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The Rigor/relevance Framework©:its Relationship To K-12 Student Achievement On Statewide Tests

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THE RIGOR/RELEVANCE FRAMEWORK©:ITS RELATIONSHIP TO K-12 STUDENT ACHIEVEMENT ON STATEWIDE TESTS

by

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DEDICATION

This dissertation is dedicated to my family and friends for their support. I would like to thank my husband Gar who has been a constant source of encouragement and also to my father Joe who inspired me to do this when I was just a little kid.

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CHAPTER 1

Introduction

A report commissioned in 1983 under the presidency of Ronald Reagan said that the American educational system was idling. This report, *A Nation at Risk*, stated Americans had become comfortable with their schools and were not aware that foreign countries were surpassing American students on achievement tests (National Commission on Excellence in Education, 1983). Nearly twenty years later, President George W. Bush's administration created a federal bill which would make schools accountable for their students' test score results in basic skills; these tests were to be given in certain grades. Although controlled by the states themselves, states would not receive federal funding if they did not comply. In addition, if schools did not make Annual Yearly Progress, or AYP, schools would be faced with punishments and decreased funding. Without this progress, schools would be labeled as "failing" and have the choice either to improve or be taken over by the state and/or charter schools. Bush signed this bill known as The No Child Left Behind Act (NCLB) into law in 2002 (U.S. Department of Education 2010).

On July 20, 2008 a nationwide group of city leaders, politicians, and civil-rights' activists said, "'Fixing the nation's schools is the civil-rights priority of this century because so many of them -- particularly those serving poor kids -- are not delivering high-quality service'" (Sherry, 2008, para.1). Solutions these key leaders offered included: paying teachers on merit, creating more autonomous schools, and making teachers directly accountable for the achievement of their students (Sherry, 2008). They identified factors which appeared to have *little* significant influence over student

achievement: intraclassroom heterogeneity, gender, class size, peer ability, and family composition (Wright, Horn, & Sanders, 1997; Hanushek, Kain, Markman, & Rivkin, 2003; Johnson, 1992). Factors which appeared to have *some* significant influence included: self-concept, locus of control, self-perceived ability, strong parental educational values and expectations, academically related activities, optimism, sense of control, time spent at school, and time spent on homework (Johnson, 1992; Yucel, 2003).

However, the biggest factor affecting student achievement is the role the teacher plays in the improvement process (Wright, Horn, & Sanders, 1997). Several studies indicate that teachers play the most critical role in student achievement. "Students arrive in the classroom with many different backgrounds and experiences, each bringing its own set of opportunities and challenges. Highly qualified teachers can maximize every child's potential to meet high academic standards. Teachers are the key to fulfilling the promise of No Child Left Behind" (U.S. Department of Education, 2008). Researchers Robert Slavin, director of the Center for Data-Driven Reform in Education at Johns Hopkins University, and Cynthia Lake, research scientist support this finding. Their research reviewed 87 previously released experimental studies evaluating the effectiveness of math programs in the elementary grades. Student achievement was most effected by teaching practices like cooperative learning, motivation programs, classroom management and supplemental tutoring programs rather than by computer aided instruction or changes in textbooks (Slavin & Lake, 2008).

An empirical study published in the Journal of the American Association of School Administrators confirms that student achievement is linked to teacher efficacy (Hemric, Eury, & Shellman, 2010). In this study, predictive and descriptive statistics

determined that teachers gain self-efficacy and grew in their profession based on an organizational design and system which provides: trust, collaboration around teaching and learning, collegiality, teacher control over conditions that influence their work life, and professionalism. Effective professional development has been identified as a critical factor in improving professional practice and student outcomes and the development of school-based conditions for sustainability (Timperley, Wilson-Barrar, & Fung, 2007).

One of the biggest influences on creating effective professional development is the leadership of the school. Florida Statute 1012.98, the School Community Professional Development Act, states, "The purpose of the professional development system is to increase student achievement...." the principal leads the curriculum and instruction, which influences school improvement efforts and student achievement (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Although most principals do not instruct students directly, their actions as principals affect what happens in the classroom. The principal's actions indirectly impact what happens in the classroom because the principal is responsible for hiring, managing and evaluating the classroom teachers. The principal is influential in forming teacher practices, attitudes, and teacher willingness to engage in reform. According to Fullan (2001), the single most important factor ensuring that all students meet performance goals at the school level is the leadership of the principal—leadership being defined as *"the guidance and direction of instructional improvement."* Focusing on selecting principals who are instructionally focused is a necessary first step, followed by creating an intense, comprehensive system of professional development to promote their continued growth (Fullan, 2001, p. 126).

Problem

The U.S. Department of Education, researchers, national education organizations, and task forces have published lists of effective characteristics of professional development, however, professionals cannot seem to agree on which characteristics are the most important (Guskey, 2003b). Kennedy (1999) proposed that professional development should be tied to data on student achievement. However, out of nineteen works published that show effective characteristics of professional development, found in Table 1, only eight works show that professional development tied to student data is important. As student achievement becomes increasingly important in measuring the effectiveness of teachers and schools, it is important to know which professional development models have the greatest relationship to it.

A study conducted by researchers at The University of Auckland found that professional development was most valuable when teachers had autonomy to make decisions about their own learning (Timperely, Wilson, Barrar, & Fung, 2007). However, only ten studies show that this is important (American Federation of Teachers, 1996; Corcoran, 1995; National Partnership for Excellence and Accountability in Teaching, 2000; National Staff Development Council, 2001; Speck & Knipe, 2005; Sparks, 2002; Darling-Hammond, 1997a; Hawley & Valli, 1996; Educational Research Service, 1998; Center for Performance Assessment, 2005). Studies like these emphasize the inconsistencies within the field (Guskey, 2003b).

Another problem with the lists is that they are not all based upon research. Many of the lists do not provide evidence or indicate what measurement was used to establish the characteristics important to professional development. Also, many of the lists do not

include student learning as one of its goals for professional development. Many of the lists focus on the teacher's ability to get students to retain knowledge as measured by state test scores while others do not mention a purpose (Cormas, 2006, p.9).

Incongruence in empirically-based characteristics exists in the field of K-12 professional development. There are many professional development programs school districts pay money to use that are not fully researched (International Center for Leadership in Education, 2010). With schools facing pressure to improve student achievement and costs associated with using professional development models it is important that relevant evidence about the validity and effectiveness of professional development programs be considered as well as whether using such programs has any impact on student achievement (Johnson, Oliff, & Williams, 2010).

No empirical research has been done on the effectiveness of the Rigor/Relevance Framework (R/R Framework), the model used in this study. Much of the research is based upon studies of brain activity and also Bloom's Taxonomy (Daggett & Nussbaum, 2006), not the model itself. The premise of the model is that learners who are fully engaged will acquire more knowledge than those students who are not engaged. Therefore, if students are more engaged, they will learn the material better and increase their achievement on tasks and tests. Hundreds of schools across the nation have used this model for instructing teachers during professional development and have found it to be successful in improving their school culture and their students' interest in learning. (Daggett & Nussbaum, 2006). However, a link has never been established between the use of this framework and student achievement. The extent to which a school adopts the

framework and its relationship to student achievement on statewide tests in math and language arts is the focus of this study.

Purpose of the Study

The purpose of this study is to generate empirical evidence about the characteristics of effective professional development programs for K-12 teachers and to explore the relationship between professional development and student achievement. This study provides evidence about whether characteristics found in past studies can be also be found in the Rigor/Relevance Framework used for the purpose of improving student learning through activities which are rigorous and have relevance in students' lives. Stated previously, there has been no empirical research that can confirm or deny the effectiveness of the Rigor/Relevance Framework, the teaching model in this study. Kent and Lingman's work (2000) seem to support some ideas found in the Rigor/Relevance Framework; they believe in a coherent long-term professional development planning process connected to the school plan that reflects: both site-based priorities and individual learning needs, time for professional learning to occur in a meaningful manner, professional development that follows the principles of good teaching and learning (including providing comfortable, respectful environments conducive to adult learning), support from community to solicit feedback, accountability practices and evaluation of professional development programs to provide a foundation for future planning (Kent & Lingman, 2000, p. 34). However, Kent and Lingman (2000) also believe in using student performance and student achievement data which is not fully supported by the Rigor/Relevance Framework.

In order to fully understand the link between using the framework and student achievement, principals in schools using the framework were given a five component survey examining their use of it. They were chosen because of their ability to see an overall picture of school-wide instructional practices and culture rather than just what happened in the classroom; they also had the ability to influence the degree to which teachers adopted the framework and taught it to their students. Statewide scores from these schools were analyzed to see if the use of the framework had a relationship to these scores in reading/language arts and math. Also findings in the context of other relevant literature were researched in order to identify inconsistencies or discrepancies between the practices used in the framework and other models for student improvement.

Conceptual Framework

The Rigor/Relevance Framework was the conceptual framework for this study. The Rigor/Relevance Framework is a professional development model that was created to combine knowledge with application in order to impact student achievement (Daggett & Nussbaum, 2006). Figure 1 provides the visual representation of the framework. It is based upon two dimensions of higher standards and student learning. First, there is the Knowledge Taxonomy, a continuum based on the six levels of Bloom's Taxonomy, which describes the increasingly complex ways in which we think (Bloom, Engelhart, Furst, Hill, &Krathwohl, 1956). The framework has four quadrants. Each quadrant is labeled with a term that characterizes the learning or student performance at that level (*Rigor/Relevance Framework*™, 2008). The low end (located in the lower left hand corner of the framework) shows the most basic form of instruction; it involves acquiring knowledge and being able to recall or locate that knowledge; this quadrant is labeled

Acquisition (Quadrant A). The high end (located in the upper right hand corner of the framework) shows the most complex form of instruction; it describes the more complex ways in which individuals use knowledge, such as taking several pieces of knowledge and combining them in both logical and creative ways; this quadrant is labeled Adaptation (Quadrant D). There are also two quadrants which represent a combination of Quadrants A and D. Quadrant B (located in the lower right hand corner of the framework) involves a slightly higher form of instruction than that used in Quadrant A where students act to solve problems and design solutions. This quadrant is labeled Application. Quadrant C (located in the upper left had corner of the framework) involves instruction where students routinely analyze and solve problems based on their knowledge. This quadrant is labeled Assimilation. The second dimension is the Application Model. This continuum is one of action. Its five levels describe putting knowledge to use (Daggett, 2008).

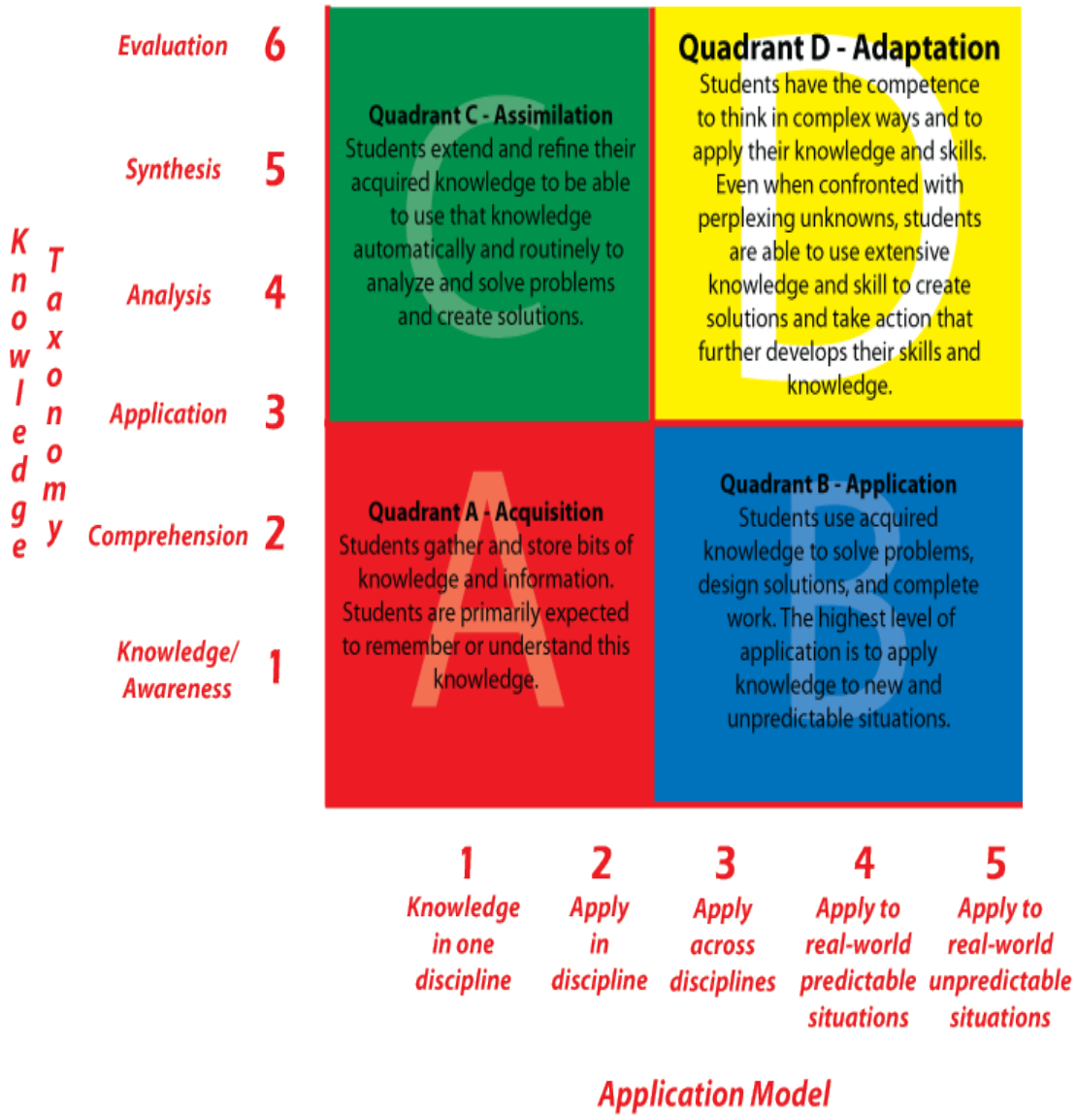


Figure 1: Rigor/Relevance Framework (*Rigor/Relevance Framework*™ (2008)

Research Questions

1. What key characteristics proposed by the empirical literature does the Rigor/Relevance Framework include?

2. How pervasively are schools using the framework?

3. What is the most pervasive way principals report that their schools use the framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher?

4. What is the a relationship between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on student state test scores in math and reading/language arts?

Justification

There are many professional development programs that exist. However, there is limited empirical research on how professional development impacts student achievement, or at the very least, what the relationship is between professional development and scores on statewide tests. In an era where state test scores determine the success of schools, it is important to empirically study models that that are assumed to help student performance. Models for improvement are implemented by schools regularly, but may only be in place for a year. Their continued use depends upon who is in charge of professional development for the school. In many cases, this is not enough time to study the efficacy of these programs. Idealized design requires an unwavering commitment to the change process, as participants must be trained and continuously supported in their new roles as change agents (Borko, Wolf, Simone & Uchiyama, 2003).

The International Center for Leadership in Education (ICLE) created the R/R Framework as a conduit for student achievement. The Center sponsors an annual nationwide conference about effective practices in teaching and offers support for the use of this framework as well as supportive books and materials. It also sends out teacher consultants to do school-wide analyses of districts and help schools develop personalized school improvement plans, but these services are not free to school districts. Depending on which services the schools choose, the cost can vary from under ten thousand dollars to over one-hundred thousand dollars (The International Center for Leadership in Education, 2010). School districts wishing to make informed decisions about how to make a positive change in their schools may wish to consider using this program, but many will ask, "What is the return on our investment?" There are only case studies which show that this framework has indeed made a positive difference in school districts (The International Center for Leadership in Education, 2008); there has never been an empirical study to support its effectiveness. Therefore this study is critical to determining if the use of the framework has a relationship to student achievement.

Limitations of the Study

There were various limitations that impacted this study. One of the limitations was timing. State tests take time to grade, tabulate results, send them to the schools, and make them available to the public. Many state tests are given at the beginning of each year. If schools are in the first year of using the R/R Framework, the students may not have benefited by the instruction taught using this model. Surveys asking principals to rate their use of the framework were sent to them in the summer of 2011. This timing may have impacted the results because principals may not have had enough time to

reflect on the use of the framework from the previous year. Additionally, although principals reflected on how their staff used the framework (pervasively, considerably, partially, initiated or absent), the survey did not ask them to reflect upon how *effectively* the teachers used the framework.

