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Causality: A Comparative Study of a Current Causality Model to that of Synchronized Analysis Model (SAM) in a Rural Elementary School

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DISSERTATION

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DEDICATION

I dedicate this work to my family. Without your support and love I would have never completed it. Primarily to my wife Dotty. You have been by my side through the entire process and have never let me give up. Your prayers, words of inspiration, and motivation has given me the strength to keep on going. You have listen to my ramblings about root cause more than anyone should be expected to and for this I thank you. I love you beyond what words can express. To my children and their spouses, Amy, Alissa and Joe, Robin and Theo, Vince and Nick. You all have motivated me in ways unknown to you. Thank you for believing in your papa and father-in-law. To my parents, Joe and Sue, for your continual prayers that God bless me with His wisdom and understanding. Thank you.

Lastly, I dedicate this to my grandchildren. Those of you who knew me before this process, those who were born during it, and those who have not yet come. Thank you for your smiles, laughter, and joy. It is because of you that this work means so much. Not only that I finish or the research, but so that you can know that if grandpa can do it, you can too. Never give up and reach for your dreams. It is because of you, Kaya, Joey, Nico, Zion, Isaac, Adyn, Jubilee, Levi, and Helo, (. . .), that I wish to pass on a better world in developing the young minds of tomorrow, your's specifically.

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Abstract

The field of K-12 education has undergone an ever increasing strain to improve student and school performance in the last few decades. Many schools have failed to improve despite the attention they have been given.

The purpose of this study is to compare an elementary school's current model of causality to the Synchronized Analysis Model (SAM) and Kaizen's five why's in determining low school performance. Using a qualitative instrumental case study design, surveys, interviews, and a focus group as the method of inquiry, nine employees were surveyed, four teachers and a principal were interviewed, and three leaders participated in a focus group. Questions for all inquiry methods centered around elements of the SAM and Kaizen's five whys to determine causality.

The participants provided data that allowed the researcher to determine causality in a more granular level using the SAM rather than the current model being used by school and district leaders. Conclusions provide leadership with targeted interventions to address the cause of low school performance rather than generalized interventions that may or may not impact low school performance.

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CHAPTER 1 INTRODUCTION

Purpose of this Study

The purpose of this qualitative case study is to compare the Synchronized Analysis Model (SAM) to that of a current model used by school leaders to determine performance causality in their school.

Introduction

Throughout the history of public education in America change and constant pressure to produce have existed to produce students who can meet the needs of the community. During the 1830's, the beginning of public education, in the United States of America (USA), leaders contended that "public schools would transform children into moral, literate, and productive citizens; eliminate poverty and crime; quell class conflict; and unify a population that was becoming more ethnically diverse" (Kober, 2007, p. 5). Kober (2007) also documented that "in the early 20th century, as the U.S. became home to larger and more diverse groups of immigrants, national leaders and education reformers called on the public schools to "Americanize" the new arrivals and make them literate in English" (p. 5). In more recent history 875 school board members were asked what the purpose of education is. They responded as follows:

Help students fulfill their potential – 42.6 percent

Prepare students for a satisfying and productive life – 31.7 percent

Prepare students for the workforce – 8.1 percent

Prepare students for college – 8.1 percent

Help students become well rounded – 6.5 percent

Prepare students for civic life – 3.0 percent (Piefer, 2014, p. 1).

Society has stressed the desire for K-12 school students to perform well during and after school so they can be college and career ready, "knowledge and skills needed to succeed in college, career training, or entry-level jobs" (National Association of State Boards of Education, 2009, p. 6). According to MacDonald (2015) a high school graduate should have language, critical thinking, employability (one's ability to obtain a job), and personal management skills. According to Norris (2014), 65.9% of high school graduates in 2014 were enrolled in college. Some high school graduates go to trade school, some go to the military while still others are employed immediately after graduating. No matter where the graduate ends up, the focus has always been to produce students who can be successful once they enter the adult life.

Importance of the Study

Since the launch of the Russian satellite, Sputnik, in 1957 the United States has had many initiatives to increase school and district performance levels (Fritsberg, 2017). Brady (2003) posits that "*being* a high performing school and *becoming* a high performing school are very different challenges" (p. 8). The No Child Left Behind act presented expectations of states, districts, and schools, but the improvement efforts are in the form of interventions (2003). With this in mind, education at the national level leverages improvements based on interventions. Many times, however, root causes to problems are not uncovered and appropriate interventions are not implemented. Brady

(2003) stated interventions are "based on assumptions about failing schools and what must be done to transform them" (p. 8). These assumptions include:

1. All schools can succeed.
2. Elements in the school are missing or awry to inhibit success.
3. The intervention body possesses what the trouble school lacks.
4. Leadership and/or professionals in the school lack the skills to achieve success.
5. The school leader and/or school staff lacks the will to improve. (p. 8-9)

One may conjecture these assumptions are enough to move forward with school improvement, but they lack the focus on driving down to what is broken with the school and correctly prescribing the correct intervention for improvement. Although the urgency is upon the nation to do something drastic in school reform Peck and Reitzug (2014) stated, "finding quick fix turnaround schemes is likely to be ineffective, but benign or outright neglect of persistently low-performing schools is morally unconscionable" (p. 31).

Timar & Chyu (2014) conducted a study that infused money into schools to create school improvement and concluded, "money and a school improvement plan alone do not cause school improvement, neither is school improvement linked to how money is spent" (p. 1925). They continued by stating "Investing in literacy or math coaches, professional development, or extending learning time, for instance, does not lead predictably better outcomes than spending on smaller classes, small schools, or computers" (pp. 1925-1926). McQuillan & Salamon-Fernandez (2008) presented a seemingly contradiction to this stance in that there is a

> likelihood that mandated state interventions will increase, the limited staffing of many states departments of education, and the difficulty of turning around consistently low-performing schools (among other factors), those who control state budgets must recognize the enormity of this challenge, which means state education budgets must receive a significant infusion of financial resources. (p. 28)

The assumptions stated above would suggest turnaround initiatives replace personnel, Duke (2006) points out "it is unclear . . . how principals arrive at these decisions" and asks, "How, for instance, does a principal determine that the reason for low student achievement is the instructor and not the instructional program or intervention strategy?" (p. 734). Duke concludes with "we know relatively little about *unsuccessful* efforts to turn around low-performing schools. And until we know more about these endeavors, we can only guess at the reasons why some school turnaround efforts succeed while others fail" (p. 734). Hamilton, Heilig, & Pazey (2014) stated "after two decades of high-stakes tests and accountability in Texas, the fact that policy-makers and the media are not trumpeting the success of a legion of turnaround schools is telling. Even more problematic is the scarcity of existing evidence detailing its effects on student outcome" (p. 206).

