the customized model, it's absolutely critical, because you know, we have everything structured. Because kids are going at their own pace, it's not like we have a large group of kids, who need a lesson at one particular time. So, with this we have our notes, our lessons on the iPads. The kids access those on the iPads, and you know, they scan it, they take the notes that way, and then they come to us with questions, more individually.

Teachers in District B use technology mainly to communicate with students and families, as tools for research, and to videotape Integrated Performance Assessments. One teacher said, "It's a lot of information to throw at people. So I make sure that everything's up on our website somewhere and they know where. That they can grab it. It's just, it's the one downside is it's just so much information."

Overall, the use of technology varied across districts but was similar across teachers within the same district. Teachers in District A view technology as a critical component to standards-based instruction, given their model of a flipped classroom.

Summary

The purpose of this research was to examine assessment and instructional practices in standards-based classrooms relative to research-based practices in education. This study examined the perceptions, understandings, and practices of classroom teachers in schools that

have implemented standards-based education. Relative to the research question in this study, "What are the perceptions of teachers about the impacts of standards-based education on their practice?" All four teachers interviewed expressed shifts in their instructional practices as a result of implementing standards-based education. The most significant shifts occurred in the specificity of learning targets and assessments, the nearly sole focus of instructional time on the standards, and the types of instructional activities that could be implemented given the amount, complexity, and style of the standards they were addressing.

Relative to the research questions: What are the instructional and assessment practices used by teachers in standards-based classrooms? How do those identified practices align with research-based instructional practices? All teachers were implementing all five instructional practices from the Research-Based Instructional Practices Framework, an original framework based upon existing meta-analyses developed for this study. However, the understanding and implementation of those practices varied by district. Three additional instructional practices repeatedly emerged across teacher interviews as key variables in describing what is happening in standards-based classrooms: direct instruction; the use of technology; and focused instructional time.

CHAPTER 5-- ANALYSIS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This study attended to the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. While there is a wide body of empirical research about the specific instructional practices that have the greatest impact on student achievement, the research of effective practices in a standards-based setting is quite limited. As classroom teachers embark on what is perhaps the largest policy reform in education, understanding common standards-based instructional practices as they relate to the research on effective teaching and learning is critical.

Further, the research around standards-based education indicates a disconnect between intended public policy and classroom practices. Explanations for that disconnect include: the lack of a clear and consistent purpose and understanding of standards-based reporting; the fact that reporting practices do not always translate into adjustments to classroom instruction; and a wide variation in the implementation across states, regions, districts, schools, and classrooms. Identification of the point of that disconnect will assist policymakers, curriculum leaders, and school administrators to reconcile the discrepancy.

Analysis

The following section offers an analysis of the findings in this study. The first part summarizes the shifts that teachers have experienced as a result of this reform and identifies key aspects of instructional practices that have been impacted. The second part more closely analyzes the instructional and assessment practices that emerged. A Code Cloud is used to provide a visual representation of the frequency of responses by code.

Impacts of Standards-Based Education on Teacher Practice

Relative to the research question: "What are the perceptions of teachers about the impacts of standards-based education on their practice?" across these two school districts the reform has led to shifts in the instructional practices of teachers interviewed for this study. One teacher noted, "I think it's different, both in my instruction and in the work that I give the kids." A second teacher expanded, "In many ways that's a shift though, because we've been having kids do work that hasn't been related, and so they begin to think - What is important?" A third teacher responded, "And everybody's kinda, I think, on the path. Some are a little further than others; more comfortable than others. And we're still trying to kinda figure it out." Yet another said, "It's been a really good experience, too, and you know, I can't be stuck in my old ways because I have a long way to go, too."

An analysis of the transcripts indicates that all of the teachers interviewed are experiencing a shift in their instructional practices as a result of the reform. That indicates an authentic desire to implement standards-based education. The shift is most notable in both districts in the identification of learning targets and in assessment practices. However, there is a distinct difference in understanding and implementation between districts. The data are consistent with the current literature on standards-based education, as well as with the deeper analysis of specific instructional practices. While the teachers are working to adjust their practice and implement the reform as defined, the districts are defining the reform differently. While that supports consistency within each district, it is leading to increased variance between districts.

Across the interviews, teachers spoke openly of their challenges and concerns. These concerns center on grading practices, student accountability, and the expectation for all students to attain the same level of proficiency despite naturally occurring differences. The concerns

reflect the differences in interpretation and the nuances of specific communities. However, in the end, the teachers return to the importance of classroom culture, relationships with students, and their love of teaching as common anchors in traditional and standards-based classrooms. The specific instructional practices of those teachers are more closely examined below.

Instructional and Assessment Practices

Relative to the research questions in this study: What are the instructional and assessment practices used by teachers in standards-based classrooms, "How do those identified practices align with research-based instructional practices?" Those findings indicate that all teachers interviewed are implementing the five practices in the Framework of Research-Based Instructional Practices. They are implementing most similarly in the practices of extension and remediation and most divergently in learning targets, feedback, and authenticity. Additionally, three key practices emerged: focused instructional time; direct instruction; and technology.