The study also only showcased schools that were using R/R Framework rather than other school improvement programs designed to foster student improvement. There were hundreds of schools using this framework: however, the study only shows the degree to which the framework had a relationship to the statewide test scores of these schools. The framework did not address whether there were differences in attrition rates and/or attendance as a result of using this model. Additionally, the study only sampled schools that participated in the Successful Practices Network (SPN) (an online program designed for schools using the R/R Framework to collaborate with each other) not necessarily all the schools that used the framework. Some schools may have used the R/R Framework but not participated in the Network. The Network is an additional cost to school districts after the first year of using the Framework. Due to budget cuts, schools may have opted out of using the Network. Therefore, the study may not be representative of all schools using the framework, which could have impacted generalizability. Finally, it cannot be concluded that any changes in scores were attributed solely to the R/R Framework.

Conclusions

What makes the task of creating good professional development so difficult is the lack of consistent findings about best practices in the field; the problem has been clearly identified, but the solutions vary from study to study. One conclusion about professional

development that Kennedy (1999) proposed was that it had to be tied to improvement in student performance. He suggested that all professional development should be focused on how they help students and what evidence there is to support that premise. This is the reason why it is important to study the relationship between the use of professional development models and student performance. Therefore the purpose was to study the relationship between the use of the Rigor/Relevance Framework and student achievement on statewide test schools. Another purpose was to see if it would be logical to expect schools that report using the framework most pervasively to have achieved higher test scores on statewide tests in math and language arts. The ICLE offered school-wide analyses to districts that wished to participate in the framework with support from the center; one partial explanation of any observed changes may be that a realignment of goals could have increased the focus of the teachers and the outcomes of the students.

Definitions

Model Schools Program- This program was developed by the International Center for Leadership in Education (ICLE). The ICLE develops resources and establishes relationships to advance school improvement. Schools using this framework use speaker and teacher leader coaches from The International Center to provide ongoing support for the program. The Center has yearly nationwide conferences and credits much of the work to its founder Dr. William Daggett (Daggett, 2008).

Rigor/Relevance Framework ™- (R/R Framework): The Rigor/Relevance Framework ™ was the model used in this study. This tool is used to examine instruction, curriculum, and assessment. The Rigor/Relevance Framework is based on two

dimensions of higher standards and student achievement. The first dimension is the Knowledge Taxonomy, a continuum based on the six levels of Bloom's Taxonomy. This taxonomy describes the increasingly complex ways in which we think. The low end involves acquiring knowledge and being able to recall or locate that knowledge. The high end labels the more complex ways in which individuals use knowledge, such as taking several pieces of knowledge and combining them in both logical and creative ways. The second dimension is the Application Model. This continuum is one of action. Its five levels describe putting knowledge to use (Daggett, 2008).

Successful Practices Network (SPN): This Network is an online tool for schools using the Model Schools Program. The mission of the network is to share data, experiences, technical assistance, research, and successful practices focused on rigor, relevance and relationships for ***all*** students. Members can seek expert and peer advice on school improvement from like-minded schools and education leaders (Successful Practices Network, 2010).

Professional Development: This refers to the ongoing education teachers receive in K-12 education. Most of this development occurs during teacher in-service days.

Sustainable school improvement program: This refers to programs which continue to be used to foster improvement in spite of changes in the school leadership (Walter, 2004).

Chapter Two

Literature Review

Effective professional development has been cited as a crucial factor in the development of school-based conditions for sustainability, in the improvement of student outcomes, and in the sustainment of professional practice (Higgins, & Parsons, 2009, p. 232). According to the US Department of Education, it must be a top priority (U.S. Department of Education, 2008). Relevant to this study was research on how teachers learn and how they use information from professional development in their classrooms. It was also important in this study to understand that professional development can impact teachers' practices quite differently depending on how it is acquired and how relevant teachers view it to be. This study included professional development models as prescriptive choices that teachers and schools have used to impact teacher and student learning.

This chapter begins with studies on teacher learning. The manner in which teachers learn has an impact upon how teachers benefit from professional development programs (McKenzie, 2001). After studies have shown how teachers learn best, the chapter will then explore the goals of professional development. Once the goals have been established, the chapter highlights professional development guidelines teachers and researchers have created that best suit their learning needs. The next part of the chapter explores why it is hard to always identify effective guidelines of professional development. Though no real consensus exists, school officials may look at their staff to help them determine which guidelines are important to them. Once they have established these guidelines, they may look to a professional development model to help influence

their choices. This chapter outlines some models used to influence professional development. It also looks at models that have been used in states and country wide to create sustainable professional development. Chapter Two concludes with a synthesis of the research and makes the argument that more research needs to be done to create professional development programs which are both teacher focused and aimed at increasing student achievement.

Teacher Learning

Although there is not much empirical research (it is assumed that teacher learning is quite similar to student learning) there are several theories about teacher learning (National Research Council, 2000). Studies indicate that teacher learning occurs most frequently when teachers have opportunities for active, intellectual engagement. These opportunities include "reflection; participating in learning through sustained collaboration and support; placing their primary focus on content-specific knowledge and pedagogy; and systematically engaging in examinations of student learning" (Fickel, 2002, pp. 47-48). The National Research Council states that teachers learn best when the learning is relevant to them, it is collaborative, they are accountable, they are empowered to make decisions, it is self-directed, and they are supported by administration (2000).

This may explain why professional development in the past has not worked. In order to deliver training to teachers (mass audience) in a short amount of time (ten or less days per year), many schools have employed ineffective methods. One of these methods is the lecture method. The retention rate of material after listening to a lecture is only twenty-percent (Fuszard, 1999, p.359). As many as 70 to 80 percent of learners say they would prefer to learn by some other method (Cross, 1984, p. 208). With state-wide

emphasis on reforms, Paul V. Bredeson of the University of Wisconsin-Madison and Jay Paredes Scribner of the University of Missouri-Columbia studied the effect of the use of lecture-based conferences to increase teacher learning (Bredeson & Scribner, 2000). Through surveys, they collected data from participating teachers at a statewide conference in Wisconsin. They conducted descriptive and inferential analyses of all quantitative data and used a constant comparative method to analyze the narrative data. What they found was not encouraging to the government officials of Wisconsin. They reported:

> While a majority of participants in this study attended the conferences as part of a school team, and many were supported by WEAC and/or their school districts, alarmingly few participants were confident they could disseminate their newly acquired knowledge to colleagues in their schools. So, while large scale professional development conferences may have their place in overall professional development programs, coordination between the various levels of our educational system must occur to ensure that the professional knowledge gained is internalized by teachers, principals, and others in their respective practices (Bredeson & Scribner, 2000, p. 11).

In similar studies, one-shot workshops seem the least effective way to improve teacher training. In a study of a tobacco prevention program, teachers that only went to workshops and were not encouraged by their supervisor to implement the curriculum made far less effort that other groups. Those who attended weekend workshops followed by needs assessments, three workshops and five meetings, and no workshops, but

encouragement, were far more successful in implementation (Bassen-Enquist, 1994). The problem is that most staff development in K-12 education does not take into consideration what occurs in the classroom, building or district. Most people in charge of professional development do not allow participants to be a part of its development nor its evaluation. As a result teachers do not usually find it motivating (Richardson, 2000). In his book, *How Adults Learn*, J.R. Kidd states that motivation is a major consideration on the rate and amount of learning that occurs, if learning occurs at all (1959, p. 111). How can teachers/adult be motivated? One model that incorporates tenets of motivational theory is John Keller's (1987) *ARCS* model. The acronym *ARCS* stands for: Attention, Relevance, Confidence, and Satisfaction. In the *A*ttention phase, the educator stimulates learners by perceptual arousal (gaining and maintaining attention by the use of novel, surprising, and uncertain events in instruction), inquiry arousal (stimulating information-seeking behavior by having the learner generate questions to solve) and by variability (maintaining interest by varying instructional elements). In the *R*elevance phase, the educator sets the stage for instruction by familiarity (adapting instruction using concepts that relate to a person's experience and values in hopes of integrating new knowledge), goal orientation (providing or seeking objectives and goals for instruction), and motive matching (adapting the techniques given the motive profiles that match instruction).

The educator can provide ongoing instructional feedback in the *C*onfidence phase. During this phase, the educator sets the expectations for success (makes learners aware of performance criteria), sets challenges (provides multiple achievement levels for learner to set personal goals or standard of accomplishment) and molds positive attributes (providing feedback that supports student ability and effort for success). In the final

phase, *S*atisfaction, the educator provides natural consequences (opportunities for the learner to use knowledge in a real or simulated setting), positive consequences (feedback and reinforcements that will sustain the desired behavior) and equity (consistent standards and consequences for task accomplishment).

There is limited quantifiable data on the success or failure of the ARCS model. In her article titled, *Motivation in Instructional Design,* Ruth Small states this it is a "well-known and widely applied model of instructional design" (1997, p.1). She states that it is very easy to use and provides "a useful framework for both the design and improvement of the motivational quality of a range of informational entities…and increases the likelihood that these entities will be used and enjoyed" (p.5).

What are appropriate strategies for teaching people in a variety of cultural, ethnic, racial, or economic communities? What helps them become motivated to learn? The use of the narrative method, or storytelling, is helpful to people in a variety of cultures because it provides repressed voices a way to redefine and recover their roles (Amstutz, 1999, p.28). Giving a voice to teachers of different ethnicities allows the decentering of instruction and gives them opportunities to share their uniqueness, use dialogue as a basis for assessing knowledge claims, and gives them with a sense of personal accountability (Amstutz, 1999, p.28). Another example of motivational learning is cooperative learning. Cooperative learning is a good technique because it enhances the communication of the sojourner with his/her new environment; it also promotes positive interdependence and shared leadership skills (Amstutz, 1999, p.28).

One way for teachers to experience cooperation on a school-wide level is to teach at a Professional Development School. A Professional Development School is a school

that has partnered with a university. The university provides college students and professors to educate teachers on the latest trends and best practices in education. This environment enables teachers to put theory into practice. The college students work directly with the teacher in a cooperative learning setting in the classroom. The professor and the principal observe both the teacher and the college students to provide both leadership and training. A study on the effectiveness of this method was conducted at the University of North Texas and seven schools in the surrounding area. This study is highlighted because it offers guidance to schools interested in pursuing this option. In order for this method to be effective, it must be well supported by the administration and woven into the fabric of the school. Of the seven schools, four were the most successful because they had staff that worked well together and had greater numbers of people to share the responsibility of creating the Professional Development School. In the study, authors suggested that good Professional Development schools should plan workload so that participants are not overwhelmed, provide the university faculty with ancillary staff in a role similar to an assistant principal to help the principal, develop clear job descriptions, and obtain staff buy-in (Bowen, & Adkinson, 1996).

In another study, Kansas State University partnered with three Kansas school districts resulting in 21 Professional Development Schools. After a six year partnership, every school reported gains in student achievement especially in science and reading (Shroyer,Yahnke, Bennett, & Dunn, 2007). The greatest impact of their early renewal initiatives was on the attitudes in science and practices of teachers. This study also helped professors at Kansas State University create “performance-based, teacher education standards for teachers” and “modified introductory courses” for their teacher

education program (Shroyer, et al., 2007, p.217). At the end of the study, they concluded that Professional Development Schools provided increased understanding and awareness, enhanced collaboration, and led to increased personal reflection on teaching and learning (Shroyer, et al., 2007, p. 222).

Prichard and Ancess (1999) at the National Center for Restructuring Education, Schools, and Teaching conducted a literature review of the effects of Professional Development Schools. Though they discuss the impact on several areas of education, for this study the effects on K-12 teachers will highlighted. The Professional Development Schools had a very positive effect on experienced teachers. As a result of participating in these schools, teachers reframed their experiences. They looked at their district differently. Rather than looking at their school as a separate entity in a district, they began to see their school as an important piece that links to other buildings. They began to see how they could create bridges as students moved from one building to the next. As they built these bridges, they began to compare their experiences with other teachers across the district and they began to see themselves as a whole professional group (Pritchard & Ancess, 1999).

In addition to how they reframed their thinking, their participation affected the way they felt about teaching. They reported feeling involved in school level change and more empowered to take action. Teachers reported a greater sense of community with peers, pre-service teachers and university faculty; this understanding made them feel less isolated, more powerful, more professional, and more able to make improvements in their classroom practice. They also became more open to ideas which led them to become energized and willing to participate in school-based research (1999).

A less collaborative method than the one used as a foundation for the Professional Development schools is based on learning which is self-directed (Abdullah, 2001). A strategy that can help them learn this way is Self-Directed Learning, SDL. Self-Directed Learning is different than traditional learning in that it provides the learner freedom to determine what he/she wishes to learn (Cross, 1981, p. 193).

A typical Self-Directed Learning project, according to Abdullah (2001) might follow Houle's fundamental system (Houle, 1996). He suggested seven steps to learn more about a topic. The first step in this fundamental system is to *identify a possible educational activity*. A teacher may wish to model a different reading strategy to help her students comprehend informational text. For example, a teacher may wish to try the KWL method (What do I Know? What do I Want to learn? What have I Learned?) The second step is to *make a decision to proceed*. An example of the application of this second step is a teacher who chooses to teach using this method in the fall before state testing is likely to proceed. The third step is *to identify and refine objectives*. A teacher may wish to identify, apply, and evaluate objectives with one lesson before applying them to a whole unit. The fourth step is the *design a suitable format*. The teacher may wish to have posters of this method around the room and create interactive ways for students to engage in a specific reading passage using this format. The fifth step is *fitting the format into larger patterns of life*. This teacher may wish to gather sources from the media the students may find interesting to and use the KWL method to understand these sources. The sixth step is to *put the plan into effect.* The teacher would teach using the plan. The final step is to *measure and appraise the results*. A teacher may wish to use a quantitative measure (test) and/or a qualitative method (question the students' perceptions

of the method). Once the teacher feels confident with this new method, he/she may also teach this method to other teachers and see if they notice greater achievement.

A group that implemented this self-directed strategy made "significant gains" in professional development (Arthur, Bingham, Ireland, McQueen, & Swain, 1994, p.9). In 1994, fourteen K-12 Catholic educators in Australia collaborated on an action research project in which they could identify a problem and spend time exploring the solution. This type of project allowed teachers to think about problems and create action plans in a group setting enabled by facilitators. Then they post project follow-up meetings (Arthur et al., 1994, p. 6). Although teachers were used to following prescribed formulas during professional development and found the format confusing at first, this study highlighted issues of personal control over learning and the personalization of issues of interest and concern (Arthur et al, 1994, p.9). It was determined that relevant inquiry was critical to the success of Self-Directed Learning.

Goals of Professional Development

Once school district officials understand the way teachers learn, it is important for the designers of professional development programs to identify the goals of the training it wishes to create. Corcoran (1998), through the Consortium for Policy Research in Education, describes what is known about professional development, what its goal should be, and presents principles for effectiveness. The principles are based on a number of experts and organizations (1995). Although student expectations are mentioned in the article, the goal of professional development is viewed as improving teacher knowledge and skills. These principles follow a teacher-centered approach (micro-level) rather than a school-wide (macro) level approach This research stimulates and supports site-based

initiatives, supports teacher initiatives as well as school or district initiatives, is grounded in knowledge about teaching, models constructivist teaching, offers intellectual, social and emotional engagement with ideas, materials and colleagues, demonstrates respect for teachers as professionals and as adult learners, and provides for sufficient time and follow-up support for teachers to master new content and strategies and to integrate them into their practice (Corcoran, 1998)

In *Achieving the Goals - Goal 4: Teacher Professional Development*; the U.S. Department of Education (1997) investigated what federal agencies are doing to improve professional development. The authors stated that the goal of professional development is to make developers aware that student learning is directly affected by teacher effectiveness (Cormas, 2006, p. 25). This macro approach focuses on how professional development affects the school as a whole rather than on how it affects individuals.

High-quality professional development should focus on teachers as central to student learning; yet include all other members of the school community. It should focus on individual, collegial, and organizational improvement, respect and nurture the intellectual and leadership capacity of teachers, principals, and other school community members, reflect the best available research and practices in teaching, learning, and leadership, enable teachers to develop further expertise in subject content, teaching strategies, uses of technology, and other elements essential in teaching to high standards. It should promote continuous inquiry and improvement embedded in the daily life of schools, be planned collaboratively by those who will participate in and facilitate the development, require substantial time and other resources, be driven by coherent long-term plans, be evaluated ultimately on the basis of its impact on teacher effectiveness and student learning, and

use this assessment to guide subsequent professional development efforts (U.S. Department of Education, 1997, p. 7-8).