This study compares the current model of uncovering the root cause of performance problems to a designed model of root cause analysis to understand if there is a better practice available. Finnigan, Bitter, & O'Day (2009) suggested, "the capacity of school staff to identify the root of their performance problems remain an issue" (p. 18).

Due to the many efforts throughout the United States to foster school improvement that have had limited success, there exists a need to create a useful tool and build the capacity of district and school leaders to improve school performance.

Research Question

Does utilizing Marker's Synchronized Analysis Model improve leadership's understanding of the cause(s) of underperformance in [The] elementary School as compared to the method currently used? The following sub questions will help frame the investigation:

1. What level, environmentally and/or individually, does the cause of the performance problem exist?
2. Where, i.e. within the school or outside the school, does the cause of the performance problem exist?
3. What elements (i.e. informational, instrumental and/or motivational) is/are the cause(s) of the performance problem?
4. How can the district or school leaders use the data collected from the SAM to make impactful decision for performance improvement?

CHAPTER 2 REVIEW OF RELEVANT LITERATURE

Introduction

On December of 2015 President Obama signed into law the Every Student Succeeds Act (ESSA), which reauthorizes the Elementary and Secondary Education Act (ESEA) initiated in 1965. ESEA allowed federal grant monies to flow to low-income school districts to offset the pernicious effects that poverty has on students (U.S. Department of Education, 2015). With the new administration of President Trump, different philosophies are making changes as this author conducts his study. Throughout the years updates have occurred to ESEA.

In 2002, President George W. Bush gave ESEA a new name, the No Child Left Behind Act (NCLB) (Mackinac Center for Public Policy, 2002). The law mandated states to show schools were reaching annual yearly progress (AYP) according to the NCLB timeline. Undergirding this timeline were annual measurable outcomes (AMO), which mandated individual states meet 100% proficiency in math and reading in all student populations by 2014. The federal government defines AYP as:

> A measure of year-to-year student achievement on statewide assessments. Each state comes up with its own definition of what it means to make AYP. Definitions must answer three questions: the percentage of students that must be proficient or above when tested in reading and mathematics (annually in grades 3-8 and once in high school); whether or not at least 95 percent of students in those grades participated in the assessments; and, the additional academic indicator (e.g., graduation rates for high schools) that will be measured. (ed.gov, n.d.)

While established with good intentions, NCLB could not reach its lofty goals of 100% proficient in math and reading. In 2012, President Barack Obama allowed states to apply for waivers to provide some flexibility "in exchange for rigorous and comprehensive state-developed plans designed to close achievement gaps, increase equity, improve the quality of instruction, and increase outcomes for all students. Thus far 42 states, [including New Mexico], DC, and Puerto Rico have received waivers from NCLB" (U.S. Department of Education, 2015, par 6; Polikoff, McEachin, Wrabel and Duque, 2014). Writing in 2007, Linn, the co-director of the National Center for Research on Evaluation, Standards and Student Testing at UCLA, seemed prescient in stating, "There is a zero percent chance that we will ever reach 100 percent target. But the title of the law is so rhetorically brilliant, politicians are afraid to change this completely unrealistic standard. They don't want to be accused of leaving some children behind" (as cited by Paley, 2007, par 3). In the face of the reality that few, if any, schools would achieve 100% proficiency mark, the Obama Administration, in conjunction with a bi-partisan effort in congress enacted the Every Student Succeeds Act as the latest iteration of the ESEA.

States with in the United States are currently forming plans to meet the expectations of ESSA. Within NCLB the federal government set rigorous expectations, but ESSA changes many of these federal government driven expectations and places more control to the State Educational Agency (SEA) and the Local Educational Agency (LEA). Some of the more notable changes are as follows:

1. “Challenging academic standards” are approved by the SEA rather than the federal Secretary of Education.
2. ESSA gives the LEA more control of the type and frequency of “high-quality student academic assessments” in math and reading.
3. A “statewide accountability system” established by the SEA with a focus on academic achievement, student growth, four-year graduation rate, and English language proficiency.
4. The SEA must address the statewide accountability system through the lens of “meaningful differentiation” focusing on all indicators of the system and subgroups of students.
5. The SEA, every three years, must focus on an identified category of “comprehensive support and improvement” that addresses no less than five percent of the low-performing schools in the state, all high schools with a 66% graduation rate or lower, and schools who have subgroups consistently underperforming.
6. SEAs must notify LEAs annually of underperforming subgroups and in turn the LEA must implement a “targeted support and improvement plan” with interventions approved and monitored by the LEA. (Gonzales, Heredia-Griego, Okun, & Kuit, 2016)

The New Mexico Public Education Department (PED) submitted their plan to the federal government with some impressive goals. The highlights of this plan are to improve current current success rates in 2016 to rates in 2022 for all students as follows:

English Language Arts (ELA) proficiency from 27.8% to 64.9%

Mathematics proficiency from 20.2% to 61.2%

Four year graduation rates from 71% to 85%

English language proficiency from 43% to 55%. (NMPED, 2017)

At the time of this dissertation none of the new state plan has yet to be implemented and time will tell if and how the state of New Mexico will improve because of it. Due to the newness of ESSA this researcher will be be focusing on the expectations, supports, and results from NCLB era.

Proficiency

During the 21st century, The United States has focused intently on student proficiency in math and reading. Proficiency is still a variable unique to each state (Grissmer, Ober & Beekman, 2014). An example of this variation is shown in Table 1. If students do not meet the current standards of proficiency established by their state through state-mandated tests for math and reading, they can use one of the math or reading alternatives to meet graduation requirements such as alternative assessments, portfolios, or other school district established alternatives. New Mexico students taking the SAT would need to score a 500 on both math and English to demonstrate proficiency while New Jersey students would need to only score of 400 in both subject areas to show proficiency. New Mexico has differing expectations in the Accuplacer math and writing versus New Jersey in that New Mexico student would have to score a 79 in Elementary Algebra to pass and a New Jersey student would have to score a 76. Conversely in the

Accuplacer WritePlace test New Jersey student would have to score an eight to pass and a New Mexico student would have to score a six.