Learning Targets

Learning targets have been identified by several researchers as having a significant impact on student achievement (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). For the purposes of this study, learning targets were defined as follows: Learning targets are a clearly articulated "chunk" of learning that is connected to standards and instructional objectives. Those are present throughout the learning task, and are transparent to students, teachers, and parents. In this study, all teachers described the clarity and transparency of learning targets for students, teachers, and parents. However, the amount of learning targets varied by district from approximately four or five overarching targets per-content area across high school in one district,

to verbatim use of state standards in the other district, leading to 15 to 24 standards per- high-school course.

According to the National Commission on Teaching and America's Future (1996), "Standards give direction to education reform initiatives by offering consensus about what students should learn and what skills they should acquire" (p. 1). While the results of this study indicate that teachers are identifying and articulating clear learning targets for students, teachers, and parents, as articulated in the research on effective instructional practices, there is no consensus about the skills and targets that students should acquire across districts. While the standards in both districts derive from the state standards, they differ in number, specificity, and style. Therefore, if the intent of policymakers is to ensure consistency in learning targets through standards-based educational reform, results of this study suggest that the intent may not be realized at the classroom level.

Interestingly, unlike the results of a study by Welsh and D'Agostino (2007) that indicated large variation in teacher understanding and implementation of standards-based assessment and grading even within the same school district, these results do show consistency within each school, across content areas and teachers. The wide variation in these results is clearly between school districts. It may even be that the disparity lies between groups of districts, depending upon the educational agency or cohort they have decided to follow. It is important to note, however, that the size of the schools in this study are both under 1,000 in student population whereas those in the Welsh and D'Agostino study were in a large district made up of 20 schools. The fact that the disparity in these results lies between districts, and not classrooms, may be in part a function of the small schools and districts in Maine.

Authenticity

Results of this study indicate that authenticity is understood by teachers as an important aspect of instruction, one that is challenging to implement in transition to a standards-based classroom. According to Newmann (2001), authenticity occurs when students construct knowledge, draw conclusions, and connect learning to their own lives. For the purposes of this study, authenticity was defined as: Students are actively engaged in learning that connects to current or future "real-world" situations. Again, results of this study indicate a disparity across settings. In District A, teachers feel that attainment of the standards through the flipped-classroom, customized model is authentic learning in today's world. In District B, larger units are based upon real-world events and integrated into larger projects like the comparison of past and present traditions for Muslim women, or the development of a French café in Paris.

The teachers in each district are looking for opportunities to build authenticity into their practices. However, given the fact that the current practices were common with all four teachers prior to implementation of standards-based instruction, that seems less related to the implementation of this reform and instead connected to classroom practice and teacher style. One teacher said, "For me personally, I've never been a project person. My struggle with the authenticity is there's so many pieces, skill sets, they need to know before they can go into anything authentic." Another said, "I think that the general quest of trying to make it as clear and worthwhile for kids as possible. And to get away from doing busy work." Clearly, however, the amount and type of learning targets, or standards, identified by the district impacts a teacher's ability to either move through many standards or develop more project-based experiences that are focused around one or two broader standards.

Feedback

All teachers in this study described benchmark assessment, pre-assessment, and post-assessment as key instructional practices. Those are clearly paramount to standards-based instructional practices and far more present then in the classrooms of these teachers prior to standards-based implementation. However, the methods and types of those assessments varied across district. In one district, the proficiency level is determined by use of rubrics and summative assessments that are either performance based, or developed through constructed response tasks. In the other district, proficiency is determined by tests and quizzes as students progress through mastery at their own pace. Both districts meet the definition in the empirical research on effective classroom instruction and assessment practices (Marzano, 1998; Hattie & Timberley, 2007; Zemelman, Daniels, & Hyde, 2005; Marzano, Pickering, & Pollack, 2001; and Dean, Hubbell, Pitler, & Stone, 2012). Hattie and Timperley (2007) define feedback as, "information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (pg. 81). Given the nature of this study, it is unclear what differences in those approaches will have on student achievement in the longer term. Of importance, however, is the fact that such disparity in practice was not the stated intent of policymakers in standards-based reform efforts.

Opportunities for Extension and Remediation

Across teachers and districts, opportunities are sought for learning to go deeper and further. School-wide structures are in place for remediation, and teachers are identifying more opportunities to provide intervention and correction in a standards-based classroom than in a more traditional one. The opportunities for remediation, in particular, were well developed across teachers and districts. That is thought to be a result of a longer-term policy initiative, Response to Intervention (RTI), which has been formally in place in Maine since the 2006

revision of Chapter 101: The Maine Unified Special Education Regulations (MUSER, 2006). Based upon the results of this study, opportunities for extension appear to be in the ability to go deeper or further with an assignment or skill, in contrast to simply producing additional work. That is consistent with the research on effective instructional practices.

Overall, the results of this study indicate that the instructional practices in standards-based classrooms reflect all five aspects drawn from the meta-analyses of research. However, each of the research-based practices is interpreted and implemented differently, with the largest differences in the areas of learning targets, authenticity, and feedback. Moreover, the results indicate that the greatest differences are across school districts, not between classrooms and teachers within the same district. While the instructional practices in this framework are represented by the teachers as being core to their practices in a standards-based classroom, the data indicate three other common practices that drive instruction: direct instruction; focused instructional time; and technology.