The National Staff Development Council (NSDC) is involved with professional development. Their goal is to help teachers produce achieving students. They believe that student learning deepens as a result of staff development, especially staff development that includes rigorous academic standards and knowledge of a variety of classroom assessments (NSDC, 2009). Their *Standards for Staff Development* (NSDC, 2001) was published in order to build cohesiveness in the field of professional development, and is "…grounded in research that documents the connection between staff development and student learning (NSDC, 2001, p. 2). The Standards of the Council are divided into context standards, process standards, and content standards. They can be found in Table 1:

Table 1

NSDC Standards for Professional Development

Context Standards **Staff development that improves the learning of all students:**
□ Organizes adults into learning communities whose goals are aligned with those of the school and district. (Learning Communities) □ Requires skillful school and district leaders who guide continuous instructional improvement. (Leadership) □ Requires resources to support adult learning and collaboration. (Resources)
Process Standards **Staff development that improves the learning of all students:**
□ Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement. (Data-Driven) □ Uses multiple sources of information to guide improvement and demonstrate its impact. (Evaluation) □ Prepares educators to apply research to decision making. (Research-Based) □ Uses learning strategies appropriate to the intended goal. (Design) □ Applies knowledge about human learning and change. (Learning)

- Provides educators with the knowledge and skills to collaborate. (Collaboration)

Content Standards
Staff development that improves the learning of all students:

- Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement. (Equity)
- Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately. (Quality Teaching)
- Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement)

North Carolina uses these standards as a way to improve their teacher professional development programs statewide. In response to No Child Left Behind, North Carolina drafted the *Professional Development Initiative: Proposal for Action* (Owen & Skinner, 2004). This initiative was driven by a recognition by leaders at all levels that K-12 professional development in North Carolina was disjointed and uncoordinated. Some districts did offer tailored programs while others lacked options, financial resources, or both (Owen & Skinner, 2004, p.7). This initiative identified the key components necessary to bring about changes in North Carolina schools. This proposal begins a process that is currently being executed in the state's schools. Although results have yet to be reported, this initiative reflects the work of a growing body of states that wish to create coordinated and jointed programs.

One of the largest international studies to synthesize the effects of professional development upon student achievement is a study done from researchers at the University of Auckland in New Zealand published in 2007. The purpose of this study was to consolidate evidence gathered from several countries to understand the best way to promote teacher learning that directly impacts student achievement (Timperely, Wilson,

Barrar, & Fung, 2007). They discovered that "the evidence base for sustainability in teacher professional learning is disappointingly thin" (Timperely, et. al., p. 225). However, in studies that showed "sustained, substantive student outcomes," teachers used a strong "theoretical base" to make changes to their practice and inquiry skills to see the impact their teaching made upon learning (p. 225). In terms of whether programs should be prescriptive or not, their synthesis noted that the most successful interventions allowed teachers a great amount of autonomy to develop teaching programs within the confines of agreed theories and possible solutions (p. 225). Also, it appeared that when there were problems with student outcomes within the school or school district and teachers and leaders took responsibility, the outcomes improved; teachers and their leaders were motivated to change. As with other studies, the authors argue that professional development models and practices should be stable to have sustainable impact. They noted:

> A key finding of this synthesis has been that teachers need to have time and opportunity to engage with key ideas and integrate those ideas into a coherent theory of practice. Changing teaching practice in ways that have a significant impact on student outcomes is not easy. Policy and organizational contexts that continually shift priorities to the 'next big thing', with little understanding/evaluation of how current practice is impacting on desired outcomes for students, undermine the sustainability of changes already under way. Innovation needs to be carefully balanced with consolidation if professional learning experiences are to impact positively on student outcomes (p. 225).

Professional Development Characteristics

By understanding the goals of professional development and the best ways teachers learn, teachers can collaboratively create guidelines that steer professional development in the right direction. The American Federation of Teachers acknowledges the important role of teachers in professional development. They stated that professional development "should empower individual educators and communities of educators to make complex decisions, to identify and solve problems, and to connect theory, practice, and student outcomes" (p. 4*).* (2002). They also indicated that teachers should create learning which allows to students to succeed in a global environment. However, their guidelines for quality professional development involved only the voice of the teacher and have not gone through rigorous studies to prove if indeed these are the best guidelines for professional development. The Federation guidelines for professional development are:

- Professional development should deepen and broaden knowledge of content.
- Professional development should provide a strong foundation in the pedagogy of particular disciplines.
- Professional development should provide knowledge about the teaching and learning processes.
- Effective professional development should be rooted in and reflect the best available research.
- The content of professional development should be aligned with the standards and curriculum teachers' use.

- Professional development should contribute to measurable improvement in student achievement.
- Professional development should be intellectually engaging and address the complexity of teaching.
- Professional development should provide sufficient time, support, and resources to enable teachers to master new content and pedagogy and to integrate this knowledge and skill into their practice.
- Professional development should be designed by teachers in cooperation with experts in the field.
- Professional development should take a variety of forms, including some we have not typically considered.
- Professional development should be job-embedded and site specific (p. 5).

Speck and Knipe (2005) describe quality professional development, its characteristics and its approach. They identify the goal of professional development as student learning. Their approach addresses the problem mentioned earlier that teachers need to be engaged in order to learn (Richardson, 2000). This approach gives teachers a voice in their own learning and allows them to be a part of its development and evaluation. Professional Development in Speck and Knipe's research centers on teacher learning which translates to increased student learning in the classroom. Much of their research shows that collaboration among teachers which allows for inquiry, dialogue, and reflection allows teachers to grow. They emphasize that the goals the teachers set for their students will have a sustaining effect on the learning of students. In their research, they noted that this collaboration and goal setting cannot help student learning if

administrative support and evaluation of student progress is not included (Speck & Knipe, 2005, p. 9).

Sparks (2002) describes the key components of his powerful professional development in an interview. He shared the following assumptions about the good characteristics of professional development for teachers:

- The *first assumption* is that teachers and principals can improve their practice through professional learning.
- The *second assumption* is that the professional learning of teachers is the central factor in determining the quality of teaching.
- The *third assumption* is that the professional learning of principals is a central factor in determining their instructional leadership.
- The *last assumption* is that district structures and culture that surround the school play a critical role in determining the quality of professional learning experience by teachers and principals.

He emphasized that high performing students need quality teachers in each classroom and stressed the importance of *leadership within the building* to obtain that goal (Sparks, 2002).

Hawley and Valli (1999) integrated new studies and past research syntheses in order to create design principles for effective professional development. These principals primarily involve the interaction between students and teachers and are school based; they guide the analysis of the differences between student performance and goals and standards for learning. Once these differences are analyzed, they become the starting

point for which learning activities and professional development activities are developed. The activities created are modified and changed to meet the learning needs of the students (Hawley & Valli, 1999).

In *Right to Learn* (1997), Darling-Hammond lists several shared features of "professional development strategies that succeed in improving teaching" (p. 326). These features are learner-centered. Their inquiry based approach to learning (where teachers take an active role in the professional development process) is experiential, collaborative, connected to teachers' work with their students, supported by modeling, coaching, and problem solving around specific problems of practice, and connected to school change (Darling-Hammond, 1997, p. 326).

The Educational Research Service (1998) published a list of characteristics of high-quality professional development. The characteristics take more of a school-wide (macro level) focus rather than an individual teacher (micro level) focus. Teachers and administrators are encouraged to plan their own professional development activities. In their plan, they are to work with other teachers to align their classroom goals with district goals. The Educational Research Service encourages teachers to do their own research about quality professional development to help them understand their students' needs. Teachers are encouraged to look at their students in terms of their cultural, socioeconomic, and linguistic backgrounds. From their point of view, a "one style fits all" type of professional development will not work; professional development must be specialized in each school building (Educational Research Service, 1998, p.3). Their research echoes Fickel's (2002) view that professional development must be individually crafted in school buildings across the country.

Data-Driven Professional Development

With Annual Yearly Progress (AYP) necessary to for schools to continue to operate, many schools in danger of not making AYP (and others who wish for increased student scores on statewide achievement tests) have begun to restructure their professional development by using data to drive their professional development hours. Two schools (one rural and one urban) saw great gains in achievement when they used a strategy called Academic Intervention Plans (AIPs) (Morrison & Rudt, 2008/2009). The staff:

- Used strategic monitoring to identify students requiring help to reach a particular goal, whether for achievement of proficiency on statewide exams or for success in accelerated courses.
- Collected and synthesized relevant data, including several years of state math and reading scores, unit exams, attendance records, and grades.
- Reviewed the data and establish goals for each targeted student.
- Determined action steps to help students achieve their goals. This plan included interventions, criteria to determine the effectiveness of interventions, next steps, and a running record of discussions about the student.
- Implemented interventions.
- Met regularly to monitor targeted students' progress, keeping discussions focused on academics and data, and determined next steps for interventions.

- Continued the process throughout the year, adjusting the initial plan as needed. Treated the plan as a fluid, dynamic document that changes as the individual student's needs change.

After this process was implemented, both schools experienced significant gains in student achievement, a greater sense of collegiality, teacher buy-in and ownership, and an opportunity for authentic professional development. One of the most significant changes the process made was in terms of professional development. Morrison and Rudt (2008/2009) expressed: "The crux of effective staff development; it changes paradigms, beliefs, and actions to make teachers more effective and increase student learning" (p. 4).

The American Recovery and Reinvestment Act of 2009 (ARRA) provided billions of dollars in new education funding to states and localities, including funds to implement statewide longitudinal data systems to improve student achievement (Laird, 2011). Twenty-three states across the nation have recognized the need to make data informed decisions when it comes to creating teaching that makes a positive impact on student achievement (Laird, 2011). Collecting the data though is just the first step. Once data is collected, teachers need to be trained to "access, analyze, interpret and use the information, or the new system likely will not lead to the desired changes in student performance" (2011, p. 1). Therefore, there must be a commitment by teachers and principals to use professional development as an opportunity to use this data to improve instructional practices to produce a positive change in student performance. "The state is best positioned to take the lead in setting up policies and promoting practices that will lead to educators' having a better understanding of how to use the data to improve student performance" (2011, p. 1).

Thomas Guskey (2000) argued that principals must aid teachers in making better use of assessment data, particularly that data that is produced in their own classrooms. He argues that principals should stress the use of classroom assessments as learning tools that are part of the instructional process, regularly review classroom assessment results with teachers to help them identify potential instructional problems, and provide opportunities for teachers to plan collaboratively. This way they can examine their students' assessment results and work samples to identify areas of weakness, and develop shared strategies for improvement.

Problems Identifying Effective Characteristics of Professional Development

The preceding studies show that there has been considerable research in the teacher learning and professional development. However, some lists and studies of effective characteristics of professional development contradict each other (Guskey, 2003b), and there is not a consensus among professional development researchers of what constitutes "effectiveness" in professional development (Guskey2003a). And, aside from graduate classes teachers may take, professional development is one of the few places teachers may learn about effective practices for teaching even though there is no agreement about what is effective. Most professional development endeavors are not connected to the learning experience (O'Brien, 1992); participation from teachers is lacking (Radford, 1999), teachers are disconnected from the learning, and lectured-based methods are used which have proven to be ineffective (Tinoca, 2004). "The reason that many professional development experiences fail to enrich teacher learning (NRC, 2000) is because they do not address teachers' needs (Barufaldi, 1987; Feldman & Kropf, 1997). When teachers' needs are met, professional development becomes meaningful and

effective (Lieberman & Miller, 1999). Speck and Knipe (2005), state that teachers should also be involved in planning, implementing, reviewing, revising, and evaluating professional development (Cormas, 2006, p.7).

These central issues lead to confusion for educational leaders who design, implement, and evaluate professional development (Guskey, 2000). The disagreement may be due to the fact that many of the professional development characteristics are not research-based, many do not describe what measurement or evidence was used to establish characteristics, and many have not based their characteristics on the goal of student learning and teacher behavior (Cormas, 2006).

In his 2003 study titled, *Analyzing Lists of the Characteristics of Professional Development to Promote Visionary Leadership*, Thomas Guskey analyzed lists of quality professional development from various sources. What he found was that the lists were not consistent and were based primarily on the goal of the organization. "Some lists were prepared as policy documents (e.g., The U.S. Department of Education list) whereas others were prepared for audiences of professional development practitioners and school leaders (e.g., the AFT list of the NSDC Standards)" (Guskey, 2003b, p. 14). The compilation of his lists, adapted by Peter C. Cormas (with his permission), can be found in Table 2 and Table 3.

Table 2

Effective Research-Based Characteristics of Professional Development One

Characteristics (adapted from Guskey, 2003b)	American Federation of Teachers (1996)	Corcoran (1995)	U.S. Department of Education (1997)	Kent, K., & Lingman, C. (2000)	National Partnership for Excellence and Accountability in Teaching. (2000)	Wenglinsky, H. (2002)	Loucks-Horsley, S., Stiles, K., & Hewson, P. (2003)	National Staff Development Council (2001)	Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001)	Tinoca (2004)	National Science Education Standards (NRC, 1996a)	Commission on Life Sciences (NRC,1996b)	Speck & Knipe (2005)	Sparks (2002)	Darling-Hammond (1997a)	Hawley & Valli (1996)	Educational Research Service (1998)	Center for Performance Assessment (2005)	Association for Supervision and Curriculum Development (2002)
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
Research-based (y/n)	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*y*	*n*	*n*
Enhances teachers' content and pedagogic knowledge	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Provides sufficient time and other resources	x	x	x	x		x		x	x	x			x	x			x		
Promotes collegiality and collaboration		x	x	x	x		x	x	x	x	x	x	x	x	x	x		x	x
Includes procedures or evaluation	x		x	x	x		x	x				x	x				x	x	
Aligns with other reform initiatives			x	x	x		x	x	x	x	x		x			x	x		x
Models high-quality instruction	x	x		x			x	x	x				x						
Is school or site based		x			x									x		x	x		x
Builds leadership capacity			x	x			x					x					x	x	
Based on teachers' identified needs	x	x			x			x					x	x	x	x	x		x
Driven by analyses of student learning data				x	x			x		x			x			x	x	x	

Table 3

Effective Research-Based Characteristics of Professional Development Two

Characteristics (adapted from Guskey, 2003b)	American Federation of Teachers (1996)	Corcoran (1995)	U.S. Department of Education (1997)	Kent, K., & Lingman, C. (2000)	National Partnership for Excellence and Accountability in Teaching. (2000)	Wenglinsky, H. (2002)	Loucks-Horsley, S., Stiles, K., & Hewson, P. (2003)	National Staff Development Council (2001)	Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001)	Tinoca (2004)	National Science Education Standards (NRC, 1996a)	Commission on Life Sciences (NRC, 1996b)	Speck & Knipe (2005)	Sparks (2002)	Darling-Hammond (1997a)	Hawley & Valli (1996)	Educational Research Service (1998)	Center for Performance Assessment (2005)	Association for Supervision and Curriculum Development (2002)
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
Focuses on individual and organizational improvement	x	x	x	x								x			x	x	x		
Includes follow up and support		x			x										x	x	x		
Is ongoing and job embedded		x	x					x					x	x	x	x	x		x
Helps accommodate diversity and promote equity						x							x				x		
Based on best available research evidence	x		x				x	x			x							x	
Takes a variety of forms	x								x				x						x
Provides opportunities for theoretical understanding					x									x		x			
Driven by an image of effective teaching and learning							x				x		x					x	
Provides for different phases of change												x				x	x		
Promotes continuous inquiry and reflection					x						x	x	x	x	x				x
Involves families and other stakeholders								x			x								

Professional Development Models

Though there is no real consensus on the most effective characteristics and guidelines for professional development, school officials may look at their staff to determine which ones are important to them. Once they have established these characteristics, they may look to professional development models to help guide their choices. Using models as guides may help teachers see a practical way to use the effective characteristics they have determined are important. This may help change students' attitudes, abilities, or achievement levels.

Bransford and the Cognition and Technology Group at Vanderbilt (1998) created a model which focuses attention upon learners' current knowledge, skills, attitudes, and

beliefs; it is based on current research in learning theory and cognition (Cormas, 2006). The model is built on strengths, needs, and interests of the learner. The learner centered model proposed by Bransford et al. (1998) is quite different from the typical professional development experience that is not learner-centered.

Virginia Richardson, a researcher from The University of Michigan who has studied professional development for over two decades, created an outline (model) of "research-based" characteristics of professional development that we know may lead to reform (Richardson, 2000). Her model is less teacher-centered and more school-wide centered. Her research-based characteristics include school wide efforts to develop a school culture of improvement which is content specific (more or less) and is long-term with follow-up; this includes processes that should encourage collegiality, learning communities, and dialogue with groups, agreement on goals/vision, supportive administration, adequate funds for materials, outside speakers, substitute teachers, buy-in from participants, an outside facilitation/staff developer (different role), and should acknowledge participants' existing beliefs and practices. Both she and Bransford's models work because they encourage the learners to decide how to proceed with their own professional development.

Although many districts employ characteristics of this model, it is not recognized as a standard because it is expensive; it takes a long time to implement, it is difficult for school districts to figure out how to support this model and the goals may not be in line with the school's visions made by participants may not be acceptable. For these reasons Richardson (2000) argues that it is easier to just go with a standardized set of goals (p.3).