Table 1. Proficiency Alternate Assessment Comparison Between New Jersey and New Mexico

		State Score Thresholds		
Assessment Alternatives	Score Ranges	New Jersey[1]	New Mexico[2]	Differenence
Math				
SAT - Math	200 to 800[3]	400	500	100
Accuplacer - Elementary Algebra	20 to 109+[4]	76	79	3
ELA				
SAT Critical Reading	200 to 800[3]	400	500	100
Accuplacer - WritePlacer	1 to 8[4]	8	6	2

[1] http://www.nj.gov/education/assessment/grad/093014Grad.pdf
[2] nmped.org 2013-2014 ADC Manual for Implementation of the New Mexico Alternative Demonstration of Competency (ADC), (2013-2014).
[3] https://collegereadiness.collegeboard.org/about/scores/structure
[4] https://secure-media.collegeboard.org/digitalServices/pdf/accuplacer/accuplacer-program-manual.pdf

During the years 2003, 2005, 2007 and 2009 many states that showed high levels of proficiency in their 4th and 8th grade math and reading tests performed extremely low on the National Assessment of Educational Progress (NAEP) exams (educationnext.org, n.d.). For example, in 2009 Nebraska, the state with the greatest number of 8th grade students who are proficient in reading on their state assessment, scored 60.62 percentage points lower on the NAEP exams (educationnext.org, n.d.) as compared to their state-

mandated assessment. This phenomenon is not unique to Nebraska. States who were ranked as high performers, based on their own state assessment scores, repeatedly did not perform that well on the NAEP exams. As illustrated in Table 2, in comparison between state and NAEP standards, in 2009. only 14 states had reading standards at the basic level for fourth grade on the NAEP, while the remaining 35 states scored below basic (Bandeira de Mello, 2011). In other words, fourth grade reading standards of 35 states scored below basic proficiency for NAEP proficiency standards. Only fourth and eighth grade math assessments from Massachusetts were considered proficient in 2009 (p. 12 &13). Bandeira de Mello (2011) concluded that "mapping state standards for

Table 2. U.S. 4th & 8th Grade Standards of Proficiency Compared to NAEP Standards in 2009

	Number of States Compared to NAEP 4th Grade Standards		Number of States Compared to NAEP 8th Grade Standards	
Subject	Below Basic Proficiency	Basic Proficiency	Below Basic Proficiency	Basic Proficiency
Reading	35	14	16	33
Math	6	42	12	36

*Massachusetts was considered the only state to have proficiency standards in both 4th and 8th grade math.
**In Nebraska, school districts developed their own local assessments. Their data was not included.
(U. S. Department of Education, 2011)

proficient performance on the NAEP scales showed wide variation among states in the rigor of their standards" (p. 27). With performance variation of this magnitude it is hard to understand how the USA's K-12 schools are really doing. When one state is touting

proficiency and another grossly lacking, one must dig deep to truly understand the proficiency level of the USA students.

Although the state tests are changing, alternative demonstrations for proficiency still remain, giving the states autonomy to make the final decision with respect to education. States are moving to a common assessment based on Common Core State Standards (CCSS) in math and reading. Both state and federal governments measure student performance with respect to these common standards.

Table 3. States Participating Using Either SBAC or PARCC in 2014-2015

SBAC		PARCC	
California	North Carolina	Alabama	Maryland
Connecticut	Oregon	Arizona	Massachusetts
Delaware	South Dakota	Arkansas	Mississippi
Hawaii	Utah	Colorado	New Jersey
Idaho	Vermont	District of Columbia	New Mexico
Iowa	Washington	Florida	New York
Kansas	West Virginia	Georgia	North Dakota
Maine	Wisconson	Illinois	Ohio
Michigan	Alaska	Indiana	Oklahoma
Missouri	Wyoming	Kentucky	Pennsylvania
Montana		Louisiana	Rhode Islnad
Nevada			South Carolina
New Hampshire			Tennessee

National Conference of State Legislators (2015)

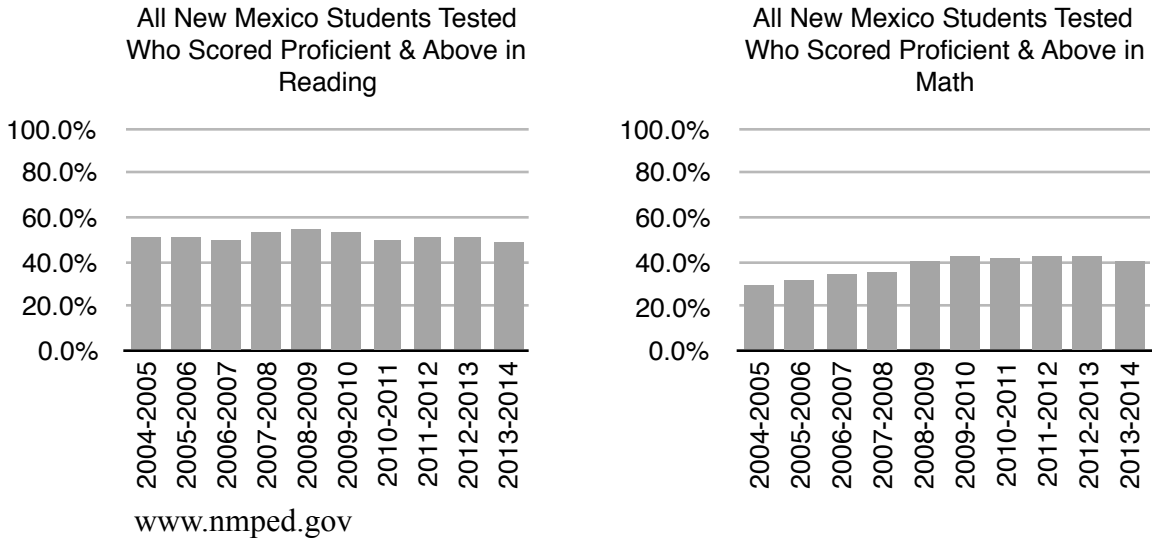
A consortium of educators and governor-appointed leaders drafted the CCSS. The

standards are relevant to all states to guide teachers as to the content they should teach (Common Core Initiative, 2015). CCSS allows states to assess their students in comparison to other states based on common math and reading standards. These initiatives and assessment strategies, implemented by federal and state educational leaders, are changing the face of how public education holds K-12 schools and educators accountable and what proficiency means. The desired outcome is to improve schools and increase the number of students who are competitive globally (Beaton, Rogers, Gonzalez, Hanly, Kolstad, Rust, Sikali, Stokes, & Jia, 2011).