Direct Instruction

All teachers across both districts agree with the need for direct instruction. Again, the results of this study suggest that the mode of instruction is linked to the number and type of learning standards identified at the district level. If high school teachers have 100 students per year, with 100 standards to master over a typical four-year high school experience, and an expectation that students are working at their own pace on the mastery of those standards, the requirement to provide direct instruction in a modality that allows for student access at many different times becomes a necessity that could only be realized by a substantial increase in teachers and educational space, or the use of technology. Alternatively, if a teacher has 100 students with only four or five broader standards to meet over a typical four-year high school

experience, there are more opportunities to provide direct instruction through lectures and texts, and during project-based learning activities.

Focused Instructional Time

One of the main themes that emerged is that of focused instructional time. Teachers in both districts report the need to fully focus all aspects of instruction and assignments on the standards. That is a concept not yet fully studied in the literature. Proponents of standards-based education view it as one of the benefits of standards-based reform. Hargrove, Walker, and Huber (2004) indicate that the overall intent of standards-based education is to identify what it is that we want students to be able to know and do, and to align assessment with the measurement of those standards. Conversely, opponents voice concern about negative impacts on the depth and quality of instruction as well as the shift away from instructional time devoted to any subjects that are not tested. Results of this study indicate that teachers across districts are allocating their instructional time to teaching the standards. That is a shift in pedagogy from the traditional to the standards-based classroom.

Technology

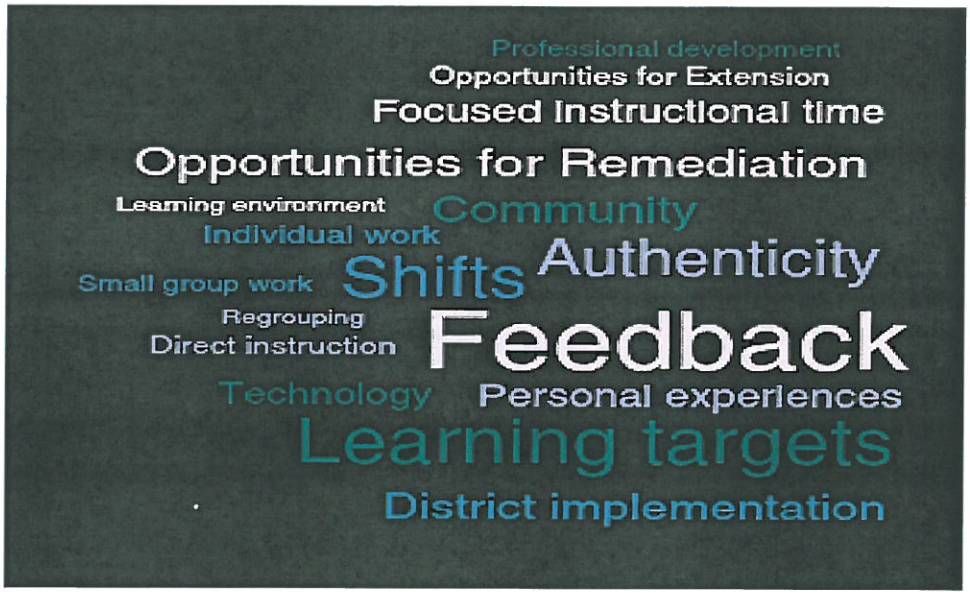
Results of this study indicate variance in the use of technology to support standards-based education. In one district, there is a substantial shift in the use of technology through a flipped classroom model. In fact, it is the model for standards-based, customized, learning. While Hattie's research (2009) finding an effect size of .3 for the impact of instructional media and computer-assisted instruction on student achievement is below the standard effect size, his effective size for the impact of direct instruction is well above at .8. In a flipped classroom model, technology is used to promote direct instruction, potentially incorporating effect sizes on either side of typical. While the effects of the model also have not yet been proven, a study is

currently underway in Los Alto Unified School District (Edutopia, 2011 as cited in Rand, 2014). In the other district studied, technology is used in a more traditional way to communicate with students, parents, and teachers, house rubrics and resources, and record or document assessment data. While it is not the intent of policymakers to direct the mode by which teachers address standards, again the interpretation and implementation of the number and type of standards determined at the district level lends itself better to one modality or another.

Another way of presenting the results is through examining a Code Cloud, which provides a visual interpretation of the preponderance of excerpts by code. The larger the font size the more references made to that code in the data. For example, "feedback" is the largest word in the Code Cloud below, indicating that it arose most in the data set. Conversely, "professional development" is in the smallest font, indicating that it arose least in the data set.

Figure 2

Code Cloud



When coding for data relative to the impact that standards-based education has had on teacher practice, shifts and personal experiences emerged. When analyzing the types of instruction and assessment practices implemented in standards-based classrooms, data emerged from within the framework: learning targets; authenticity; feedback, opportunities for remediation; and opportunities for extension, with the most excepts focused around feedback, and the fewest on opportunities for extension. Additional key instructional practices also emerged including: focused instructional time; direct instruction (including the learning environment and group size); and technology. In an effort to further understand the variation in findings across districts, themes of community, district implementation, and personal experiences emerged. The next section presents a deeper analysis of that cross-district variance as well as implications for policy and practice and recommendations for future research.