Professional Development Programs

Models can help guide professional development at the school/district level; they can also be used to guide professional development programs at the state level. New Jersey uses a three-step model to guide its professional development for creating 21st century learners: awareness and familiarization, critical transformations, and sustaining the change (New Jersey Department of Education, 2009). Their program starts by teaching teachers characteristics of their students in the digital age. The second phase includes ways it needs to transform teaching statewide. Though the second phase includes professional learning communities, newly designed models for learning, and the development of concepts needed to embrace the new roles of teaching, it does not mention who will guide these critical transformations. If they decide to include input from teachers, then they will be empowering teachers and following the guidelines of the National Research Council (2000); if, however, these programs are mandated and teachers have little input, then the changes may not be internalized by teachers, principals, and others in their respective practices (Bredeson & Scribner, 2000, p. 11). The final phase of this model includes sustaining the change. This part of the model encourages teachers to "discuss their practice" and "create curiosity for learning" (p.5). This part of the model is consistent with research on teachers as learners (Fickel, 2002). If the initiative makes it to phase three, then this program may have a chance at sustainability. New Jersey is using this three year model (2009-2011) to create change in their schools.

There are several other programs are being used to serve teachers nationwide. . One such program that is internet based is the Teacher-to-Teacher Initiative. The

Teacher-to-Teacher Initiative was designed by teachers for teachers in order to provide technical support, professional development opportunities, and recognition for teachers in all content areas and grade levels. Sponsored by the Department of Education, this program is intended to reach teachers that are self-directed learners (U.S Department of Education, 2008; Houle, 1998). On this site, teachers can participate in free workshops; nominate teachers who are outstanding in their field, find lesson plans and technical assistance. The site provides a means for motivated teachers to connect and improve their craft.

Another program is the Education Equality Project (2009). This program which was created by state leaders across the country includes the states of New York and Colorado. The goal is to transform the teaching profession "so that every classroom will one day be led by an effective instructor who advances student learning" (Education Equality Project, 2009). The project outlines seven steps which are being piloted in some school districts across the nation. They include a barrier free way for people to enter the profession to encourage promising teachers, a system to track longitudinal data to measure the impact teachers have on student achievement, an evaluation of teachers based on their students' test scores, a way to help new teachers succeed in their classrooms, a longer time (5 years) for teachers to receive tenure only if they are effective in the classroom, a compensation system for teachers who are raising student achievement in their classrooms, and a reassessment program for veteran teachers to make sure they are still effective (2009). Though this program aims to make teachers more effective, studies have shown that compensating teachers for increased student

performance has little merit. A study published by Vanderbilt University suggests that merit pay does not raise student test scores (Springer et al., 2010).

Conclusions

Schools, school districts, and states are making an effort to create successful professional development programs. However, all professional development programs have not resulted in improved teaching practice or increased student achievement (Education Commission of the United States, 2000). As stated previously, there is literature describing effective professional development, but little high-quality research that connects professional development to changes in student learning and teacher behaviors (U.S. Department of Education, 1999).

It is critical for traditional teachers to have ongoing learning or professional development to meet the goals of the building/district and advance student learning. Professional development is essential for educational reform and school improvement that is systemic and focused on enhancing learning outcomes for all children in public education (Bredeson & Scribner, 2000, p. 2). Improving student achievement can only be possible when schools systems promote teacher learning and build the capacity of its teachers. (Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009).

Numerous studies have been conducted that show the link between school leadership and student achievement, with some studies reporting a direct relationship and some studies reporting an indirect relationship between leadership and student achievement (Amsterdam,2001; Biester, Kruse, Beyer, & Heller, 1983; Hallinger, & Heck, 1998; Leithwood, Louis,Anderson, & Wahlstrom, 2004; Leitner, 1994; Marzano, Waters, & McNulty, 2005; Witziers,Bosker, & Kruger, 2003). Hallinger and Heck

(1998) found that mediated-effect (indirect) studies indicated that leadership may have an impact on the school's outcomes and effectiveness. Therefore, principals have a measurable, but indirect effect, on school effectiveness and student achievement (Hallinger & Heck, 1998).

Creating an effective professional development program for K-12 educators is a complex process. Nationwide, statewide, district wide, and school wide programs have been created to try to address the needs of teachers and students. Some programs have shown to be more effective than others. As nationwide groups get together to help improve our schools, they cannot ignore the role the teacher and principal play in the improvement process. If the biggest factor in determining student success is teacher effectiveness, then teacher professional development must be on the top of the list of programs to improve (U.S. Department of Education, 2008). Though national and state-wide communities are creating programs to address this issue, these leaders should be informed about effective methods for teaching adults. Unfortunately, a review of the literature does not show evidence of an accepted solution to enable teacher learning or promote teacher professional development; there are many different studies that indicate radically different ways to solve this problem (Cormas, 2006). This makes it difficult for leaders to make these informed decisions.

Institutions that spend time researching this issue have produced different results (Guskey, 2003a). Each state has its own way of evaluating teacher effectiveness and that it is part of the problem (Goe, 2007). Some research argues that it should be teacher-led and sustained (Timperely, Wilson, Barrar, & Fung, 2007). Other researchers argue that it should be school-wide and sustained by both teachers and administrators (Educational

Research Service, 1998). Some research indicates that a new system of recruiting and evaluating teachers needs to be implemented (Xu, Hannaway, & Taylor, 2009). This may be why there is so much debate about what constitutes good quality teacher professional development. Should it be a part of an organization as a whole or should it be individualized and left up to the teacher to develop his/her own way to improve himself/herself? As new research is published, parents, teachers, and community members can answer these questions by working collaboratively to help make informed decisions about quality professional development.

Chapter 3

Methodology

The goal of this dissertation was to explain key characteristics proposed by the empirical literature about the characteristics of effective professional development for K-12 teachers and to explore the relationship between professional development and student achievement. It was also the goal to use these descriptors to study a school-wide framework (model) called the Rigor/Relevance Framework (R/R Framework). The four research questions that guided this study were: (a) what key characteristics proposed by the empirical literature does the Rigor/Relevance Framework include? (b) how pervasively are schools using the framework? (c) what is the most pervasive way principals report that their schools use the framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher? (d) what is the relationship between the level of adoption of the R/R framework in schools and the level of achievement on student state test scores in math and reading/language arts?

This study stemmed from the researcher's attendance at an annual conference, the Model Schools Conference, sponsored by the International Center for Leadership in Education in Orlando, Florida. She attended the conference in 2008 with members of her school district. There were also employees of school districts from most of the 50 states. One of the focuses of the conference was to introduce attendees to the Rigor/Relevance Framework. After learning about the framework, using it in her classroom, and seeing it used as a basis for instruction in her school, she wondered if there was any relationship between the use of the framework and scores on statewide tests. She also recognized that

several states used the framework and she wondered if there was a relationship between their use of the framework and their scores on statewide tests. She then contacted the ICLE (International Center for Leadership in Education) and discovered that research on this topic had not been conducted. With cooperation from the ICLE, she began her investigation and formulated the following research questions:

Research Questions

1. What key characteristics proposed by the empirical literature does the Rigor/Relevance Framework include?

2. How pervasively are schools using the framework?

3. What is the most pervasive way principals report that their schools use the framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher?

4. What is the a relationship between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on student state test scores in math and reading/language arts?

Sample

The sample consisted of 488 schools using the R/R Framework across the United States. However, only 468 could be used in this sample because 20 schools did not administer statewide tests in math and language arts (most were schools with a K-2 population) and the researcher could not establish a relationship between their use of the framework and their scores on statewide tests. Of those 468 schools, 120 of them were surveyed for the pilot study and the other 368 schools were used in the actual study. The number of schools used in the sample was derived from those schools participating in the

Successful Practices Network (SPN). This network is a link of schools across the nation participating in the Model Schools' Program although not all schools using the framework participate in this network. These schools were in urban and rural areas, varied in size, were both public and private, and varied socioeconomically (International Center for Leadership in Education, 2008).

Research Design

In order to fully understand the degree to which schools use the Rigor/Relevance Framework, principals were asked to complete a Likert Scale questionnaire (Appendix B). The response options consisted of pervasively=5, considerably=4, partially=3, initiated=2, or absent=1. These variables were ordinal. Ordinal variables do not establish the numeric difference between data points. They indicate only that one data point is ranked higher or lower than another (Runyon, 1991). Ordinal variables are quite useful for subjective assessment of 'quality; importance or relevance'. Ordinal scale data are very frequently used in social and behavioral research (Types of Variables, 2012). Additionally, this study sought out to determine if there is a relationship between the use of the R/R Framework and the achievement of students on state test scores in math and reading/language arts. There were five sections of the questionnaire (Envision, Discover, Create, Develop, and Support) for the principals to reflect upon. The responses to these sections were analyzed to see which section had the strongest relationship to student achievement.

Instrumentation

The research instrument, a questionnaire developed by the ICLE (Appendix B) was used to gather data about how the framework has been used pervasively in all aspects of the school. It was divided into five sections which showcase the degree to which students, staff, and administration used the framework. The questions assessed how the framework had impacted the culture of the school. For example, one of the sections of the questionnaire, entitled Create, asked the participants to assess how rigorous and relevant lessons were developed. All of the answers to the questions helped the researcher determine whether or not the framework was really being practiced. For example, schools may have had a poster of the framework visible in their schools and they may have attended the training sessions, but they may not have had it visible in the culture of the school; this was the reason for the length of the questionnaire. Even though the ICLE created the questionnaire, it had never been used on a nationwide scale to determine the extent to which schools were using the framework (until this study); the questionnaire was used as a way for schools themselves to assess their use of the framework. It is noteworthy that the ICLE never requested this self-assessment data.

Validity

Assessing validity and reliability of the questionnaire instrument is the first step in survey research. "A systematic approach is required for quality research," (Malmgreen, C., 1995, p. 1). Though the preceding questionnaire had been evaluated by educators who worked with the ICLE, it had not undergone validity or reliability testing. This study established content validity through expert reviews. The instrument was shared with six teacher consultants from the ICLE that work with schools all over the country.

The consultants were former principals in schools that used the Rigor/Relevance Framework pervasively; they were hired by the Center because they were considered to be experts on the use of the framework. Their job was to support principals and teachers to maximize the use of the framework.

They were given a modified version of the survey (Appendix A) that not only included the same questions as the original survey (Appendix B), but also contained a numerical three point scale for each of the statements to determine how relevant each statement was to each section (Envision Discover, Create, Develop, and Support). Relevance was defined as the importance of the question to the definition of the section heading. The consultants reviewed each question and assigned it a rating of one if the item was *highly relevant* to the theme of the section; two if the item was *somewhat relevant* the theme of the section or three if the item was *not relevant* to the theme of the section.

Results

Tables 4-8 show the results of the calculated validity for each section. The content validity formula $CVR = (n_e - N/2) / (N/2)$ where CVR = content validity ratio, n_e = number of Subject Matter Expert (SME) panelists indicating "essential" or "relevant," and N = total number of SME panelists was used for the calculations. This formula yields values which range from +1 to -1. Positive values indicate that at least half the SMEs rated the item as essential. The mean CVR across items was used as an indicator of overall test content validity. The tables use the following abbreviations: HR=Highly Relevant, SR=Somewhat Relevant, NR=Not Relevant, CVR=Content Validity Ratio. If the content validity index was not greater than 0.6, five more teacher consultants from the

ICLE were sent the questionnaire. However, this was not necessary because the content validity ranged from +1 to +.66 for all questions; therefore, the instrument as a whole proved to be valid.

Table 4

Item Statistics for Content Validity Section ENVISION

	HR	SR	NR	CVR
E.01	6	0	0	+1
E.02	5	1	0	+1
E.03	6	0	0	+1
E.04	5	1	0	+1
E.05	5	1	0	+1
E.06	5	1	0	+1
E.07	6	0	0	+1
E.08	5	1	0	+1

Table 5

Item Statistics for Content Validity Section DISCOVERY

	HR	SR	NR	CVR
DI.01	4	2	0	+1
DI.02	5	1	0	+1
DI.03	5	1	0	+1
DI.04	2	4	0	+1
DI.05	5	1	0	+1
DI.06	6	0	0	+1
DI.07	5	0	1	+.66
DI.08	5	0	1	+.66

Table 6

Item Statistics for Content Validity Section CREATE

	HR	SR	NR	CVR
C.01	5	1	0	+1
C.02	5	0	1	+.66
C.03	5	1	0	+1
C.04	5	1	0	+1
C.05	5	1	0	+1

Table 7

Item Statistics for Content Validity Section DEVELOP

	HR	SR	NR	CVR
DE.01	5	1	0	+1
DE.02	6	0	0	+1
DE.03	4	2	0	+1
DE.04	5	1	0	+1
DE.05	5	1	0	+1
DE.06	5	1	0	+1
DE.07	5	1	0	+1
DE.08	5	1	0	+1
DE.09	6	0	0	+1

Table 8

Item Statistics for Content Validity Section SUPPORT

HR			SR	NR		CVR
S.01	4	1	1			+.66
S.02	5	1		0	+1	
S.03	4	2		0		+1
S.04	4	2		0		+1
S.05	2	4		0	+1	
S.06	2	4		0	+1	
S.07	4	2		0	+1	
S.08	5	1		0	+1	
S.09	4	2		0	+1	

Reliability

In order to ensure reliability of this instrument, a pilot test of the instrument was sent to 120 school principals using the Framework (Appendix B). A cover letter created by the researcher and representatives from the International Center for Leadership in Education was the first page in the packet (Appendix C). Principals were asked to fill out the questionnaire (Appendix B) and respond to how they used the R/R Framework during the 2010-2011 school year. If the completed questionnaires were not returned in two weeks, a second letter was sent to the principals of the schools. (Appendix D). The principals in all of these schools were asked to rate their use of the framework during the 2010-2011 school year in five different categories: Envision, Discover, Create, Develop,

and Support. They rated each of these statements categories based on whether the model had been used (pervasively=5, considerably=4, partially=3, initiated=2, or absent=1).

Results

Internal consistency is "of paramount importance in a tool where the measurement of an attribute such as attitude is desired" (Malmgreen, C., 1995, p. 2). A Cronbach's alpha, score of .7 or better was used to consider the instrument reliable (Cortina, 1993). The results are shown in Table 9:

Table 9

Summary Table of Cronbach's Alpha Scores for Each Section of the Survey

SECTION	CRONBACH'S ALPHA
ENVISION	0.956
DISCOVER	0.798
CREATE	0.854
DEVELOP	0.925
SUPPORT	0.829

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. A "high" value of alpha is often used as evidence that the items measure an underlying (or latent) construct (Malmgreen, 1995). Twenty-one schools responded to the pilot study. A reliability score of .7 or better was reached so the pilot answers were used along with the answers received from the other schools. Only a

summary of the results can be found in the preceding table, Table 9; further detailed results can be found in Appendix H.

Data Analysis

The study employed quantitative analysis methods. In this case, a multivariate regression analysis was used to determine if there was a relationship between the use of the Rigor/Relevance Framework and student achievement on state test scores in math and reading/language arts. The independent variables with the strongest impact on the test scores were also identified. This method was chosen because there were five independent variables (sections) within the instrument and two dependent variables, the state test scores in math and reading/language arts. Multivariate regression analyzes change where there is more than one independent and one dependent variable (Grimm& Yarnold, 1995). Math and reading/language arts were chosen because these are consistently tested areas in each state.

Procedures for Collecting Data

Research Questions	Data Collection Methods	Data Analysis Methods
1. What key characteristics proposed by the empirical literature does the Rigor/Relevance Framework include?	Evidence was gathered by reading empirical literature and summarizing the findings.	This content was analyzed using characteristics found in the Literature Review and comparing them to those found in The Rigor/Relevance Framework (Speck & Knipe, 2005); (Laird, 2011); (Morrison & Rudt,2008/2009); (Pritchard & Ancess, 1999); (Abdullah, 2001); (Educational Research Service, 1998); (NSDC Standards for Professional Development, 2001) (Timperely,Wilson,Barrar, & Fung, 2007); (Hawley & Valli, 1999); (Richardson, 2000); (American Federation of Teachers, 2002); (U.S. Department of Education, 1997).
2. How pervasively are schools using the framework?	A survey and cover letter was sent by mail. Each school was given the option of sending the surveys back to the researcher by conventional mail or by answering the survey questions online through Survey Monkey.	Using the ordinal numbers from the survey assigned to each category (pervasively=5, considerably=4, partially=3, initiated=2, or absent=1) the researcher discovered how pervasively schools used the framework (Runyon, 1991).