For the academic year 2014-2015 most states used either the assessments created and administered by Smarter Balance Assessment Consortium (SBAC) or Partnership for Assessment of Readiness for College and Careers (PARCC). See Table 3. According to the National Conference of State Legislators (NCSL) 23 states are participating in SBAC and 23 plus the District of Columbia in PARCC (2015). The participating states signed a memorandum of understanding (MOU) "pledging to implement the consortium's assessment for purposes of federal accountability testing" (NCSL, n.d., par. 4; Center for K-12 Assessment & Performance
Management at ETS, 2012). Prior to these assessments, states had a variety of assessments and due to the variety of meanings for proficiency, schools have had differing results to meet NCLB.

From the 2014-2015 school year to the 2015-2016 school year states have backed out of these tests and now there are 11 states participating in the PARCC (PARCC, 2016) and 15 states, one territory and the Bureau of Indian Education participating in SBAC

(SBAC, n.d.). According to Gewertz (2016) only New Jersey and New Mexico , both using PARCC, and Washington using SBAC employ these assessments as a graduation requirement.



www.nmped.gov

Figures 1 and 2. New Mexico proficiency data.

Over the past decade, New Mexican students' results have not even closely reached the 2014 NCLB 100% proficient expectation in reading and math. Figures 1 and 2 show proficiency levels for reading and math in New Mexico. Due to the inconsistency of what states define as proficient it is hard to understand how well New Mexico schools are performing in comparison

to neighboring states unless one reviews the NAEP results. Table 4 illustrates how New Mexico and its neighboring states: Arizona, Colorado, Kansas, Oklahoma, Texas, and Utah are compared to national performance on the NAEP assessment. Although New Mexico is consistently below the nation's average of performance its neighbors have a variety of results where only Utah consistently is above the nation's average performance. None of the nation's states have 100% proficiency.

Table 4. Comparisons of Neighboring States to New Mexico of the 2015 NAEP Results[1]

	Compared to the National Average in 4th Grade		Compared to the National Average 8th Grade	
State	Reading	Math	Reading	Math
Arizona	Below Average	Average	Average	Average
Colorado	Average	Above Average	Above Average	Above Average
Kansas	Average	Average	Above Average	Average
Oklahoma	Average	Average	Average	Below Average
New Mexico	Below Average	Below Average	Below Average	Below Average
Texas	Average	Above Average	Below Average	Average
Utah	Above Average	Above Average	Above Average	Above Average

[1] https://www.nationsreportcard.gov/reading_math_2015/

Criticisms of the Current Performance Indicators

The performance indicators of NCLB elicit a broad spectrum of interpretations regarding their efficacy among researchers. According to Grissmer, Ober & Beekman (2014),

NCLB measures have been criticized in four ways:

1. The long-term performance goals have been characterized as implausible given the underlying normal distribution of scores unless the proficiency standards are set very low.
2. Assessing whether AYP is met annually often is problematic, given changes in annual scores, and statistical uncertainties in score changes often is similar in

magnitude to AYP, making AYP a poor measure on which to base rewards or sanctions.

3. The variation between states in their standards and strategies for setting AYP make the standards and strategies difficult to interpret and compare.
4. The use of AYP may place high poverty and racially diverse schools at a disadvantage. (as cited by Mintrop & Trujillo, 2005; Kane & Staiger, 2002; Kim & Sunderman, 2005; Raudenbush, 2004; Rothstein, 2008; Linn & Haug, 2002; Linn, Baker, & Herman, 2002; Stecher, Hamilton, & Gonzalez, 2003)

The inconsistencies from state to state did not provide comparable data to the federal and state government education officials in order to adequately know how well schools were actually performing with regard to proficiency in math and reading. Due to these inconsistencies, some states had a weak policy to show proficiency and hence meet AYP goals while others might have had stringent policy preventing schools from meeting AYP. Thus, while the metrics may not show it, students in both states might actually perform at the same levels (Linn, 2005).

Mintrop and Trujillo (2005) contend that methods to improve low-performing schools will need to address all aspects of the school system and that the NCLB Act make the intervention burdens even greater. Those schools with a greater number of subgroups (racial/ethnic groups, economically disadvantaged, etc.) will have a harder time meeting AYP due to required expectation for each and every subgroup. Table 5 shows the many ways in which a school will have to satisfy NCLB annual measured outcomes to reach AYP Linn (2005). Where the subgroups of racial ethnic groups could be Hispanic,

Table 5. Hurdles for a Large School with a Diverse Student Population

	Reading/English Language Arts		Mathematics		
Demographic Group	Participation Rate	Percent Proficient or Above[1]	Participation Rate	Percent Proficient or Above[1]	Other Academic Indicators
All Students	95%	100%	95%	100%	100%
Caucasion	95%	100%	95%	100%	
Hispanic	95%	100%	95%	100%	
African American	95%	100%	95%	100%	
Native American	95%	100%	95%	100%	
Economically Disadvantaged	95%	100%	95%	100%	
Students with Limited English Proficiency	95%	100%	95%	100%	
Students with Disabilities	95%	100%	95%	100%	

Note: Modified from Mintrop and Trujillo (2005)
[1] Percent proficiency is based on the NCLB goal of 100% percent proficiency by the year of 2014.

Caucasian/Anglo, African American etc. all must participate at a 95% rate or higher to meet AYP. Just participation in diverse schools make it considerably difficult for schools and districts to meet AYP even without considering assessment scores.