Conclusions

As discussed in Chapters 1 and 2 of this study, the case is made of a disconnect between policy and practice in the implementation of standards-based education. Explanations for that disparity include: a wide variation in the implementation across states, regions, districts, schools, and classrooms; the lack of a clear and consistent purpose and understanding of standards-based reporting; and the fact that reporting practices do not always translate into adjustments to classroom instruction. While the findings in this study are based upon interviews with a limited number of teachers, the data support those explanations. Perhaps the most compelling finding is the vast difference in implementation at the school and district levels paired with the striking commonality and consistency across classroom teachers within the same district. If that finding holds true across the field, there is likely to be increasing variability between districts.

While individual teacher style and technique are both complex and unique by nature, the understanding, interpretation, and implementation of standards-based practices are foundationally consistent in this study when interviewing teachers from the same school and district. The results indicate the main point of disconnect in the reform may be between school districts, rather than classrooms. An analysis of the transcripts yields a consistent message that the professional development provided to teachers by the districts in recent years has been focused almost exclusively on standards-based reform. All teachers interviewed recognize that the limited professional development funding, paired with the need for increased accountability and a shift to standards-based practices, has caused districts to become very focused and targeted in their support for teacher growth.

In the absence of specificity in the standards-based education policies, each district has sought out different professional researchers, regional partnerships, and educational consulting groups with which to align itself. Teachers in District A reflect upon training by the Re-inventing Schools Coalition (RISC) and an alignment with the Maine Cohort for Customized Learning (MCCL). District B reports annual conferences with the League of Innovative Schools and a Professional Learning Team model in the district. Further, educational agencies and regional collaboratives are determining their own visions of what standards-based education means in instructional practice.

Several authors have explored the discrepancy between policymakers' reform efforts and the implementation of such policy in education and social programs (Hill, 2001 & McLaughlin, 1987). McLaughlin notes:

> It's hard to make something happen, primarily because policymakers can't mandate what matters. We have learned that policy success depends critically on two broad factors:

> local capacity and will. Capacity, admittedly a difficult issue, is something that can be addressed. Training can be offered. Dollars can be provided. Consultants can be engaged to furnish missing expertise. But will, or the attitudes, motivation, and beliefs that underlie an implementer's response to policy's goals or strategies, is less amendable to policy intervention (p.172).

Hill (2001) examines the process that one district takes in interpreting new state standards in mathematics and aligning local curriculum. She notes variation in stance that districts often take when presented with state policy. Some ignore or subvert the policy; others make token efforts to comply by augmenting the policy to their local ideas. The result is a discrepancy between policymakers' reform efforts and instructional practices. While Hill's observations reveal a well-meaning process of policy reconciliation including teacher engagement, curriculum alignment, and professional discourse in a particular district, she further describes a substantial disconnect in the intent of those standards and the ultimate interpretation by the district. Hill suggests four key explanations: a disconnect in the language of the policymakers and teachers; a difference in professional languages; many of the words used in the state policy have meanings that are largely contested in the field; and the instructional practice did not match the intent of the reform.

Hill questions whether policy can encourage conceptual reorientation, which is crucial for policy to truly reform the practice of schools. She further notes an inherent, unintentional "leakage" or "trickle-down effect" that results from differences in the meaning and understanding of policy. She suggests, as discussed above, that language is a more general variable impacting reform efforts. Overall, Hill suggests that policymakers might have found more success had they provided further instructional guidance for teachers including videotapes

of lessons and methods, concrete lessons and student work to analyze, and further explanation of the interpretation of the state.

Results of this study confirm both of those authors' findings. The Maine Department of Education is providing some amount of funding to assist districts in addressing the issue of capacity. However, in the absence of specificity and instructional guidance, the interpretation and beliefs of consultants, curriculum leaders, and teachers appears to be leading to differences in instructional implementation. In the two districts, an educational agency has entered the void noted above in implementation, understanding, and purpose, to provide a specific approach to standards-based education. While that is an understandable, even commendable, response to the void between policy and implementation, the result is increased variance across districts. That result is in direct opposition to the promise of standards-based reform. Further, with the growing phenomenon of educational agencies stepping into the void and leading cohorts of schools and districts in various directions, a fourth barrier to the attainment of empirical evidence has emerged. That is, the widening of variation across even neighboring school districts and the resulting inability to measure the impact of standards-based education on classroom practice.

Limitations and Delimitations of the Study

It is important to recognize some of the limitations and delimitations of this study. The Research-Based Instructional Practices Framework, described in Chapter 3, is an original framework that is based upon existing research meta-analyses and was developed for this study. The research is also limited to the perceptions of teachers during one year (2014) and includes schools that have implemented standards-based practices for varied amounts of time. Data were gathered only from those schools that have been implementing for at least two to three years to

attempt to ensure that the participants were not novices; they have some understanding of, and experience with, standards-based education.