3. What is the most pervasive way principals report that their schools use the Framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher?	A survey and cover letter was sent by mail. Each school was given the option of sending the surveys back to the researcher by conventional mail or by answering the survey questions online through Survey Monkey.	Using the answers from the surveys assigned to each category (pervasively=5, considerably=4, partially=3, initiated=2, or absent=1), the researcher discovered which area of the framework was used most pervasively. An average was necessary to calculate because each section did not have the same number of questions (Runyon, 1991).
4. What is the a relationship between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on statewide test scores in math and reading/language arts?	Statewide test scores in math and reading/language arts were found on each state's website and the scores were compared with principals' responses to the survey (Appendix B) to see if there was a relationship between them.	Multivariate regression analysis was used to determine if there was a relationship between the use of the Rigor/Relevance Framework and student achievement on state test scores in math and reading/language arts. The independent variables with the strongest impact on the test scores were also identified. This method was chosen because there were five independent variables (sections) within the instrument and two dependent variables, the state test scores in math and reading/language arts. Multivariate regression analyzes change where there is more than one independent and one dependent variable (Grimm& Yarnold, 1995).

Chapter 4

Findings

This chapter describes the findings from the study and answers the four research questions: (1) Does the Rigor/Relevance Framework support the key characteristics of the literature? (2) How pervasively are schools using the framework? (3) What is the most pervasive way principals report that their schools use the framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher? (4) What is the a relationship between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on statewide test scores in math and reading/language arts?

Findings for Research Question One

Table 10

Key Characteristics of PD Supported by the Rigor/Relevance Framework

	All	Some	None
Speck and Knipe (2005) Goal: Focus on student learning.	X		
Educational Research Service (1998) Goal: Focus on school-wide efforts that are sustained by both teachers and administrators .	X		
Hawley and Valli (1999) Goal: Focus on the interaction between students and teachers .	X		
Virginia Richardson (2000) Goal: Focus on school-wide efforts to develop school culture of improvement which encourages collegiality.		X	
American Federation of Teachers (2002) Goal: Focus on empowering individual educators and communities of educators to make complex decisions and to identify and solve complex problems.		X	

NSDC Standards for Professional Development (2001) Goal: Focus on staff development that improves the learning of all students.		X	
U.S. Department of Education (1997) Goal: Focus on working collaboratively.		X	
Laird, E. (2011); Morrison, D. & Rudt, M. (2008/2009) Goal: Focus on data-driven instruction.			X
Pritchard & Ancess (1999) Goal: Focus on partnering with a college.			X
Abdullah (2001) Goal: Focus on teacher-directed instruction.			X
Timperely, Wilson, Barrar, & Fung (2007) Goal: Focus on teachers leading and sustaining PD.			X

Research question one asked if key characteristics proposed by the empirical literature are supported by the Rigor/Relevance Framework. In isolation, it employed all, some, and none of the characteristics found in effective professional development programs highlighted in the literature review. The Rigor/Relevance Framework followed *all* of Speck's and Knipe's (2005) recommended approach where the goal of professional development is student learning. It also employs *all* of Hawley's and Valli's (1999) design principles for effective professional development. These principals primarily involve the interaction between students and teachers and are school based; they guide the analysis of the differences between student performance and goals and standards for learning. Once these differences are analyzed, they become the starting point for which learning activities and professional development activities are developed. The activities created are continuously modified and changed to meet the learning needs of the students (Hawley & Valli, 1999). It is also school-wide and sustained by both teachers and administrators (Educational Research Service, 1998).

The framework employs *some* of the Effective Research-Based Characteristics by Thomas Guskey (used with permission by Peter Cormas); it contains 12 of the 21of characteristics (Table 2). These characteristics include: enhanced teacher's content and pedagogic knowledge (their model is based upon brain research), provide sufficient time and resources (teacher consultants have regular visits to the school), promote collegiality and collaboration (teachers are encouraged to observe other teachers teaching rigorous and relevant lessons), model high-quality instruction (the goal of the program is the development of lessons that encourage high rigor and relevance), is school or site based (each school can adapt the program to their needs), build leadership capacity (a group of teacher leaders meets regularly with teacher consultants from the International Center for Leadership in Education (the group that created the framework), focus on individual and organizational improvement (the framework addresses best practices in teaching), include follow up and support (teacher consultants visit the school quarterly), is ongoing and job embedded (there is a continuous focus on improving teaching and learning), based on best available research evidence (the framework is created and it is driven by an image of effective teaching (there is a handbook of effective teaching strategies the Center compiles for teacher to use).

The Rigor/Relevance Framework also employs *some* of Virginia Richardson's (2000) research based characteristics. Her research based characteristics the framework uses include: school wide efforts to develop school culture of improvement which is content specific (more or less), processes that should encourage collegiality and dialogue with groups, supportive administration, adequate funds for materials, outside speakers, substitute teachers, etc., buy-in from participants, and an outside facilitation/staff

developer. The framework does not include long-term follow-up from the ICLE, learning communities' agreement on goals/vision, and acknowledgment of participants' existing beliefs and practices.

The Rigor/Relevance Framework employs *some* of American Federation of Teachers (2002) recommendations specifically: professional development should deepen and broaden knowledge of content, professional development should provide a strong foundation in the pedagogy of particular disciplines, professional development should provide knowledge about the teaching and learning processes, effective professional development should be rooted in and reflect the best available research., professional development should provide sufficient time, support, and resources to enable teachers to master new content and pedagogy and to integrate this knowledge and skill into their practice.

The Rigor/Relevance Framework employs *some* NSDC Standards for Professional Development (2001) including*:* uses learning strategies appropriate to the intended goal, provides educators with the knowledge and skills to collaborate, prepares educators to understand and appreciate all students, creates safe, orderly and supportive learning environments, holds high expectations for their students' academic achievement, deepens educators' content knowledge, provides educators with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately.

The Rigor/Relevance Framework employs *some of* the standards from *Achieving the Goals* a publication issued by U.S. Department of Education (1997) including*:* collegial, and organizational improvement, respect and nurture the intellectual and leadership

capacity of teachers, principals and be planned collaboratively by those who will participate in and facilitate the development, require substantial time and other recourses, be driven by coherent long-term plans.

The Rigor/Relevance Framework *did not* employ professional development that was data-driven (Laird, E., 2011; Morrison, D. & Rudt, M., 2008/2009), that partnered with a college (professional development school) (Pritchard & Ancess, 1999), that was self-directed (Abdullah, 2001), and that was teacher-led (Timperely, Wilson, Barrar, & Fung, 2007).

Findings for Research Question Two

Research question two asked how pervasively schools report using the Framework. Principals' reported using the framework considerably**.** A total of 88 principals responded to the survey. Using the ordinal numbers assigned to each category (pervasively=5, considerably=4, partially=3, initiated=2, or absent=1) the researcher discovered how pervasively schools used the framework. Ordinal scales consist of items that have an order, but in and of themselves do not represent quantitative values. The researcher tabulated the sum and percentage of responses in each category to questions on survey. The results can be found in Table 11:

Table 11

Sum and Percentage of Responses in Each Category to Questions on Survey

	5	4	3	2	1
ENVISION	102	101	54	28	11
DISCOVER	86	172	191	109	138
DEVELOP	129	253	223	140	37
SUPPORT	131	190	208	170	129
CREATE	70	154	138	62	11
Sum	518	870	814	509	326
Percentage	17%	29%	27%	16%	11%

The table shows that the principals' reported using the framework "considerably" because "considerably" was given the assigned number of "4" for the study and it was the category used the most by them (870 times). In this case, 29% of all questions that the principals answered on the survey were answered "considerably."

Findings for Research Question Three

Research question three asked what was the most pervasive way principals report that their schools use the framework (Envision, Discover, Create, Develop, and Support) as indicated by their answers to a survey sent to them by the researcher. The area of the framework that was used most pervasively was the Envision area. The data in Table 12 indicates that the section of the survey that the principals' rated the highest was the Envision section, although there were not marked differences between any of the sections in the questionnaire (less than .8 of a point separated the all of the sections). An average was necessary to calculate because each section did not have the same number of questions. For example, the principals were only asked to respond to five questions in the section CREATE, while they were asked to answer nine questions in the section SUPPORT.

Table 12

Average of Reponses to Questions on Survey

Name of Section	**Average of Responses**
ENVISION	3.64
DISCOVER	2.9
DEVELOP	3.35
SUPPORT	3.1
CREATE	3.44

In the Envision section, principals were asked to rate their use of the framework in terms of the vision it helped to provide. They were asked how often members of the school: shared information on WHY rigor, relevance, and relationships are important, collected ongoing evidence of the need for rigor, relevance, and relationships, engaged staff in discussions to understand, embrace, and reflect on the need for rigor, relevance, and relationships, establish common definitions of rigor and relevance, establish common definitions of relationships to support student learning, established common definitions of relationships to support staff collaboration, shared examples of rigor and relevance in the school, and connected rigor and relevance with instruction and assessment practices.

Findings for Research Question Four

Research question four asked what the relationship was between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on student state test scores in math and reading/language arts**.** The data does not show a relationship between the level of adoption of the framework and student achievement**.** There were several analyses performed to reach this conclusion; a test for significance for the five independent variables, a test to see if five independent variables existed (the five

sections of the survey), and a test to determine if one variable had a relationship to state test scores in math and language arts.

Table 13

Test of Significance for the Five Independent Variables: Coefficients for Language Arts

Model	Standardized Coefficients Beta	Sig.
1 (Constant)		0
SUME	-0.044	0.825
SUMD	0.064	0.754
SUMC	-0.033	0.877
SUMDE	0.065	0.775
SUMS	0.137	0.469

Table 14

Test of Significance for the Five Independent Variables: Coefficients for Math

Model	Standardized Coefficients Beta	Sig.
1 (Constant)		0
SUME	0.128	0.516
SUMD	-0.15	0.453
SUMC	-0.293	0.164
SUMDE	0.181	0.414
SUMS	0.308	0.099

The first analysis showed that none of the five independent variables (the five sections within the questionnaire- SUME, SUMD, SUMC, SUMDE, and SUMS) showed individual significance when correlated with the dependent variables. The two dependent variables were the percent proficient in math and the percent proficient in language arts. The percent proficiency in math and language arts was the percent of students in all 88

schools that passed the math and language arts portion of their state tests. Regression analysis was used to see if there was a relationship between these two dependent variables and the five independent variables. A regression is used to explore, explain, and model the relationship between two or more variables. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. Since the alpha value is usually set at .05, any value less than this will result in significant effects, while any alpha value greater than .05 will result in no significant effects.

In the following tables, tables 15 and 16, each of the five independent variables (SUME, SUMD, SUMC, SUMDE, and SUMS) were compared to test scores in math and language arts. The results in the Sig. (significance) column show that all values are higher than .05. Therefore none of these independent variables were significant to scores in language arts and math.

Table 15

ANOVA Table for Language Arts

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	488.175	5	97.635	0.582	0.713
Residual	13582.049	81	167.68		
Total	14070.224	86			

Table 16

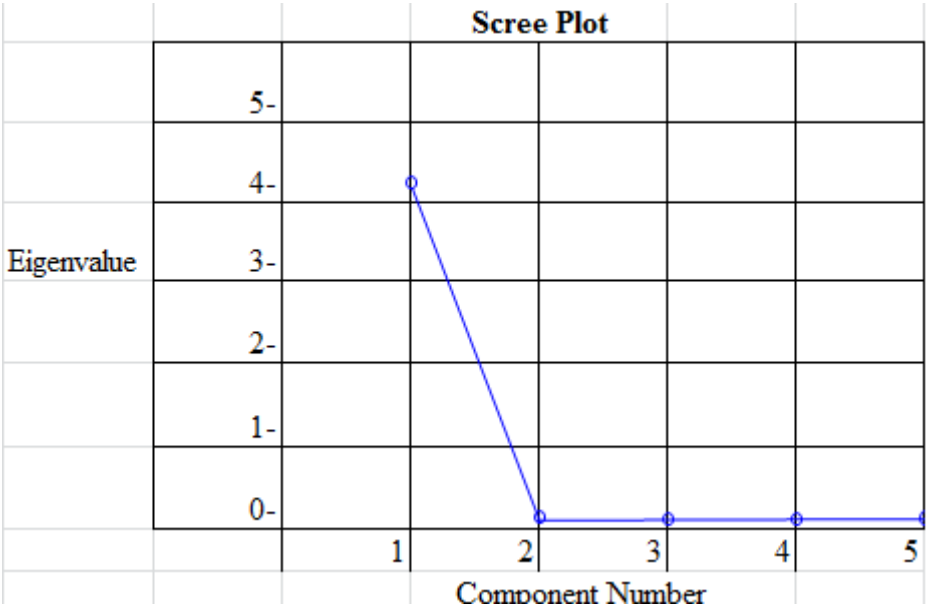
ANOVA Table for Math

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	2274.014	5	454.803	1.415	0.228
Residual	26033.357	81	321.399		
Total	28307.371	86			

A further explanation in the ANOVA tables show that the P value (indicated in the Sig. column) for both language arts and math is higher than .05. Values higher than .05 do not show significance between two variables. For language arts the P value is .713; this means that the interaction between the five independent variables (SUME, SUMD, SUMC, SUMDE, and SUMS) did not have a significant relationship with the percentage of students who passed the language arts portion of their statewide tests. For math, the P value is .223; this means that the interaction between the five independent variables (SUME, SUMD, SUMC, SUMDE, and SUMS) did not have a significant relationship with the percentage of students who passed the math portion of their statewide tests.

Table 17

Exploratory Factor Analysis to Determine Whether Five Variables Exist



The first analysis showed that none of the five independent variables (the five sections within the questionnaire- SUME, SUMD, SUMC, SUMDE, and SUMS) showed individual significance when correlated with the dependent variables. This caused the researcher to wonder if five independent variables really existed. In order to test this, an exploratory factor analysis was used (Table 17). The primary objectives of an exploratory factor analysis are to determine the number of common factors influencing a set of measures and to test the strength of the relationship between each factor and each observed measure. The scree plot is a graphical approach to showing the results of a factor analysis and an approach to selecting eigenvalues. The scree plot places the eigenvalues on the y-axis and the factors on the x-axis. The user of this procedure finds an "elbow" in the scree plot, which is a point after which all the eigenvalues are aligned in a linear fashion. The eigenvalues before this elbow are those that the researcher should

use in the factor analysis. In the scree plot (Table 18) above only one of the five independent variables (the five sections within the questionnaire- SUME, SUMD, SUMC, SUMDE, and SUMS) is significant. The value in the first column is higher than the "elbow." From the second factor on, the line is almost flat, meaning that each successive factor accounts for smaller and smaller amounts of the total variance. Therefore, it was determined that only one independent variable showed significance not the original five factors hypothesized.

Table 18

ANOVA Table for Language Arts

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	410.923	1	410.923	2.557	0.114
Residual	13659.302	85	160.698		
Total	14070.224	86			

Table 19

ANOVA Table for Math

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	757.669	1	757.669	2.338	0.13
Residual	27549.702	85	324.114		
Total	28307.371	86			

Once it was determined that only one independent variable existed, regression analysis was used to determine whether the one independent variable resulted in a significant relationship with the two dependent variables: (1) percent of students in all 88

schools that passed the language arts portion of their state test, and (2) percent of students in all 88 schools that passed the math portion of their state test. In order to show this possible relationship, regression was used to compare the one independent variable to the four dependent variables. A regression is used to explore, explain, and model the relationship between two or more variables. Regression analysis is also used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. Since this value is usually set at .05, any value less than this will result in significant effects, while any value greater than .05 will result in no significant effects. In the preceding tables, tables 19 and 20, the independent variable was compared to the two dependent variables: (1) percent of students in all 88 schools that passed the language arts portion of their state test, and (2) percent of students in all 88 schools that passed the math portion of their state test. The results in the Sig. (significance) column show that all values are higher than .05. For language arts, the P value is .114; this means that the interaction between the one independent variable did not have a significant relationship with the percentage of students who passed the language arts portion of their statewide tests. For math, the P value is .13; this means that the interaction between the one independent variable did not have a significant relationship with the percentage of students who passed the math portion of their statewide tests. As illustrated in these tables, a significant relationship does not exist between the independent variable (the entire RR Framework questionnaire) and statewide test scores in language arts or math.

After running the analyses, it was determined that perhaps only two dependent variables, (1) percent of students in all 88 schools that *passed the language arts portion*

of their state test (2) percent of students in all 88 schools *that passed the math portion* of their state test were not enough to prove that a relationship existed between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on student state test scores in math and reading/language arts. Based on this conclusion, the state test scores were further broken into eight variables; four in language arts and four in math. The new variables were (1) percent of students in all 88 schools that passed with excellence the language arts portion of their state test, (2) percent of students in all 88 schools that passed the language arts portion of their state test (3) percent of students in all 88 schools that partially passed the language arts portion of their state test, (4) percent of students in all 88 schools that did not pass the language arts portion of their state test, (5) percent of students in all 88 schools that passed with excellence the math portion of their state test, (6) percent of students in all 88 schools that passed the math portion of their state test (7) percent of students in all 88 schools that partially passed the math portion of their state test, (8) percent of students in all 88 schools that did not pass the math portion of their state test .