Federal and State Mechanisms for Remedying Low-Performance in K-12 Schools

In many states, schools receive grades in some form or another on how well they are doing through a one-time snapshot of the AYP indicators. There is an ever increasing push for holding leaders and teachers accountable for underperforming schools and students. Leaders are at a loss as to what they should do to make a major impact on increasing test scores. With certain turnaround initiatives such as "Race to the Top" (whitehouse.gov, 2014) sanctioned by the federal government, there is pressure to bring change and to bring it quickly. President Obama made investments in the following initiatives: Race to the Top (RTTT) — $4.35 billion, School Improvement Grants (SIG) — $3.55 billion and Investing in Innovation Fund (I3) — $650 million to fund four turnaround models. These four turnaround models are as follows:

1. Turnarounds: Replace the principal and rehire no more than 50 percent of the school's staff; adopt a new governance structure; provide job-embedded professional development; offer staff financial and career-advancement incentives; implement a research-based, aligned instructional program; extend learning and teacher planning time; create a community-orientation; and provide operating flexibility.
2. Restarts: Transfer control of, or close and reopen, a school under a school operator selected through a rigorous review process. A restart model must enroll, within the grades it serves, any former student who wishes to attend.
3. Transformations: Replace the principal (no requirement for staff replacement); provide job-embedded professional development; implement a rigorous

teacher-evaluation and reward system; offer financial and career advancement incentives; implement comprehensive instructional reform; extend learning- and teacher-planning time; create a community-orientation; and provide operating flexibility and sustained support.

4. School Closure: Close the school and enroll students in other, higher-achieving schools. (Kutash, Nico, Gorin, Rahmatullah, & Tallant, 2010)

The U.S. Congress sought out the Equity and Excellence Commission and charged them to "provide advice to the secretary of the U.S. Department of Education on the disparities in meaningful educational opportunities that give rise to the achievement gap, with a focus on systems of finance, and to recommend ways in which federal policies could address such disparities" (U.S. Department of Education, 2013). Though different efforts were put forth to turn around schools, McQuillan and Salomon-Fernandez (2008) stated "there is limited understanding of what it takes to turn around chronically low-performing schools" (p. 4). States have tried a variety of efforts such as the above four methods funded by the federal government, as well as establishing charter schools, and offering financial incentives to quality teachers to teach at low-performing schools (Steele, Murnane & Willett, 2010).

Pullman, LaCaria, Schoenberger, and Algozzine (2014) researched the turnaround efforts of 19 successful principals who were brought in to turn schools around. The movement from NCLB for underperforming schools spurred this restructuring process. Schools received a list of methods for turnaround and each of these 19 schools decided to replace the principal and some staff members in order to make a major impact on student

performance. Some principals brought their own leadership staff along with teachers to the school while other did not. Over a course of three years the leaders documented their efforts and analyzed the performance of the students.

The first year these turnaround schools did not show significant change in student performance, but during the second and third year, principals started to see change within the school. They concluded that the initiatives these leaders implemented were the areas in which change occurred. All principals focused, as a high priority, on cleaning up the grounds, making school facilities more presentable and functional. Some focused on bringing in new curriculum while others did not. Some focused on discipline and behavior while others focused on instruction. Pulliam et al. (2014) concluded that all principals had turnaround in the areas in which they focused.

If the conclusion from Pulliam et al. (2014) is an indicator of what turnaround efforts can do, it will pay to focus on what needs changing, within the school, by strong, passionate and supported leaders. A turnaround school can have many different grey areas and a leader, as Pulliam et al. (2014) would suggest, should focus on the high priority needs to make the most impactful turnaround. One school may have the need for instruction while another may have the need of organizational structure, while still another may have a need of professional development. If this study is an indicator of effective strategies to turnaround schools, one might consider conducting a needs analysis to identify the true areas in need for turnaround. Although many schools may have similar areas in need of turnaround, underlying causes will differ greatly. When causes for school low performance are identified, a turnaround program will be more effective to

increase student performance and efforts to turn a school around will be more sustainable in the long run. The concept of 'turnaround' may be too cliché and a hot topic at this point in the USA culture influencing school and district leaders to jump on the 'band wagon' and try to make major change for their school or district without focusing on the cause of the problem. This quick action without understanding the cause of the problem risks unsustainable change resulting in high cost with no long term gains.

Performance Improvement/Human Performance Technology

Overview of Performance Improvement/Human Performance Technology

Throughout the years humans have tried to increase their performance at what ever is being done. The definition of Human Performance Technology (HPT) has grown and morphed over the years. In the Forward of the *Handbook of Human Performance Technology*, Edited by James Pershing, Stolovitch & Keeps (2006) stated "Human performance technology sounds somewhat dry and mechanistic. Hence the term human performance improvement (HPI) has begun to appear in professional publications as a more acceptable euphemism" (p. xiii). Pershing (2006) continued discussing the evolution of HPT and outlined 30 years of definitions of HPT. From Gilbert in 1978 defining it as

> Human competence is a function of worthy performance (W), which is a function of the ratio of valuable accomplishments (A) to costly behavior (B);

to the International Society of Performance Improvement (ISPI) in 2005 defining it as

> A system approach to improving productivity and competence, uses a set of methods and procedures—and a strategy for solving problems—for realizing opportunities related to the performance of people. More specifically, it is a process of selection, analysis, design, development, implementation, and evaluation of programs to most cost-effectively influence human behavior and accomplishment. It is a systematic combination of three fundamental processes: performance analysis, cause analysis, and intervention selection, and can be applied to individuals, small groups, and large organizations. (pp. 8-9)

Van Tiem, Moseley, & Dessinger (2012) defined performance improvement (PI) as "the science and art of improving people, process, performance, organizations and ultimately society" (p. 5). Kaufman & Guerra-Lopez (2013) defined PI as "an attempt to reduce or eliminate the gaps between current results and desired results. This may be applied to individuals, organizations, or to society/communities" (p. 180). The idea of evaluating a system and finding areas to improve performance is decades old. Many refer this process as Human Performance Improvement (HPI). According to Richey, Klein & Tracey (2011) the philosophical emphases of PI is generalized as:

1. Empiricism: Human performance follows specific laws that can often be predicted and controlled.
2. Pragmatism: PI theory reflects the belief that practical findings can be used as the basis for knowledge and meaning.

3. Humanism: Organizational theory emphasizes the use of intrinsic motivation and growth of individuals in an organization. (Table 9.4, An overview of Performance Improvement Theory and Instructional Design, Kindle Edition)

Table 6. Gilbert's Behavioral Engineering Model (BEM)

	Information	**Intrumentation**	**Motivation**
Environmental Supports	Data 1. Feedback 2. Expectations 3. Clear and Relevant Guides	Resources 1. Tools, Resources, Time and Materials	Incentives 1. Financial 2. Non-Financial 3. Career-Development 4. Consequences for Poor Performance
Individual's Repertory of Behavior	Knowledge 1. Training 2. Placement	Capacity 1. Flexible Scheduling 2. Physical Aids 3. Physical Shaping 4. Adaptation 5. Selection	Motives 1. Assessment of Workers' Motives 2. Recruitment

Modified from Gilbert's Behavioral Engineering Model. Van Tiem et al., (2012) Used with permission.