The delimitations of this research include:

- A singular method of data collection was used for this study. Since the goal of the study was to understand standards-based instruction and assessment practices from the perspectives of teachers, that was the most appropriate method to answer the research questions.
- The study focuses on a small numbers of teachers, and may not be representative of all teachers in a school, district, or state.
- Since the purpose of the study was to attend to the perceptions, understandings, and practices of teachers relative to standards-based education, classroom observations were not conducted.

Despite the growing political trend toward instructional conformity, classroom practices are unique and complex. According to Creswell (2009), in this type of constructivist, qualitative research, "...the researcher seeks to establish the meaning of a phenomenon from the views of participants" (p. 16). The practice of collecting meaning from participants involves collaboration between researcher and participant. The researcher brings personal values and background knowledge to the study, and validates the accuracy of findings while collecting and interpreting data. In this study, an inductive process was used to gather information, analyze data, and establish common themes. The provision of thick, rich description of the techniques examined in the research, paired with the compilation of themes, allows the reader to determine whether the themes are generalizable to a particular situation. Thus, the findings must be considered in light of those limitations. But the findings do support the conclusions that there is wide variation in

understanding and practices between school districts when implementing standards-based education.

Recommendations

This study suggests the following implications for policy and practice in the interpretation and implementation of standards-based instruction at the school and district level.

1. If the goal of standards-based education is common standards and common learning expectations, that must be made clear by policymakers. Specifically, clarity on behalf of policymakers and/or a state department of education to local school districts about: which standards districts are required to adopt; the general number and type of standards by grade level and/or span and by content area; and to what level proficiency is expected, would result in increased consistency across districts.
2. A corresponding shift in the provision of resources to offer modeling, lesson plans, videos, and other tangible insights into key instructional practices would better address the policy issues of capacity and will.

With increasing numbers of educational consulting groups being brought into districts to assist in the understanding and implementation of standards-based education, there appear to be emerging clusters of consistency. While limited in scope, the results of this study indicate that teachers are implementing research-based instructional practices in the classroom. Given that, the following recommendations are made for future research:

1. It appears that the unit of analysis to measure the impact on student achievement may be the district as opposed to the classroom. Studies are beginning to be sponsored by the educational consulting groups (e.g. RISC, The Gates Foundation). Given the wide variation in understanding and approach, the question may really be, "If a district

implements, with fidelity, a certain type of standards-based education does it have an impact?"

2. The issue of focused instructional time is one that should be closely examined, as it is equally controversial, lacks any empirical data, and will become increasingly profound as accountability measures increase. Proponents of standards-based education view the sole focus on mastery of the standards as one of the benefits of standards-based reform. Hargrove, Walker, and Huber (2004) indicate that the overall intent of standards-based education is to identify what it is that students should be able to know and to do, and to align assessment with the measurement of those standards. Theoretically, that sounds quite logical. However, opponents voice concern about negative impacts on the depth and quality of instruction, as well as the shift away from instructional time devoted to any subjects that are not tested.

Based upon the perspective of teachers in this study, additional consideration should be given to:

1. Increased professional development in assessment literacy. The teachers in this study reported comfort and confidence in the new assessment practices, including pre-assessment and self-assessment. However, they each acknowledged that to be a significant shift in practice. It seems logical, then, that teachers will need additional development to ensure success.
2. Professional development that revisits research-based instruction and assessment practices, particularly in the areas that emerged most frequently in these standards-based classrooms (learning targets, assessment, feedback, direct instruction, and time) would strengthen both the consistency across the field, and classroom implementation.

In sum, the purpose of this research was to examine assessment and instructional practices in standards-based classrooms relative to research-based practices in education. The study examined the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. Relative to the teacher perceptions of the impact of standards-based education, it is clear that the reform is fostering shifts in classroom practice. Teachers are working to implement standards-based education as defined and described by their districts and/or educational agencies/consultants. However, the interpretation of standards-based education differs substantially between districts. Therefore, the challenges, successes, and supportive evidence are vastly different, even in neighboring districts.

Prior to this study, the intersection between effective instructional practices and standards-based education was a largely unstudied arena. While this study is limited in scope, it provides some initial data that suggest further variation between districts due to differences in understanding and implementation. A conceptual framework was developed and used to better understand the extent that standards-based practices align with research-based practices including clear learning targets, authenticity, feedback, opportunities for remediation, and opportunities for extension. In addition to the five instructional practices in the framework, three practices emerged across participants and are thought to be key variables to effective standards-based instructional practices: the notion of focused instructional time; an increased reliance on technology for instruction and assessment; and the necessity for direct instruction on the standards.

Currently, there is a lack of empirical evidence that standards-based education results in improved student achievement. Explanations for the limited supportive empirical research include: the lack of a clear and consistent purpose and understanding of standards-based

instruction; the fact that reporting practices do not always translate into adjustments to classroom instruction; and a wide variation in implementation across states, regions, districts, schools, and classrooms. Findings in this study further suggest that this disconnect is occurring at the school and district level as opposed to across teachers and classrooms in the same school. As districts attempt to make meaning of this public policy, the interpretation and implementation varies substantially, and a growing number of school districts are partnering with educational agencies to follow their lead. The result is increased variance across districts, which is in direct opposition to the promise of standards-based reform. Additionally, with the growing phenomenon of educational agencies leading cohorts of schools and districts in various directions, a fourth barrier to the attainment of empirical evidence has emerged. That is, the widening of variation across even neighboring school districts and the resulting inability to measure the impact of standards-based education on classroom practice, as opposed to the efficacy of a specific consulting group or approach.