> Canonical correlation was used to test these new potential relationships. Canonical correlation is a way of measuring the linear relationship between two multidimensional variables. It finds two bases, one for each variable, that are optimal with respect to correlations and, at the same time, it finds the corresponding correlations. In other words, it finds the two bases in which the correlation matrix between the variables is diagonal and the correlations on the diagonal are maximized (the dimensionality of these new bases is equal to or less than the smallest dimensionality of the two variables) (Borga, 2001, p. 2).

Table 20

Wilks' Lambda Significance Test

Wilks' Lambda, using F-approximation (Rao's F):

	stat	approx	df1	df2	p.value
1 to 5:	0.3944799	1.8052560	40	303.5585	0.003163068
2 to 5:	0.6427073	1.1823964	28	253.8108	0.247665032
3 to 5:	0.8121174	0.8538923	18	201.3036	0.634907411
4 to 5:	0.9343700	0.4971454	10	144.0000	0.889701809
5 to 5:	0.9732955	0.5007281	4	73.0000	0.735252810

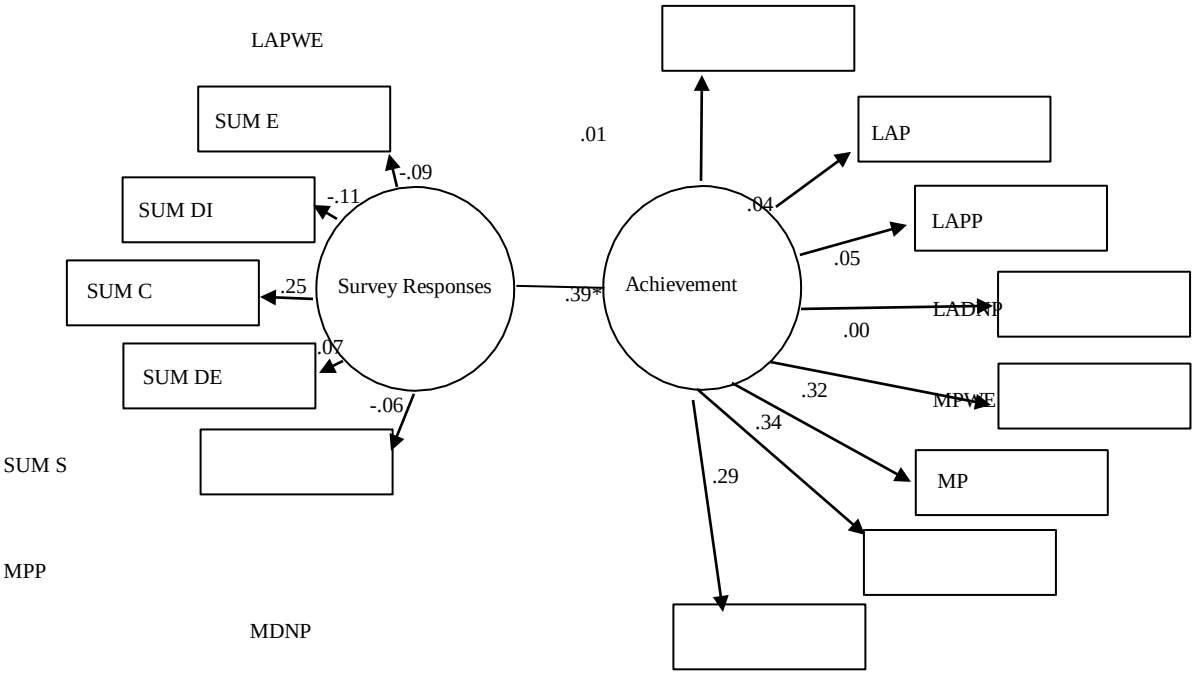
The first step in canonical correlation is to run a Wilks' Lambda Significance Test. Wilks' Lambda is a direct measure of the proportion of variance in the combination of dependent variables that is unaccounted for by the independent variable (the grouping variable or factor). If a large proportion of the variance is accounted for by the independent variable (the survey) then it suggests that there is an effect from the grouping variable and that the groups (the test scores in math and language arts) have different mean values. For the Wilks' Lambda test, it is necessary to look at the p value which is an indicator of significance. Values less than .05 are considered to be significant. When Wilks' Lambda was calculated, one of the p values (0.003163068) showed significance.

After the Wilks' Lambda test is calculated then the canonical correlation can be calculated. The results of the canonical correlation showed that a relationship exists between the level of adoption of the R/R Framework in schools and the level of achievement on student state test scores in math and reading/language arts. The largest canonical correlation corresponds to the strongest relation between independent and dependent variables; subsequent canonical correlations correspond to relations of

decreasing strength. By looking at the Wilk's Lambda chart above, the number in line 1 to 5 is 0.3944799; it is in the stat column which is in the same row as the significant p value of 0.003163068. The p value shows the relationship between the independent and dependent variables.

Table 21

Visual Representation of a Canonical Correlation



*Sig to .05

It is important in canonical correlation to look at the five independent variables (SUME, SUMD, SUMC, SUMDE, and SUMS) as one factor; this is represented by the "Survey Responses" circle. The eight dependent variables (percent of students in all 88 schools that passed with excellence the language arts portion of their state test or LAPWE, percent of students in all 88 schools that passed the language arts portion of their state test or LAP, percent of students in all 88 schools that partially passed the language arts portion of their state test or LAPP, percent of students in all 88 schools that

did not pass the language arts portion of their state test or LADNP, percent of students in all 88 schools that passed with excellence the math portion of their state test or MPWE, percent of students in all 88 schools that passed the math portion of their state test or MP, percent of students in all 88 schools that partially passed the math portion of their state test or MPP, and percent of students in all 88 schools that did not pass the math portion of their state test or MPDNP) are also represented as one variable in the chart; they are represented by the "Achievement." Circle. The path that connects them is above .39 (the number in line 1 to 5 on Table 20); it is a significant path since its p value (0.003163068) is below .05. The p value shows significance. The number 0.394 represents the amount of variance in the dependent variables accounted for by the independent variables. The quantity 1 – Wilk's Lambda (1 –0.394 = .606) represents the amount of variance in the dependent variables accounted for by the independent variables. (Sound familiar?). So, we have 60% of the variance accounted.

In CCA we're looking at many correlations and there may be redundancy so we need to calculate another statistic; the Stewart-Love Index of Redundancy. This statistic takes out the redundant variance and leaves a value similar to multiple R^2 in multivariate regression. r^2 = ∑((Y-ybar)^2-∑(Y-yhat)^2)/(∑(Y-ybar)^2. After running a Stewart-Love Index of Redundancy test to prove that the relationship does not exist out of chance (running canonical correlation with several variables can show multiple relationships that are not significant), it shows that a relationship exists between the framework and the test scores. In this case, the Stewart-Love index is 0.015; the model represents about 1.5% of the variance; it only accounts for 1.5% out of 100% of the variance.

Since the sample size was relatively small (only 88 schools were used in the study) it is possible that the study did not have sufficient power to detect a difference.

Chapter 5

Discussion and Conclusions

The purpose of this study was to discover empirically-based characteristics of effective professional development for schools. This research helped to determine whether characteristics found in these studies could also be found in the Rigor/Relevance Framework, the model used in this study; it also explored: how pervasively schools were using the framework, which of the areas of the framework (Envision Discover, Create, Develop, and Support) did principals report using most pervasively as indicated by their answers to a survey sent by the researcher, and what was the relationship between the level of adoption of the Rigor/Relevance Framework in schools and the level of achievement on student state test scores in math and reading/language arts. This chapter addresses the study's effect upon critical knowledge and the development of new knowledge; it also suggests recommendations for practitioners (administrators, teachers, parents, and students) and provides recommendations for future research and conclusions.

Critical Knowledge

Research question one explored which characteristics found in the empirical studies in the Literature Review could also be found in the Rigor/Relevance Framework. Empirical studies often begin with a particular question which is researched and then answered; many of the characteristics found in models are the answers to questions asked by a researcher to help solve a particular problem; they are the solution. There were several characteristics of different models that were found in the framework, but not all of the characteristics were found in this particular model because the questions the researchers were asking to create this model were unique.

The Rigor/Relevance Framework was formed to help educators create assignments that have real-world unpredictable results so that students can practice solving problems they will encounter outside the school walls; it was not formed to help students succeed on statewide tests. However, this researcher wondered if real-world knowledge could help students remember facts and problems presented to them on these tests. The researcher did not discover a significant relationship between the pervasive use of the framework and correct answers on statewide tests in math and language arts.

Interestingly, there is discussion among groups of educators and researchers which show that neither the instruction the students receive nor the way they receive it is the problem. Therefore, the problem does not originate from the application of various instructional models. The problem seems to originate from the state tests.

The American Association of School Administrators has criticized the reliance upon standardized testing in 1989 (*Testing: Where We Stand*), 1998 (*Confronting Barriers to Effective Assessment*), 2000 (*Be Mindful What You Wish For*), and in 2007 (*Implementing a Growth Model in a Schools System*). Each article expresses the pitfalls of putting too much weight upon standardized testing. Some of these testing pitfalls include: using them as tools to prove rather than improve student learning, relying too much on them to show student achievement, providing little to no education to teachers on how to make students successful test takers, and relying on these tests to measure traditional skills which are not particularly effective in measuring higher order thinking skills which are crucial for the 21st Century.

Many argue that the tests are flawed. A. Hartocollis (2012, April 20) reported in *The New York Times* that there was a confusing story on the English portion of the eighth

grade standardized test in New York; this resulted in the state dropping the questions related to the story from the student's official scores. The author argued that this same confusing story has been used on standardized tests in four other states since 2007. Lipman (1987) and others assert that standardized achievement tests that use multiple choice format are not effective in measuring collaborative efforts by students, creative thinking, and complex problem solving skills.

Some argue that the scores on the tests are deceiving. Garrett (2012) argues that standardized tests have always been biased toward the higher classes of society because they have traditionally been the ones that have created the tests. She also argues that the current system rewards high-performing schools and sanctions low-performing schools. This bias creates a class divide and hurts the students that need the most help. Archibald and Newman (1988) point out that there is no correlation between students who perform well on standardized tests and their first year college performance or their performance on tasks that require them to integrate new knowledge, perform tasks that require disciplined inquiry, or with their ability to deal with problems that are not standard.

Standardized testing also does not appear to be good for teaching and learning. Sadker and Zittleman (2006) argue that there are seven reasons why standardized tests are not working: at-risk students are placed at greater risk, graduation rates are lower, higher test scores do not mean more learning, standardized testing shrinks the curriculum, tests are not impervious to failure, teachers face increased stress, and what is worth knowing is not always tested. Au (2011) argues that high-stakes standardized tests make teachers in the United States teach pre-packed corporate curricula aimed at teaching to the test which does not appear to yield higher test scores and some of them undermine the

legitimacy of the test if actual test questions are given to students (Mehrens & Kaminski, 1989, p. 21).

Research questions two and three asked how pervasively schools reported using the framework and which section of the framework was used most pervasively. They (the principals' who responded to the survey) reported using the framework *considerably* (pervasively=5, considerably=4, partially=3, initiated=2, or absent=1); they also reported carrying out the vision (Envision) of the school most prominently in the sections of the framework (Envision Discover, Create, Develop, and Support) as a way of providing overall guidance for the school.

Why did principals report using the Framework *considerably*? If they were using the framework *considerably* it is likely they had more of a stake in the program then if they were using it less than that; they would also likely be interested in knowing if their considerable use had a relationship to test scores in language arts and math. Research supports this theory. Even though there is not an abundance of research that explains why people respond to surveys (because most research is focused on why people do not respond to surveys), it does appear that people choose to act when the benefits of doing so either to themselves or to others outweigh the costs (Singer, 2010). There were no costs, except time, incurred to the participants in the study so they may have viewed answering the survey to be a beneficial use of their time.

Why did the principals report carrying out the vision (Envision) of the school most prominently in the sections of the framework (Envision Discover, Create, Develop, and Support)? A study of principals showed they ranked "Vision" as the most important of the ten qualities that were essential in strong school leaders (Hopkins, 2008). An

explanation for this could be that principals are often responsible for creating that vision and for outlining the practical steps needed to achieve that vision (Méndez-Morse, 1992).

> The importance of principals having a vision also appears in the literature that pertains to instructional leadership (Blumberg & Greenfield, 1980; Lightfoot, 1983; Méndez-Morse, 1991; Niece, 1989; Pejza, 1985). Principals have a vision -- a picture of what they want their schools to be and their students to achieve. Pejza (1985) stated that "leadership requires a vision. Without a vision to challenge followers, there is no possibility of a principal being a leader" (p.10). The vision provides guidance and direction for the school staff, students, and administration. Niece (1989) reported that several authorities included "providing vision and direction for the school" (p. 5) as a component of instructional leadership. Principals keep their "vision in the forefront" (Méndez- Morse, 1991, p. 2). "Associated with a vision has to be a plan, a way of reaching the goal" (Pejza, 1985, p. 10) (((Méndez-Morse, p.1, 1992)).

Research question four investigated if there was a relationship between the use of the Rigor/Relevance Framework and scores on statewide tests. After using canonical correlation, it was established that there was no relationship. There are several possible reasons for this: the Rigor Relevance Framework is more of a descriptive model rather than a prescriptive model. The framework recommends teachers create rigorous and relevant instruction to give students tools to succeed in an unpredictable world; it suggests taking basic knowledge and using it in a hands-on manner. The goal of this framework is not to drill objectives; it is to have students learn the objectives and apply

them. Application of knowledge is a way for students to remember it in context and the researcher thought that it may help them better remember basic knowledge, but teaching in context does not always translate into better scores on paper and pencil tests (Daggett, 2008). "Critics of current assessment practices argue that the goal should be to have students who can create, reflect, solve problems, collect and use information, and formulate interesting and worthwhile questions. Thus, it is argued, our assessments - whether they are developed by teachers, writers of textbooks, or large corporations - must measure the extent to which students have mastered these types of knowledge and skills" (Wisconsin Education Association Council, 2012, p. 1).

If a descriptive model does not appear to have a significant relationship with statewide test scores, what about prescriptive models? Do teaching models that give rote instructions to teachers have a relationship with statewide scores? Research shows that commercially prepared materials do not appear to yield higher test scores and some of them undermine the legitimacy of the test if actual test questions are given to students (Mehrens & Kaminski, 1989, p. 21). A study of 26 high achieving, high-poverty schools in Texas showed that "no single program or new practice" can turn low performing schools into effective schools (U.S. Department of Education, 1998). What appears to work is a holistic approach which includes a combination of community involvement, professional development, and researched teaching practices.

Recommendations for Practitioners

Schools that have implemented successful improvement programs have adopted a holistic approach to improvement and have not relied on any one specific method or

model to improve. Research suggests that school districts involve all stakeholders to address issues they face. These stakeholders can help create a unique vision and plan which will address specific needs of the districts (U.S. Department of Education, 2006). The interdependent nature of interventions supports the holistic approach to school reform that is associated with achievement gains. Aspects of the holistic approach which foster high achieving schools are as follows: teachers and administrators work together with clear goals and priorities to improve student achievement, schools use research-based design models with high implementation rates, school staff have a combination of an academic focus as well as a focus on supportive relationships with students, and high academic achievement is expected for all students (Trimble, S., 2005, p. 5).

Suggestions for Administrators

"The principal [who is] viewed as a strong leader is associated with articulation of the school's mission, a safe learning environment, and instructional improvements" (Trimble, S., 2005, p.5).

Some suggestions for administrators include: creating time for training, discussion, and collaborative planning among teachers (U.S. Department of Education, 1998), giving teachers ample time to work together to discuss and determine priorities, curriculum alignment, methodologies, and data collection, making "intensive and sustained efforts to involve parents and community; create an environment of mutual respect and collaboration; and foster a passion for continuous improvement and professional growth" (U.S. Department of Education ,1998).

Support for family and community involvement starts with school administrators. "Their willingness to recruit parents and community members for school tasks, to listen

to other people's viewpoints, and to share decision making provides a necessary foundation for all school-family-community partnerships" (Mueller, 1997). School administrators are crucial to providing teachers with professional development and for encouraging family and community involvement. Such professional development is an important part of effective partnerships. All school staff should to develop the necessary skills for working effectively with parents and families. The school district or system can take the lead in offering teachers professional development on how to: collaborate with parents and families, learn about family dynamics and nontraditional family structures, share methods to improve two-way communication between school and home, discover ways to reduce barriers to family involvement, and to understand diverse cultures (Mueller, 1997; Ballen & Moles, 1994).

School administrations should also conduct a needs' assessment as a means to determine the needs and current level of satisfaction of school staff and families. The assessment should also ask respondents to describe additional programs and practices that would be of value to them. Such an assessment could be a simple survey asking parents' opinions on the school's current involvement practices and how welcome they feel in the school, or a more detailed parent involvement inventory asking for feedback from school staff as well as parents. "The use of telephone interviews and school meetings also could ensure that a greater percentage of families will provide their input into the process. Goals and policies for school-family-community partnerships then can be developed based on real needs and strengths, not perceived ones, increasing the chances for a successful program built on what is already working" (Mueller, 1997).