According to Van Tiem et al. (2012) "Gilbert created one of the earliest models for performance improvement, the 'Behavioral Engineering Model'" (p. 14). Due to his collaboration with Skinner, Gilbert's model operated on the premise that behavior was due to stimuli and response (Richey et al. 2011). Gilbert posited that causality, the underlined cause of the performance problem, is due to either environment factors or individual factors of behavior (Van Tiem et al., 2012), and each of these coincide with information, instrumentation, and motivation. Within the intersection of these elements

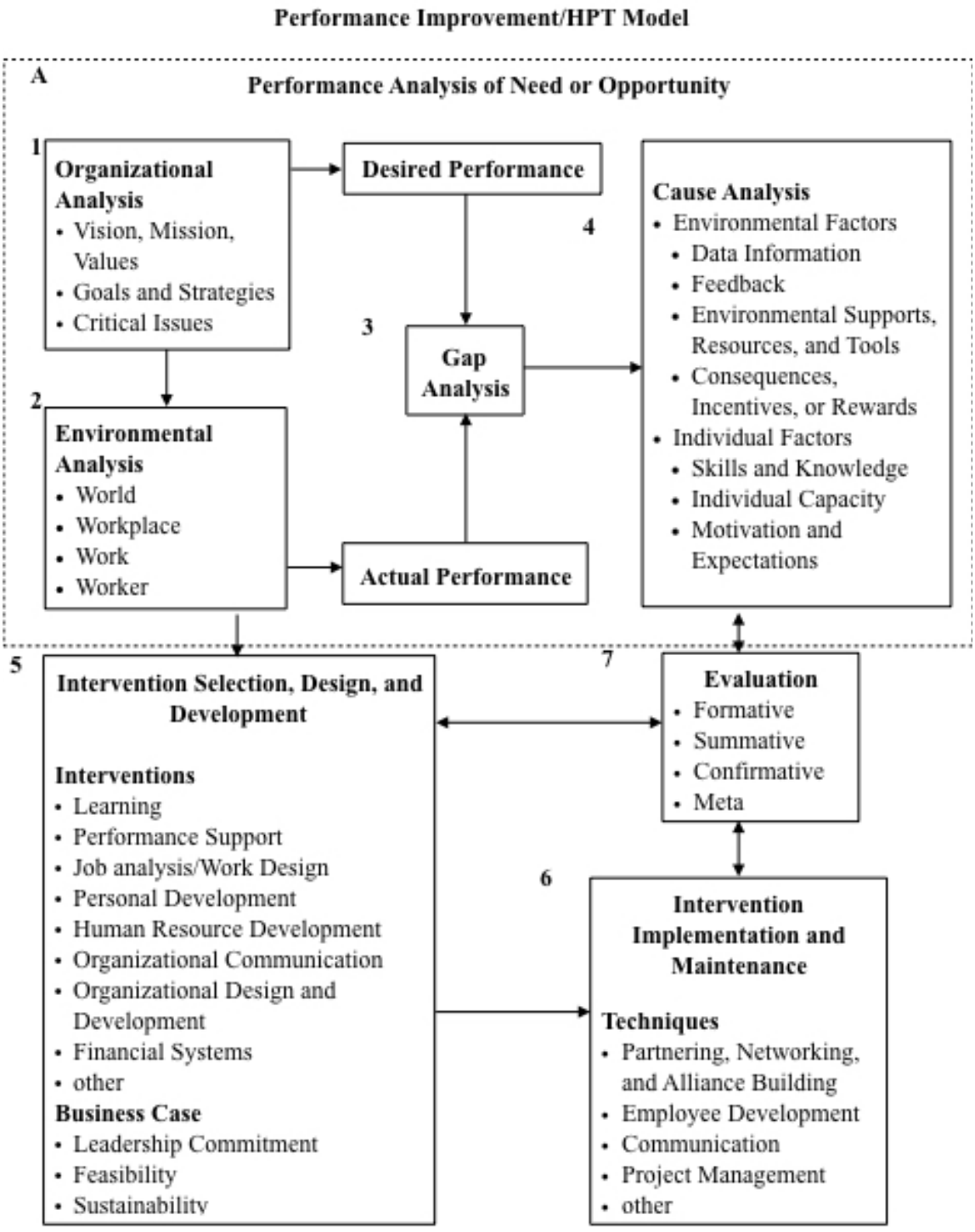


Figure 3. Performance Improvement/HPT Model

lie the “six basic aspects of human behavior that impact performance improvement” (Van Tiem et al., 2012, p.14). These six basic aspects, as shown in Table 6 are Data, Resources, Incentives, Knowledge, Capacity and Motives. Gilbert’s Behavioral Engineering Model will be discussed in greater detail later in this chapter.

The International Society of Performance Improvement (ISPI) as developed by Van Tiem et al. has produced their PI/HPT of change management displayed in Figure 3. Van Tiem et al. (2012) stated that there are six key elements of HPT:

1. It is people oriented: the people are the heart of an organization
2. Results driven: it is all about improving results
3. Teams oriented: HPT relies on teams of people coming together to solve difficult problems
4. Commitment: organizations must be committed to see change happen and interventions sustained
5. Sustainability: HPT professionals are about sustaining the changes to insure gaps stay closed within an organization over time
6. Not a gimmick: organizations today are about knowledge sharing, problem solving and team approaches to solve immediate problems and HPT fits this need and should not be looked upon as a gimmick to be discarded when a new method comes around. (p. 7 & 8)

Performance Analysis

"The Performance Improvement/HPT Model" according to Van Tiem et al. (2012), "is representative of the knowledge and models of experts and practitioners in the field. Gilbert's

Behavior Engineering Model is integrated into the [ISPI PI/HPT model as the] cause analysis component of the Performance Analysis" (p. 41). In Figure 3, section A, there is a large dotted box which delineates elements within a performance analysis. Rosset (2009) stated,

> Performance analysis (PA) is partnering with clients and customers to help them define and achieve their goals. PA involves reaching out for several perspectives on a problem or opportunity; determining any and all drivers toward or barriers to successful performance; and proposing a solution based on what is learned, not on what is typically done. (Chapter 2, Section 3: Designing Performance Analysis, par 1, Kindle Edition)

The ISPI PI/HPT model starts with the user conducting a performance analysis. This analysis provides understanding of the organization's desired state, actual state, gap, and cause for performance issues. According to Rossett (2009), the goals of the performance analysis are as follows:

1. Identifying current status of performance from many sources, including sponsors, the opinions of leaders, published literature, job incumbents, content experts, supervisors, work products, records, and customers.
2. Identifying what excellence looks like from these very same sources.