In sum, the purpose of this research was to examine assessment and instructional practices in standards-based classrooms relative to research-based practices in education. This study examined the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. Relative to the teacher perceptions of the impact of standards-based education, it is clear that the reform is creating shifts in classroom practice. Teachers are working to implement standards-based education as defined and described by their districts, educational agencies, and consultants – or some combination thereof. However, the interpretation of standards-based education differs substantially between districts. Therefore, the challenges, successes, and supportive evidence are vastly different, even in neighboring districts.

Prior to this study, the intersection between effective instructional practices and standards-based education was a question left largely unanswered. While this study is limited in scope, it provides some initial data that suggest further variation between districts due to differences in understanding and implementation. A conceptual framework was developed and used to better understand the extent that standards-based practices align with research-based practices including clear learning targets, authenticity, feedback, opportunities for remediation, and opportunities for extension. In addition to the five instructional practices in the framework, three practices emerged across participants, and are thought to be key variables to effective standards-based instructional practices. Those are: the notion of focused instructional time; an increased reliance on technology for instruction and assessment; and the necessity for direct instruction on the standards.

Currently, there is a lack of empirical evidence that standards-based education results in improved student achievement. Explanations for the limited supportive empirical research are primarily: the lack of a clear and consistent purpose and understanding of standards-based instruction; the fact that reporting practices do not always translate into adjustments to classroom instruction; and a wide variation in implementation across states, regions, districts, schools, and classrooms. Findings in this study further suggest that the disconnect is occurring at the school and district level, not across teachers and classrooms in the same school. As districts attempt to make meaning of new public policies, the interpretation and implementation varies substantially, and a growing number of school districts are partnering with educational agencies to follow their leads. The result is increased variance across districts. Such a result is in direct opposition to the promise of standards-based reform. Additionally, with the growing phenomenon of educational agencies leading cohorts of schools and districts in various directions, a fourth barrier to the

attainment of empirical evidence has emerged. That is, the widening of variation across even neighboring school districts, and a resulting inability to measure the impact of standards-based education on classroom practice, as opposed to the efficacy of a specific consulting group or approach.

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Appendix A: Description of the Study

University of Southern Maine

DESCRIPTION OF THE STUDY

Project Title: An examination of standards-based education relative to effective instructional practice in schools

Principal Researcher(s): *Kathryn Hawes, 149 Duke Lane, Lyman, Maine 04002, (207) 838-3822, Kathryn.hawes@usm.maine.edu*

Overview

The focus of much of the educational theory on standards-based education surrounds assessment and reporting practices as opposed to changes to instructional techniques. However, one of the assumptions of standards-based education is that learning pathways replace the former age-based and time-based system of education and that student learning becomes customized and distinctly individualized. The purpose of this research is to examine teaching and learning in standards-based classrooms as it relates to research-based practices in education. This study will attend to the perceptions, understandings, and practices of classroom teachers in schools that have implemented standards-based education. To meet this purpose, this researcher will a) develop and understanding of the teacher's background and current teaching context, b) examine the philosophy and practices of the teacher in a standards-based educational setting, and c) assess the impact of change in the practice, thinking, and professional growth of the teacher through this reform.

Research Plan

The inquiry into standards-based education in Maine schools will involve a 3-part interview process with select teachers who are working in districts that have implemented this model and have been teaching for longer than standards-based education has been formally in place. Interviews will be transcribed and analyzed for themes and patterns. These themes and patterns will be compared with artifacts and other interview data and reviewed with the teacher interviewed for accuracy.

Interviews

Before each interview, the researcher will obtain participation agreement and schedule interviews at a mutually convenient time and location. The interviews will be audio taped. Each interview will last 45-60 minutes. Teachers will be asked to bring relevant documents (assessments, lesson plans, reporting tools, etc.) to the second interview.

Report of Findings

All data collected and reported will be in aggregated and incorporated into a summary report identifying cross interview findings. All data and reporting will insure the confidentially of the participants. At the completion of the interviews, the researcher will conduct a cross-case analysis and prepare a final dissertation report with findings that will benefit critical stakeholders concerned with Standards-Based Education in Maine and beyond.

Expectations

Teachers participating in the study agree to:

- Indicate an interest in participating in this 3-part interview process,
- Participate in all three interviews
- Reflect openly about their background and context, philosophy and practice, and impact of the change process
- Provide access to relevant documents, and
- Provide feedback as to the accuracy of patterns and themes that emerge.