Suggestions for Teachers

Teachers should not just rely on administrative guidance to improve their schools. Some suggestions for teachers include: adopting "a strong focus on ensuring academic success for each student; a refusal to accept excuses for poor performance; and a willingness to experiment with a variety of strategies" (U.S. Department of Education, 1998), attending structured training on "how to use student assessment data to improve instruction," working collaboratively and using data to modify instructional plans to meet demonstrated student needs (Boudett, K. et. Al, 2005, p. 705).

School staff can also be involved in action research. This approach uses teams of teachers who meet monthly in small groups to study school-family-community relationships, discuss efforts to involve families and the community, and devise strategies to improve their own practice (Davies, 1991). After the groundwork has been laid with school staff, schools can begin to establish school-family-community partnerships through the creation of an action team that is committed to developing a comprehensive family-involvement program. This collaborative team contains teachers and other school staff, administrators, students, parents, and community members. Members of the team bring their own perspectives, experiences, and skills to the project. They are responsible for conducting a needs assessment, developing goal statements, identifying strategies to meet the goals, developing implementation plans, and using evaluation tools (Mueller, 1997).

Teachers could also learn from one of the world's leaders in student scores, Finland. In Finland, diagnostic testing of students is used early and frequently. If a student is in need of extra help, intensive intervention is provided. Groups of teachers

visit each other's classroom to observe their colleagues at work. Teachers are also provided with one afternoon each week for professional development and school funding is higher for the middle school years, the years when children are most in danger of dropping out (Wilde, M., 2012).

Suggestions for Parents and Community Members

Parents and community members should also see themselves as important in the improvement process. Research indicates that family involvement in schools increases student achievement (Henderson & Berla, 1994; Ballen & Moles, 1994; Epstein, 1995). "The benefits of parent and family involvement include higher test scores and grades, better attendance, more completion of homework, more positive attitudes and behavior, higher graduation rates, and greater enrollment in higher education. A literature review of school-family partnerships indicates that benefits are apparent not only for younger children but all students through high school. Although parent involvement is typically strongest at the primary level, continued involvement through the middle grades and at the secondary school level is important in encouraging and guiding children's development and achievement (Caplan, 1998).

When schools consider their relationship with families as a partnership where home and school share responsibility for learning the result is a jump in the levels and types of parental involvement as well as the support that families demonstrate for the school. When this partnership is extended to include the community at large, the benefits are even greater. Most importantly when responsibility for children's learning is shared by community, home, and school, children have more opportunities for meaningful,

engaged learning. Students are able to see the link between the curriculum in the school and the skills that are required in the real world (Caplan, 1998).

During Utah's 1990 legislative session, three accountability bills were passed mandating yearly statewide norm-referenced testing in grades 5, 8, and 11 and the publication of test scores. This study evaluated the impact of this legislation on Utah's school districts' accountability, curricular/instructional, and testing practices. The model for the analysis was based on the work of Mohr (1992) and Rossi and Freeman (1993). The study highlighted the school's responsibility for raising the students' test scores and how the parents can support that effort. "That personal attention is a very good idea because, many times, students and parents don't understand how close they are to the next level until we point it out" (Vogel, 2003).

Recommendations for Future Research

The methods of measuring and reporting student achievement on statewide test scores could be an area of future study. Each state has its own unique way of scoring tests and reporting results. Some states' scores can be found easily on their Department of Education websites. Illinois, Michigan, Maine, California, and Oregon are some examples of state scores that can be easily found. There are other states where basic data can be found, but school level data is more difficult to locate. These states include: Texas, Florida, Iowa, and Louisiana. Finally, there are states where the scores are hidden and a phone call to a person in the Department of Education is required to gain detailed knowledge of school level data. These states include Utah and Hawaii. This made data collection an arduous process.

Each state also measures student achievement differently; states report their scores in a variety of ways; they can use numbers or words to indicate achievement, higher numbers can mean higher or lower achievement, and states can use two or more ways to categorize their scores. Different scales are used and can vary from a 2 point scale (mastered or did not master) to a 5 point scale. State tests also have varying forms of difficulty; some standardized tests are easier than others. It is therefore very difficult to compare schools nationwide.

Presently, forty-five states are now adopting the Common Core in math and language arts. This means they will be using the same standards and will be taking one of two tests to measure this knowledge. The adoption of this test will make it much easier to do statewide comparisons in these two subjects. These tests are planned for implementation in 2014. When published data becomes available, researchers will have a greater idea of how states compare to each other; they will also have a better way to measure the impact of teacher professional development and models on statewide tests. This initiative is a very promising area for future research.

Limitations of the Study

The study did not identify factors that are linked with improvement such as: students' attitudes, time spent on academics, school climate, and parents' expectations (Johnson,1992; Yucel, 2003). One of the limitations was the sample size. There were 488 schools surveyed across the country and there were only 88 surveys returned. This small sample size may have had an effect upon the generalizability of the results especially when it came to performing the canonical correlation; a larger sample size

would have been better. Another limitation to the study was timing. State tests take time to grade and to tabulate results, send them to the schools, and make them available to the public. Many state tests are given at the beginning of each year. If schools are in the first year of using the R/R Framework, the students may not have been instructed with lessons incorporating rigor and relevance. The timing of the surveys may have also affected the results. Principals' may not have accurately reflected on their use of the framework from the previous year. Even though principals' reflected on how their staff used the framework (pervasively, considerably, partially, initiated or absent), they did not reflect on how well it was used.

The study also only showcased schools that were using R/R Framework rather than other school improvement programs designed to foster student improvement. There were hundreds of schools using this framework: however, the study really only showed the degree to which the framework had a relationship to the statewide test scores of these schools. The framework did not address whether there were differences in attrition rates and/or attendance as a result of participation in this program. The study also only sampled schools that participated in the Successful Practices Network (SPN) not all the schools that used the framework. Some schools may have used the R/R Framework, but choose not participate in the network. Joining the network was an additional cost to school districts after the first year of using the framework. Due to budget cuts, schools may have opted out of using the network. Therefore, the study may not have been representative of all schools using the framework, which could have impacted generalizability.

Conclusions

The study examined the a relationship between the level of adoption of the R/R Framework in schools and the level of achievement on statewide test scores in math and reading/language arts. It also investigated areas of the framework schools reported using most pervasively and if schools were using the framework. Additionally, empirical literature was investigated to see if the Rigor/Relevance Framework supported the key characteristics of found in the literature.

Based upon this study's quantitative analysis, the researcher did not discover a significant relationship between the pervasive use of the framework and correct answers on statewide tests in math and language arts. However, principals' reported using the framework considerably and ranked the Envision section of the framework as the most used part of the framework. Use of the framework was supported by some of the empirical literature.

Participants were sent a survey in the mail. They were asked to respond to the questions and send them back to the researcher. Participants remained anonymous throughout this study and were only referred to as "Principal" on any communication. The researcher provided return envelopes and postage for the paper surveys and also provided participants with a link to an online survey in further mailings. In order to increase return, the researcher sent out fifty ten dollar gift cards at random. Finally, the researcher sent out a final reminder in the form of a postcard.

There was an 18% return rate on the surveys; research shows that those that respond to surveys usually do it when it benefits them. The principals who responded

reported using the framework considerably so they may have answered the survey to see how using the framework benefited their school.

Many of the characteristics found in the empirical literature were found in the framework; however, not all of them were included. It can be noted that the framework is not a prescriptive model to improve test scores, but a model that encourages teachers to create and students to engage in assignments that are rigorous and relevant. This research also included a discussion about the problems with the current statewide tests given and how this framework promotes learning the occurs through real-world unpredictable situations which is the opposite of concrete information that statewide tests measure.

Problems were noted with the differences between statewide tests across the United States; specifically, many have different cut-off scores and some are easier than others. With the adoption of a Common Core of curriculum standards it will be easier to measure statewide scores and compare them across states. This will give more unified data to researchers who wish to learn more about the application of models to improve student performance.

APPENDIX A

Directions: Please rate the questions in the following survey using a three point scale to determine how relevant each statement is to each section: Envision, Discover, Create, Develop, and Support. Relevance is defined as the importance of the question to the definition of the section heading. Rate the questions as one (1) if the item is highly relevant to the theme of the section; two (2) if the item is somewhat relevant to the theme of the section or three (3) if the item is not relevant to the theme of the section. Example: Does the first question, "Share information on WHY rigor, relevance, and relationships are important," seem highly relevant (1), somewhat relevant (2) or not relevant (3) to the vision of the school?	Rating: 1, 2, or 3
Envision	
"Vision without action is a dream. Action without vision is simply passing the time. Action with Vision is making a positive difference."	
Joel Barker	
1. Share information on WHY rigor, relevance, and relationships are important.	
2. Collect ongoing evidence of the need for rigor, relevance, and relationships.	
3. Engage staff in discussions to understand, embrace, and reflect on the need for rigor, relevance, and relationships.	
4. Establish common definitions of rigor and relevance.	
5. Establish common definitions of relationships to support student learning.	
6. Establish common definitions of relationships to support staff collaboration.	
7. Share examples of rigor and relevance in the school	
8. Connect rigor and relevance with instruction and assessment practices.	
Discover *The real act of discovery consists not in finding new lands but seeing with new eyes."* *Marcel Proust*	
1. Analyze local assessments for levels of rigor and relevance	
2. Identify examples of Quadrant D lessons in the school.	
3. Share examples of high rigor and high relevance learning	
4. Analyze state assessments for levels of rigor and relevance.	
5. Conduct student focus groups on rigor and relevance.	
6. Conduct student focus groups on relationships	
7. Survey students as to the current levels of learning support and relationships	

8. Share examples good learning support and relationships with staff.	
Create *"The goal isn't to live forever; the goal is to create something that will." Chuck Palahniuk*	
1. Design interdisciplinary lessons.	
2. Design new activities to strengthen learning relationships among students	
3. Design activities to strengthen support and relationships for students in the transition year into the school.	
4. Create new instructional activities that increase rigor and/or relevance.	
5. Create new assessments that increase rigor and/or relevance.	
Develop *"When you shift people's perceptions, their actions follow." Rayona Sharpnack*	
1. Develop staff skills to create, adapt, and use performance assessments.	
2. Develop staff skills to identify and write good test questions.	
3. Develop common performance tasks for typical student performance, e.g. writing, presentations.	
4. Develop staff skills to write high rigor/high relevance performance tasks.	
5. Develop staff ability to select and use instructional strategies appropriate for high rigor/high relevance.	
6. Develop staff skills in building positive learning relationships.	
7. Develop staff ability to create classroom procedures that build learning relationships.	
8. Create structures and support for daily professional learning.	
9. Create a model of peer teaching and coaching.	
Support *"Some people change when they see the light, others when they feel the heat." Caroline Schoeder*	
1. Conduct frequent walk-throughs to observe instruction.	
2. Include rigor and relevance as a part of the observation protocols for classroom walk-throughs.	
3. Provide opportunities for peer review of instruction.	

4. Conduct peer review of learning experiences for rigor and relevance.	
5. Conduct celebrations of achievement of rigor and relevance.	
6. Conduct celebrations of developing learning relationships.	
7. Analyze data of student learning criteria on core and stretch learning related to rigor and relevance.	
8. Analyze data of student learning criteria on student engagement and personal skills development related to relationships.	
9. Staff gives each other feedback on positive relationship behaviors.	

APPENDIX B

How pervasively does your school use the Rigor/Relevance Framework?

Directions: Please fill out the attached survey and send it in the enclosed envelope.

Please respond to these statements honestly. Your answers will be confidential and you will not be identified in this study.

Thanks so much for your participation!

An Agenda for Change

Pervasive	Considerable	Partial	Initiated	Absent	***Envision*** *"Vision without action is a dream. Action without vision is simply passing the time. Action with Vision is making a positive difference."* Joel Barker
					1. Share information on WHY rigor, relevance, and relationships are important.
					2. Collect ongoing evidence of the need for rigor, relevance, and relationships.
					3. Engage staff in discussions to understand, embrace, and reflect on the need for rigor, relevance, and relationships.
					4. Establish common definitions of rigor and relevance.
					5. Establish common definitions of relationships to support student learning.
					6. Establish common definitions of relationships to support staff collaboration.
					7. Share examples of rigor and relevance in the school.
					8. Connect rigor and relevance with instruction and assessment practices.
Pervasiv	Consider	Partial	Initiated	Absent	

					Discover "The real act of discovery consists not in finding new lands but seeing with new eyes." Marcel Proust
					1. Analyze local assessments for levels of rigor and relevance.
					2. Identify examples of Quadrant D lessons in the school.
					3. Share examples of high rigor and high relevance learning.
					4. Analyze state assessments for levels of rigor and relevance.
					5. Conduct student focus groups on rigor and relevance.
					6. Conduct student focus groups on relationships.
					7. Survey students as to the current levels of learning support and relationships.
					8. Share examples good learning support and relationships with staff.
Pervasive	**Considerable**	**Partial**	**Initiated**	**Absent**	***Create*** *"The goal isn't to live forever; the goal is to create something that will."* Chuck Palahniuk
					1. Design interdisciplinary lessons.
					2. Design new activities to strengthen learning relationships among students.
					3. Design activities to strengthen support and relationships for students in the transition year into the school.
					4. Create new instructional activities that increase rigor and/or relevance.
					5. Create new assessments that increase rigor and/or relevance.
Per	**Co**	**Par**	**Init**	**Abs**	

					Develop *"When you shift people's perceptions, their actions follow."* Rayona Sharpnack
					1. Develop staff skills to create, adapt, and use performance assessments.
					2. Develop staff skills to identify and write good test questions.
					3. Develop common performance tasks for typical student performance, e.g. writing, presentations.
					4. Develop staff skills to write high rigor/high relevance performance tasks.
					5. Develop staff ability to select and use instructional strategies appropriate for high rigor/high relevance.
					6. Develop staff skills in building positive learning relationships.
					7. Develop staff ability to create classroom procedures that build learning relationships.
					8. Create structures and support for daily professional learning.
					9. Create a model of peer teaching and coaching.
Pervasive	**Considerable**	**Partial**	**Initiated**	**Absent**	***Support*** "Some people change when they see the light, others when they feel the heat." Caroline Schoeder
					1. Conduct frequent walk-throughs to observe instruction.
					2. Include rigor and relevance as a part of the observation protocols for classroom walk-throughs.
					3. Provide opportunities for peer review of instruction.
					4. Conduct peer review of learning experiences for

					rigor and relevance.
					5. Conduct celebrations of achievement of rigor and relevance.
					6. Conduct celebrations of developing learning relationships.
					7. Analyze data of student learning criteria on core and stretch learning related to rigor and relevance.
					8. Analyze data of student learning criteria on student engagement and personal skills development related to relationships.
					9. Staff gives each other feedback on positive relationship behaviors.

Source: *Leadership For Rigor, Relevance, and Relationships*

APPENDIX C

TO: Successful Practices Network Principals

FROM: Catherine Colagross Willoughby, Doctoral Student, Wayne State University

RE: Research Project exploring the use of R/R Framework in your school.

DATE: May 2011

Dear Principal:

I am seeking your assistance in filling out a survey related to a research project I am conducting. The study, which will address the relationship between the use of the Rigor/Relevance Framework and state test scores in math and reading/language arts, is part of my doctoral program at Wayne State University located in Detroit, Michigan.

This research will benefit all Network schools, and I intend to distribute the results once the project is completed.

I hope you will support me by taking the survey. Please be assured that your responses will be held in the strictest confidence, and neither you nor your school will be identified by name.

Enclosed is a packet containing the survey and directions for its completion. The survey should only take about 15 minutes to finish and can be placed in the enclosed envelope. Do not hesitate to contact me if you have any questions.

Thanks in advance for your participation in this project.

Catherine Colagross Willoughby
Member of SPN Network
Wayne State University
Doctoral Student
Email: ad8190@wayne.edu
Phone: 248-701-9850

APPENDIX D

TO: Successful Practices Network Principals

FROM: Patrick Carrese, President and CEO, Successful Practices Network and Tim Ott, CAO, International Center for Leadership in Education

RE: Research Project by Doctoral Student Catherine Colagross Willoughby

DATE: June 2011

Dear Principal:

Two weeks ago Catherine Colagross Willoughby sent you a letter regarding a survey related to a research project being conducted by a teacher at SPN member Oxford Middle School in Oxford, Michigan. The study, which will address the relationship between the use of the Rigor/Relevance Framework and state test scores in math and reading/language arts, is part of Catherine Colagross Willoughby's doctoral program at Wayne State University.