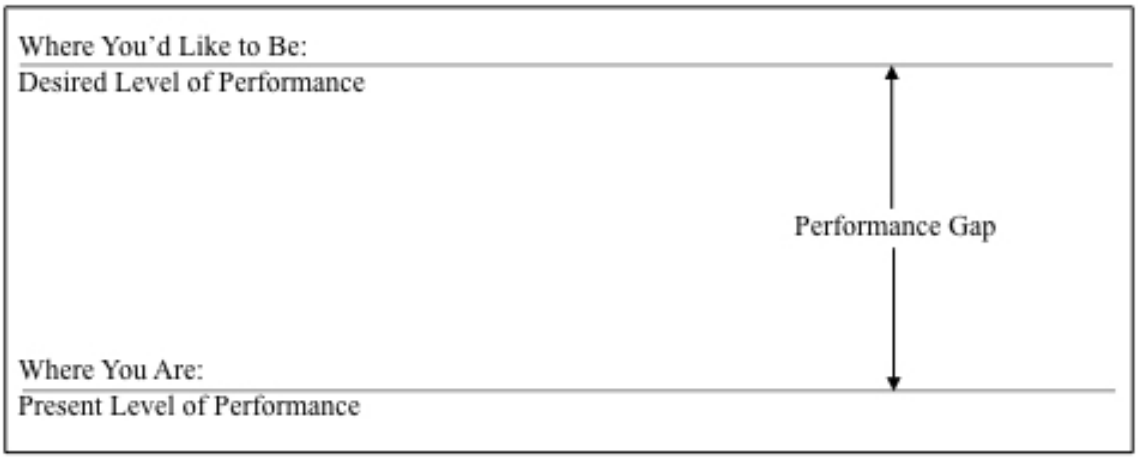
3. Identifying why the performance is at a certain level, with an eye toward the individual and organizational factors that drive or impede performance.
4. Tailoring approaches to the kind of request or requirement in the organization.
5. Using what one discovers in items 1 through 4 in order to plan solution systems and win organizational support.
6. Using what you find out in items 1 through 4 to plan strategies to measure progress, judge worth, and continuously improve the effort. (pp. 211-213)

Many PI/HPT models begin the performance analysis with an organizational analysis (Wilmoth, Prigmore & Bray, 2002) to understand the current philosophic structure of the organization. This analysis focuses on vision, mission, values, goals, strategies, and critical issues, as seen in Figure 3 section A-1. By analyzing the organization the data collected provides the user with understanding of the organization and direction for what the organization is trying to accomplish or what goals have already been identified (Van Tiem et al., 2012). Van Tiem et al. suggested the elements of the organizational analysis often lie within the strategic plan of the organization. According to Tosti and Jackson (1997), these elements belong to the "organizational structure, centrally controlled systems, corporate strategies, key policies, business values, and corporate culture" (p. 23). Without clear understanding, of the desired direction of the organization, the user will not be able to define where the gaps exist. Chevalier (2007) referenced Lewis Carroll's *Alice in Wonderland* to point out why the user should understand what the organizational goals are within the performance analysis:

> Alice has no idea where she is or where she is going when the path she is following comes to a fork, where she can go one of two ways. She needs to make a decision which way to go, when suddenly the Cheshire Cat appears in the tree where the path divides.
>
> "Cheshire Puss," she began, "Would you tell me, please, which way I ought to go from here?"
>
> "That depends a good deal on where you want to get to," said the Cat.
>
> "I don't much care where-" said Alice.
>
> "Then it doesn't matter which way you go," said the Cat. (Chapter 1, par 6, Kindle Edition)

If the users do not know what the goals of the organization are, they cannot evaluate performance necessary for reaching these goals.

Figure 3 section A-2 depicts the environmental analysis. When applying the PI/ HPT model a user would analyze the global societal realities and culture; the organizational workplace; what is happening in the workplace; and what is happening with the workers themselves. Conducting this analysis helps the user to determine a baseline of activity, mindset, and culture, but not necessarily if there are problems (Van Tiem et al., 2012). Through analyzing the world environment, one can understand the exterior dynamics that construct the current ways of performance and according to Page and Hale (2012) “By focusing the processes systemically on the work, the workers, and the workplace, you increase the likelihood of uncovering and addressing the real barriers to change and improvement” (Chapter 3, par 12, Kindle Edition).



Defining the Performance Gap, Chevalier (2007, p. 91). Used with permission.

Figure 4. Chevalier's performance gap model.

Once the users have determined the desired goals of the organization through the organizational analysis and the actual state of the organization through the environmental analysis, he or she can start to analyze the gap in terms of the presenting problem, see Figure 3 section A-3. Also in Figure 4 Chevalier illustrates the basic idea of a performance gap graphic.

The gap analysis allows the user to measure or understand where current performance is and where the performance is desired to be. Such analysis prioritizes the organization's focus on specific performance gaps finding the root cause for those gaps, (see Figure 3 A-4).

Many authors contend (Gilbert, 1978; Van Tiem et al., 2014; Sanders & Ruggles, 2014; Rummler, 1995; and Binder, 1998) that a lack of focus on cause results in the wrong solution. Skipping the cause of the problem is counter-productive for an organization. The cause analysis allows the user to understand why there is a

performance gap. The user can then determine if the performance gap is due to the environmental supports or individuals' behavior within the organization. This paper will further detail cause analysis later. Once the performance gap and the cause has been assessed, the next step within the PI/HPT model is to determine what solution(s) would best fit the needs of the organization.

Interventions, Implementation, and Evaluation

There are literally hundreds of interventions due to the many unique characteristics and needs of organizations. Van Tiem et al. (2012), discussed over 100 possible interventions and divided them into eight categories:

1. Learning (i.e. knowledge management, just-in-time learning, games/ simulations, etc.)
2. Performance Support (i.e. job aids, documentation and standards, etc.)
3. Job Analysis/Work Design (i.e. job descriptions, job rotation, lean organizations, etc.)
4. Personal Development (i.e. coaching, mentoring, communities of professional practice, etc.)
5. Human Resource Development (i.e. staffing, competencies, succession planning leadership development, etc.)
6. Organizational Communication (i.e. communication networks, social media, etc.)
7. Organizational Design and Development (problem solving, strategic planning, ethics, social responsibilities, etc.)