Further Information

If additional information is needed, teachers are encouraged to contact

Katie Hawes:
838-3822
Kathryn.hawes@usm.maine.edu

or

David Silvernail:
780-5297
davids@usm.maine.edu

Appendix B: Informed Consent Form

University of Southern Maine

CONSENT FOR PARTCIPATION IN RESEARCH

Project Title: An examination of standards-based education relative to effective instructional practice in schools

Principal Researcher(s): *Kathryn Hawes, 149 Duke Lane, Lyman, Maine 04002, (207) 838-3822, Kathryn.hawes@usm.maine.edu*

Introduction:

- Please read this form, you may also request that the form is read to you. The purpose of this form is to provide you with information about this research study, and if you choose to participate, document your decision.
- You are encouraged to ask any questions that you may have about this study, now, during or after the project is complete. You can take as much time as you need to decide whether or not you want to participate. **Your participation is voluntary and you may ask questions at any time.**

Purpose of the Study:

- The primary goal of this study is to explore instructional practices in a standards-based education system.
- Participants in this study are 4-6 classroom teachers who have been teaching within a standards-based system for at least 3 years and who taught prior to this implementation. Participants have been recommended for the study by district administration.

What will you be asked to do?

If you choose to participate in this study, you will be asked to:

- Participate in 3 audio-recorded individual interviews lasting 45-60 minutes each. Interviews will be conducted at a mutually convenient time and place.
- Share any relevant artifacts and documents deemed relevant to this work (sanitized to protect staff and student confidentiality).
- Provide feedback on transcripts, themes, or big ideas generated from your interview.

What are the possible risks of taking part in this study?

- There are no foreseeable risks associated with participation in this study.

What are the possible benefits of taking part in this study?

- As a participant in this study, you w\ill have the opportunity to engage in a confidential professional reflection about your teaching practice in a standards-based classroom.
- This study will inform the field about effective instructional techniques, teacher perceptions, and the overall impact of standards-based education.

Confidentiality and Privacy of Data:

- The records of this study will be kept confidential to the extent allowed by law.
  - All participants will be given a pseudo name.
  - Audio recording files of each interview will be stored on storage devices at the above address and on a secure server that is password protected.
  - Only those listed as researchers will have access.
  - All audio files will be destroyed upon completion of the project.
  - In any sort of report published will not include any information that will make it possible to identify a participant.
  - Data included in such a report may be replicated in other formats and for future studies but personal information will remain unidentifiable.
  - Please note that regulatory agencies and the Institutional Review Board may review the research records.
- A copy of your signed consent form will be maintained by the principal investigator for at least 3 years after the project is complete before it is destroyed. The consent forms will be stored in a secure location that only members of the research team will have access to and will not be affiliated with any data obtained during the project.

Voluntary Participation / Withdrawal:

- Your participation is voluntary. Your decision to participate will have no impact on your current or future relations with the University *[or with other cooperating institutions (insert name)]*. If this project involves students as participants mention that their decision to participate will not impact their standing as students. If employees are involved, that their decision to participate will not impact their relationship with their employer.
- You may skip or refuse to answer any question for any reason.
- If you choose not to participate there is no penalty to you. You are free to withdraw from this research study at any time, for any reason.

Contacts and Questions:

- The researcher conducting this study is Kathryn Hawes. For questions or more information concerning this research you may contact her at (207) 838-3822, Kathryn.hawes@usm.maine.edu. For additional information or questions, you may also contact David Silvernail, Program Advisor, at Davids@usm.maine.edu, (207) 780-5044.
- If you choose to participate in this research study and believe you may have suffered a research related injury, please contact Kathryn Hawes at (207) 838-3822 or David Silvernail at (207) 780-5044.
- If you have any questions or concerns about your rights as a research subject, you may call the USM Human Protections Administrator at (207) 228-8434 and/or email usmirb@usm.maine.edu.

Will I receive a copy of this consent form?

- You will be given a copy of this consent form.

Participant's Statement

I understand the above description of this research and the risks and benefits associated with my participation as a research subject. I agree to take part in the research and do so voluntarily.

_____ _____

Participant's signature or
Legally authorized representative

Date

_____

Printed name

Researcher's Statement

The participant named above had sufficient time to consider the information, had an opportunity to ask questions, and voluntarily agreed to be in this study.

_____ _____

Researcher's signature

Date

_____

Printed name

Appendix C: A Framework for Research-Based Instructional Practices

Instruction & Assessment Practice	Definition in the Literature	Teacher Implementation
Learning Targets	Defining the essential content or skill, the reasoning processes that the student will use, the means that the student will use to demonstrate understanding, and the relevance of the lesson to previous knowledge (Moss, Brookhart, & Long 2008).	Learning targets are a clearly articulated 'chunk' of learning that is connected to standards and instructional objectives. These are present throughout the learning task and transparent to students, teachers, and parents.
Authenticity	Students construct knowledge, draw conclusions, and connect learning to their own lives (Newmann, 2001)	Students are actively engaged in learning that connects to current or future "real-world" situations.
Feedback	"…information provided by an agent (e.g. teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (Hattie & Timperley, 2007, p. 81)	Includes pre assessment, benchmark assessment, post assessment, self assessment, and opportunities for correction
Opportunities for Extension	"Teachers can make the actual content more rigorous; make the process or activities in which students engage more rigorous; or make the culminating product, which applies what the students have learned, more rigorous" (Tomlinson in Buffum, Mattos, & Weber, 2012, p.18)	Student learning starts at their level of understanding. They are provided opportunities to go deeper or further with an assignment, project, or activity. This differs from simply moving ahead to the next skill in a sequence.
Opportunities for Remediation	"…schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending upon the student's responsiveness" (NCRTI, 2010, p.2)	A system and structure is in place to assess the need for remediation, provide that opportunity, monitor the efficacy of the remediation, and potentially close the achievement gap.