We believe her research will benefit all Network schools although we are not involved in any aspect of the research. We only write this letter to support Catherine. Please be assured that your responses will be held in the strictest confidence, and your school will not be identified by name.

If you do not have your original packet, you can complete the survey online.

The link to the survey is: http://www.surveymonkey.com/s/GWRWBMS

The survey should only take about 15 minutes to finish. Do not hesitate to contact Catherine if you have any questions.

Thanks in advance for your participation in this project.

Tim Ott
CAO
International Center for Leadership in Education
TOtt@Leadered.com

Patrick Carrese
President &CEO
Successful Practices Network
Patrick@SPNet.US

Catherine Colagross Willoughby
ad8190@wayne.edu

APPENDIX E

TO: Successful Practices Network Principals

FROM: Catherine Colagross Willoughby, Doctoral Student,Wayne State University

RE: Research Project exploring the use of R/R Framework in your school.

DATE: August, 2011

Dear Principal:

I am seeking your assistance in filling out a survey related to a research project I am conducting. The study, which will address the relationship between the use of the Rigor/Relevance Framework and state test scores in math and reading/language arts, is part of my doctoral program at Wayne State University located in Detroit, Michigan.

This research will benefit all Network schools, and I intend to distribute the results once the project is completed.

I hope you will support me by taking the survey. Please be assured that your responses will be held in the strictest confidence, and neither you nor your school will be identified by name.

Enclosed is a packet containing the survey and directions for its completion. The survey should only take about 15 minutes to finish and can be placed in the enclosed envelope. Do not hesitate to contact me if you have any questions.

If you would rather take the survey online, the link is:

http://www.surveymonkey.com/s/GWRWBMS

Thanks in advance for your participation in this project.

Catherine Colagross Willoughby
Member of SPN Network
Wayne State University
Doctoral Student
Email: ad8190@wayne.edu
Phone: 248-701-9850

APPENDIX F

TO: Successful Practices Network Principals

FROM: Patrick Carrese, President and CEO, Successful Practices Network and Tim Ott, CAO, International Center for Leadership in Education

RE: Research Project by Doctoral Student Catherine Colagross Willoughby

DATE: September 2011

Dear Principal:

About a month ago, we sent you a letter regarding a survey related to a research project being conducted by a teacher at SPN member Oxford Middle School in Oxford, Michigan. The study, which will address the relationship between rigorous and relevant teaching and assessment practices and state test scores in reading and math, is part of Catherine Colagross Willoughby's doctoral program at Wayne State University.

We believe her research will benefit all Network schools although we are not involved in any aspect of the research. We only write this letter to support Catherine. Please be assured that your responses will be held in the strictest confidence, and your school will not be identified by name.

If you do not have your original packet, you can complete the survey online.

The link to the survey is: http://www.surveymonkey.com/s/GWRWBMS

The survey should only take about 15 minutes to finish. Do not hesitate to contact Catherine if you have any questions.

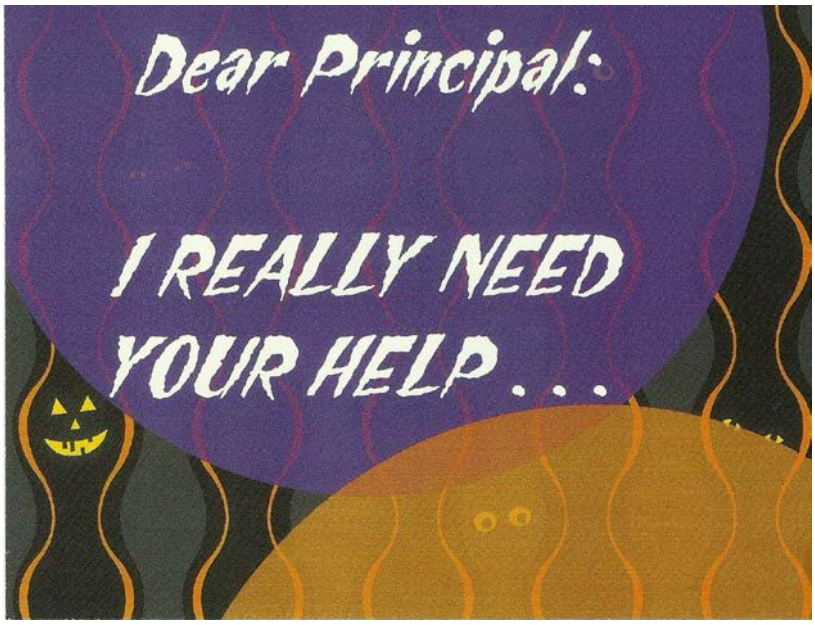
Thanks in advance for your participation in this project. ***This is our final letter asking for your participation. We really hope you can help her!***

Tim Ott
CAO
International Center for Leadership in Education
TOtt@Leadered.com

Patrick Carrese
President &CEO
Successful Practices Network
Patrick@SPNet.US

Catherine Colagross Willoughby
ad8190@wayne.edu

APPENDIX G



In care of Catherine Willoughby
385 E. Drahner Rd
Oxford, MI 48371

...it would be such a "Treat" to me if you could fill out my dissertation survey.

Your participation in this matter is vital to the results of this research.

If you do not have your packet, you can use the following link:

http://www.surveymonkey.com/s/GWRWBMS

Thanks..Thanks..Thanks...

APPENDIX H

Detailed Results of Internal Consistency for the Pilot Study

Reliability (ENVISION) Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	21	100.0
	Excluded[a]	0	.0
	Total	21	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.956	.958	8

Item Statistics

	Mean	Std. Deviation	N
E.01	3.90	1.136	21
E.02	3.81	1.123	21
E.03	3.81	1.289	21
E.04	3.57	1.287	21

E.05	3.81	.928	21
E.06	3.67	1.111	21
E.07	3.62	1.396	21
E.08	3.86	1.062	21

Inter-Item Correlation Matrix

	E.01	E.02	E.03	E.04	E.05	E.06	E.07	E.08
E.01	1.000	.730	.909	.825	.693	.528	.796	.775
E.02	.730	1.000	.699	.632	.731	.588	.557	.605
E.03	.909	.699	1.000	.912	.762	.512	.903	.819
E.04	.825	.632	.912	1.000	.807	.699	.879	.904
E.05	.693	.731	.762	.807	1.000	.808	.752	.731
E.06	.528	.588	.512	.699	.808	1.000	.559	.678
E.07	.796	.557	.903	.879	.752	.559	1.000	.872
E.08	.775	.605	.819	.904	.731	.678	.872	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.756	3.571	3.905	.333	1.093	.015	8
Item Variances	1.380	.862	1.948	1.086	2.260	.122	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
E.01	26.14	52.129	.861	.863	.948
E.02	26.24	54.390	.718	.725	.957
E.03	26.24	49.390	.910	.964	.945
E.04	26.48	49.062	.933	.944	.943
E.05	26.24	54.890	.857	.853	.950
E.06	26.38	55.048	.684	.820	.959
E.07	26.43	48.657	.870	.900	.949
E.08	26.19	52.762	.885	.880	.947

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
30.05	67.548	8.219	8

Reliability (DISCOVER) Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	21	100.0
	Excluded[a]	0	.0
	Total	21	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.798	.789	8

Item Statistics

	Mean	Std. Deviation	N
DI.01	3.57	1.207	21
DI.02	3.24	1.446	21

DI.03	3.62	1.203	21
DI.04	2.95	1.322	21
DI.05	1.67	.913	21
DI.06	2.29	1.189	21
DI.07	2.90	1.091	21
DI.08	3.62	.973	21

Inter-Item Correlation Matrix

	DI.01	DI.02	DI.03	DI.04	DI.05	DI.06	DI.07	DI.08
DI.01	1.000	.749	.743	.519	.272	.194	.309	.620
DI.02	.749	1.000	.687	.451	.328	.482	.078	.565
DI.03	.743	.687	1.000	.365	.243	.290	.085	.724
DI.04	.519	.451	.365	1.000	.152	.232	.170	.413
DI.05	.272	.328	.243	.152	1.000	.553	-.385	.075
DI.06	.194	.482	.290	.232	.553	1.000	-.440	.142
DI.07	.309	.078	.085	.170	-.385	-.440	1.000	.294
DI.08	.620	.565	.724	.413	.075	.142	.294	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.982	1.667	3.619	1.952	2.171	.492	8
Item Variances	1.391	.833	2.090	1.257	2.509	.167	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
DI.01	20.29	25.614	.807	.766	.726
DI.02	20.62	23.748	.787	.700	.723
DI.03	20.24	26.490	.726	.718	.740
DI.04	20.90	27.990	.514	.322	.776
DI.05	22.19	33.162	.279	.416	.804

DI.06	21.57	31.357	.312	.548	.805
DI.07	20.95	35.248	.038	.474	.838
DI.08	20.24	29.090	.656	.599	.758

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
23.86	36.929	6.077	8

Reliability (CREATE) Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	21	100.0
	Excluded[a]	0	.0
	Total	21	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.854	.863	5

Item Statistics

	Mean	Std. Deviation	N
C.01	3.38	.865	21
C.02	3.67	.856	21
C.03	3.52	1.078	21
C.04	3.62	1.071	21
C.05	3.48	1.123	21

Inter-Item Correlation Matrix

	C.01	C.02	C.03	C.04	C.05
C.01	1.000	.720	.365	.866	.885
C.02	.720	1.000	.253	.672	.537
C.03	.365	.253	1.000	.225	.197
C.04	.866	.672	.225	1.000	.865
C.05	.885	.537	.197	.865	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.533	3.381	3.667	.286	1.085	.013	5
Item Variances	1.010	.733	1.262	.529	1.721	.063	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
C.01	14.29	10.114	.922	.893	.766
C.02	14.00	11.400	.657	.611	.828
C.03	14.14	12.629	.280	.220	.923
C.04	14.05	9.348	.830	.815	.776
C.05	14.19	9.362	.772	.861	.793

Scale Statistics

Mean	Variance	Std. Deviation	N of Items

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
17.67	15.933	3.992	5

Reliability (DEVELOP) Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	21	100.0
	Excluded[a]	0	.0
	Total	21	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.925	.928	9

Item Statistics

	Mean	Std. Deviation	N
DE.01	3.38	1.071	21
DE.02	3.14	1.195	21
DE.03	3.29	1.056	21
DE.04	3.19	1.365	21

DE.05	3.43	1.121	21
DE.06	3.81	.814	21
DE.07	3.90	.831	21
DE.08	3.67	.856	21
DE.09	3.05	.973	21

Inter-Item Correlation Matrix

	DE.01	DE.02	DE.03	DE.04	DE.05	DE.06	DE.07
DE.01	1.000	.658	.739	.735	.648	.604	.661
DE.02	.658	1.000	.521	.596	.698	.441	.619
DE.03	.739	.521	1.000	.689	.483	.532	.489
DE.04	.735	.596	.689	1.000	.761	.755	.634
DE.05	.648	.698	.483	.761	1.000	.807	.797
DE.06	.604	.441	.532	.755	.807	1.000	.711
DE.07	.661	.619	.489	.634	.797	.711	1.000
DE.08	.418	.391	.387	.528	.625	.622	.796
DE.09	.509	.595	.521	.557	.438	.328	.439

Inter-Item Correlation Matrix

	DE.08	DE.09
DE.01	.418	.509
DE.02	.391	.595
DE.03	.387	.521
DE.04	.528	.557
DE.05	.625	.438
DE.06	.622	.328
DE.07	.796	.439
DE.08	1.000	.500
DE.09	.500	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.429	3.048	3.905	.857	1.281	.092	9
Item Variances	1.094	.662	1.862	1.200	2.813	.154	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
DE.01	27.48	43.062	.791	.741	.912
DE.02	27.71	42.814	.709	.704	.918
DE.03	27.57	44.557	.685	.635	.919
DE.04	27.67	39.233	.833	.772	.910
DE.05	27.43	42.057	.826	.843	.910
DE.06	27.05	46.348	.751	.772	.916
DE.07	26.95	45.648	.801	.838	.914
DE.08	27.19	47.062	.641	.751	.922
DE.09	27.81	46.362	.605	.572	.924

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
30.86	55.329	7.438	9

Reliability (SUPPORT) Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	21	100.0
	Excluded[a]	0	.0
	Total	21	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.829	.834	9

Item Statistics

	Mean	Std. Deviation	N
S.01	3.76	1.179	21
S.02	3.71	1.419	21
S.03	2.71	1.231	21
S.04	2.57	1.326	21
S.05	3.33	1.354	21
S.06	3.10	1.136	21
S.07	3.48	1.289	21
S.08	3.10	1.221	21
S.09	3.00	1.000	21

Inter-Item Correlation Matrix

	S.01	S.02	S.03	S.04	S.05	S.06	S.07
S.01	1.000	.764	.330	.347	-.010	.167	.572
S.02	.764	1.000	.352	.330	.078	.421	.543
S.03	.330	.352	1.000	.687	.090	.056	.122
S.04	.347	.330	.687	1.000	.084	.028	.447
S.05	-.010	.078	.090	.084	1.000	.726	.277
S.06	.167	.421	.056	.028	.726	1.000	.309
S.07	.572	.543	.122	.447	.277	.309	1.000

S.08	.329	.478	.019	.057	.464	.714	.573
S.09	.382	.388	.122	.189	.628	.660	.504

Inter-Item Correlation Matrix

	S.08	S.09
S.01	.329	.382
S.02	.478	.388
S.03	.019	.122
S.04	.057	.189
S.05	.464	.628
S.06	.714	.660
S.07	.573	.504
S.08	1.000	.696
S.09	.696	1.000

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.196	2.571	3.762	1.190	1.463	.171	9
Item Variances	1.550	1.000	2.014	1.014	2.014	.094	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
S.01	25.00	43.100	.555	.698	.810
S.02	25.05	39.648	.639	.749	.799
S.03	26.05	45.948	.337	.623	.833
S.04	26.19	44.162	.407	.666	.827
S.05	25.43	43.957	.407	.713	.828
S.06	25.67	43.133	.581	.801	.807
S.07	25.29	40.814	.644	.708	.799
S.08	25.67	41.733	.626	.732	.802
S.09	25.76	43.090	.686	.668	.799

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
28.76	53.090	7.286	9

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ABSTRACT

THE RIGOR/RELEVANCE FRAMEWORK©:ITS RELATIONSHIP TO K-12 STUDENT ACHIEVEMENT ON STATEWIDE TESTS

by

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This study generated empirical evidence about the characteristics of effective professional development for K-12 teachers and explored the relationship between professional development and student achievement. This study provided evidence about whether characteristics found in past studies could also be found in the Rigor/Relevance Framework, a teaching model, used for the purpose of improving student learning through activities which are rigorous and have relevance in students' lives.

In order to fully understand the link between using the framework and student achievement, principals in schools using the framework were given a five component survey examining their use of it. They were chosen because of their ability to see an overall picture of school-wide instructional practices and culture rather than just what happened in the classroom; they also had the ability to influence the degree to which teachers adopted the Framework and taught it to their students. Statewide scores from these schools were analyzed to see if the use of the framework had a relationship to these scores in reading/language arts and math. Also findings in the context of other relevant literature were researched in order to identify inconsistencies or discrepancies between the practices used in the framework and other models for student improvement.

There were several characteristics of different models that were found in the

framework, but not all of the characteristics were found in this particular model because the questions the researchers were asking to create this model were unique. The Rigor/Relevance Framework was formed to help educators create assignments that have real-world unpredictable results so that students can practice solving problems they will encounter in outside the school walls; it was not formed to help students succeed on statewide tests. However, this researcher wondered if real-world knowledge could help students remember facts and problems presented to them on these tests. Although principals in 88 out of 468 schools reported using the framework *considerably* on an anonymous survey, the researcher did not discover a significant relationship between the pervasive use of the framework and correct answers on statewide tests in math and language arts.

AUTOBIOGRAPHICAL STATEMENT

Catherine Colagross Willoughby graduated from Hillsdale College in 1990 with a degree in English and Elementary Education. After teaching for two years, she began her master's degree. In 1999, she completed her master's degree in Instructional Technology at Wayne State. In 2004, she decided to pursue her doctorate degree in Instructional Technology.

While she was at Wayne State, she also taught seventh grade English and social studies. During this time, she received many awards: Teacher of the Year District Nominee Award in 2005, 2006, 2007, 2008; The Korean Studies Workshop for American Educators Placement in 2007; Transatlantic Outreach Program Scholar in 2006; Japan Fulbright Memorial Fund Scholarship Winner in 2005; The Oakland Press Excellence in Education Nominee in 2005; MACUL TAPS Grant Winner in 2004; and The Sallie Mae Outstanding Teacher of the Year in 1996. She also spoke at several state and county conferences.

Currently, she is adjunct faculty at Oakland University in the Human Resources Department and also a media specialist (she completed her Master's degree in Library and Information Science in 2012) and a teacher in the Oxford School District.