Appendix D: Semi-Structured Interview Protocol #1

Focus: Background and Context of the Teacher

1) Demographic information:
    a. Years teaching / length in district
    b. Instructional context / previous contexts
    c. Recent professional development work
    d. Recent committee work
    e. Experience with standards-based education
2) What kinds of experiences resonate from your own PK-12 educational journey?
3) When did you decide to become a teacher? How did you come to this decision?
4) Please describe your undergraduate and teacher preparation experience. What kinds of student teaching experiences and professional learning opportunities did you have? Are there specific aspects of teaching that you were well prepared for? Ill-prepared for?
5) Please provide a general overview of your experience in the field of education.
6) What sustains your interest in the field? Is this similar to your initial reasons for entering the field?
7) What do you find most satisfying about teaching? Most challenging?
8) Please talk about your teaching practices in general.
    a. Daily schedule
    b. Groupings
    c. Structures
    d. Assessment

Appendix E: Semi-Structured Interview Protocol #2

Focus: Philosophy and Practice of the Teacher / Artifact Review

1) What does standards-based education mean to you?
2) How is this term similar to / different from proficiency-based education?
3) What does standards-based learning look like in the classroom? In what ways is it similar to / different from a more traditional classroom?
4) What does standards-based teaching look like in the classroom? In what ways is it similar to / different from a more traditional classroom?
5) How are standards identified? Communicated to students? Communicated to Parents? ***(Clear learning targets / objectives)*** **– Please provide examples.**
6) How do you decide whether to do whole class, small group, individual work, etc.? ***(Differentiated Instruction / Flexible Grouping)***
7) In what ways do students: ***(Authenticity / Experimental / Constructivist)*** **Please provide examples.**
    a. "Make meaning" of new content?
    b. Practice and deepen their understanding?
    c. Extend and apply previous learning and personal context?
8) Describe your assessment process ***(Success Criteria / Feedback / Progression)*** **Please provide examples.**
    a. Success criteria (academic, effort, work habits, affective development)
    b. Pre-assessment, Self-assessment, Peer assessment, Formative assessment
    c. Power law or other weighted systems
    d. Linear skill progression / advancement
9) Do you ever more kids around into different groups? How? Based upon what? ***(Differentiated Instruction / Flexible Grouping)***

10) What do you do when students are struggling? How is that handled in the classroom? Do they move on? What kinds of supports are provided? ***(Remediation)***

11) Do students have opportunities for extension if they reach proficiency earlier than others? What does this look like? ***(Extension)***

12) In what ways do standards-based practices align with your philosophy of teaching?

13) Are there aspects that do not align with your philosophy?

Appendix F: Semi-Structured Interview Protocol #3

Focus: Impacts on Student Achievement, the Change Process, and Professional Development

1) What do you see as the priority / goal of high school education? Of standards-based education? What are the priorities of your school / community?
2) A key component in the research on education is authenticity and connections to the real world. What do you think about that?
3) How would you define extension – moving forward or going deeper? Why?
4) What about the transition to standards-based education was attractive to you as a professional?
5) Can you talk more about the kinds of professional development that you have experienced? How much has this influenced your current practice?
6) Talk more about this match / mismatch between standards-based education and your philosophy.
7) What do you feel has been impacted in your practice through this shift? What aspects of your instruction or assessment have changed now that you are implementing this reform?
8) What aspects come naturally, or easily, for you? Are these the same aspects that were easy in the beginning?
9) What aspects do you find challenging? Are these the same challenges that you faced when you began standards-based education?

Biography of the Author

Kathryn M. Hawes was born in 1973, near Boston, Massachusetts. She grew up in Cape Elizabeth, Maine, graduating from Cape Elizabeth High School. In 1995, she graduated from Wheelock College in Boston, Massachusetts with a bachelor of science degree in human development, a concentration in early childhood education, and a specialization in teaching children with special needs. Kathryn went on to study at the University of Southern Maine, in Gorham, Maine earning a master of science degree in special education in 1999 and a certificate of advanced graduate study in educational leadership in 2005.

Over the past 19 years, Kathryn has worked as a teacher, consultant, and administrator in private and public schools in Maine spanning pre-kindergarten through grade 12. She is currently the assistant superintendent of schools in Regional School Unit 21, serving the towns of Arundel, Kennebunk, and Kennebunkport, Maine. On July 1, 2015, she will become superintendent of that school district. Kathryn lives in Lyman, Maine, with her husband, Chris, daughter, Emily, and twin sons, Ben and Sam. She is a candidate to receive a doctor of philosophy degree in public policy from the University of Southern Maine in May 2015.