8. Financial Systems (i.e. open book management, cash flow analysis, etc.)

In Figure 3 section 5 Van Tiem et al. (2012) illustrates the intervention selection, design and development stages of the PI/HPT model. The process of selecting an intervention as well as designing and developing it consists of the user collaborating with the organization's stakeholders to create a selection and together design the best possible solution set to close the performance gap (Van Tiem et al.). In this stage, the user will help determine where the leadership is committed to create change, if the intervention is feasible with regards to resources and talents, and gauge the sustainability of the intervention.

Once selected the user will implement and maintenance the intervention as illustrated in Figure 3 section 6. According to Van Tiem et al. (2012) "As interventions are implemented changes begin to affect the worker, the work, the workplace, and the world" (pp. 476-477). This is a crucial part of the model in that if the cause was correctly diagnosed, then the intervention will start to close the gap as desired. The user must consider the culture of the organization in the intervention's implementation phase because, as Addison and Haig (2006) suggested, "implementation plans must be culture-compatible, or they will be destroyed" (p. 46). Throughout the implementation process, the intervention will need to undergo maintenance in order to insure that its construction suits the needs of the organization and that past practices are undergoing change in the desired direction.

Throughout the entire process of the PI/HPT model the user will conduct evaluations to ensure the needs of the organization are met. There are four levels of

evaluation as illustrated in the PI/HPI model (see Figure 3 section 7): Formative, Summative, Confirmative and Meta. According to Van Tiem et al. (2012) the purpose of performing formative evaluations throughout the PI/HPT model is to validate that the performance improvement effort is:

1. Designed to do what the designers/developers promise it will do,
2. Grounded in the mission and values of the organization, and
3. Aligned with the objectives and the performance improvement efforts. (p. 547)

Formative tells the user if there is improvement. This allows the user to understand where adjustments may need to take place to ensure desired results occur for the organization.

On the other hand, the purpose of summative evaluation, according to Van Tiem et al., is to answer two major questions:

1. Did the performance intervention package solve, eliminate, or reduce the original performance improvement opportunity, problem, or gap?
2. Does the performance improvement package meet the needs of the organization? (p.553)

Summative evaluation helps the user to understand if the efforts of the intervention are making the desirable change in the organization. Summative in a sense proves if the intervention was the right one for the performance problem.

Confirmative evaluation looks at the organization after the intervention concluded to understand if the intervention created value to the organization. This is where the user evaluates what has transpired due to the intervention and if the desired results actually happened and endured (Dessinger & Moseley, 2006).

Lastly, the meta evaluation allows the user to understand if the above evaluation methods were valuable and effective. Van Tiem et al. (2012) define meta evaluation to be "the process of evaluating formative, summative, and confirmative evaluation by literally zooming in on the evaluation processes, products, results, and recommendations to take a closer look at what happened and why" (p. 562).

Key Theorist in PI/HPT and How their Models Differ

The field of HPT has a history dating back to the early 20th Century. Taylor, with his focus on strategic management to ensure production was efficient, created the initial push in the HPT direction. B. F. Skinner analyzed the behavior of humans to understand what would motivate them to do certain things. One of B. F. Skinner's students was Thomas Gilbert, the reputed originator of the idea performance improvement (Van Tiem et al., 2012). Gilbert's contributions are many, but one vital contribution from Gilbert plays a central role within the PI/HPT model — his Behavior Engineering Model (BEM). The BEM, comprises the cause analysis component of the PI/HPT model.

Luminaries of PI/HPT include:

1. Joe Harless' focus and fame is the front-end analysis which is basically performance analysis within the HPT model.
2. Roger Kaufman who focused on the Mega (societal), Macro (organizational), and Micro (individual) performance issues.
3. Kurt Lewin created the Force Field Analysis to understand the gap within organizations as well as understanding how interventions could be applied and the dynamics which occur with change.

4. Robert Mager focused on instructional objectives within the interventions to ensure the workers were indeed obtaining the correct intervention to solve the problem and fill the gap. He also worked with Piper to create a performance analysis flow chart for professionals and organizational leaders to follow in order to solve the performance problem.
5. Garry Rummler, along with Alen Branche, broke up performance into three levels: organizational, process, and individual job or performer. (Sanders & Ruggles, 2014)

The work of these theorists/practitioners interweaves throughout the PI/HPT model and each has played an important role in where the field is today.=

Gilbert's Behavioral Engineering Model and Others

Carl Binder (2006) and Chyung (2008) arguably contend that Gilbert was the father of HPT. Gilbert's contributions have given performance improvement practitioners foundational methods to analyze performance. In his seminal work, *Human Competence: Engineering Worthy Performance,* Gilbert discussed his three Leisurely Theorems:

1. Worthiness = Value of accomplishment/Cost of performance
2. Measure against a standard: the potential for improving performance
3. Assessing environmental causes. (Gilbert, 1978)

According to Gilbert (2007):

> *Leisure* comes from an old French word that means "permission." When we are permitted to break from our arduous labor, we have the opportunity to accomplish other things. The *Oxford English Dictionary* calls it "opportunity

> afforded by freedom from occupations," and, again, "time allowed before it is too late." I especially like the second definition. We can reason from it that if we learn to get more *leisure*, and better use what *leisure* we have, it will not be too late so soon.
>
> If (old-style) *leisure* is the product of time and opportunity, it is, indeed, the worthy aim of a system of performance engineering, and the one I consider to be its true purpose. But because the idle connotations of *leisure* have become great, we need another term to express our meaning. In keeping with the economic properties of any system of engineering, I have chosen the more ponderous term *human capital* to do the duty for which *leisure* would once have been adequate. (p. 11)

Solovitch (2010) noted that,

> For Gilbert, deficiencies in accomplishments are ultimately caused by management system weaknesses. "For want of a nail, a kingdom was lost." How performers are selected; integrated into the work environment; provided with processes, tools and resources; and managed has enormous impact on their performances. By selecting performers best suited for the job and providing the best conditions and resources to accomplish the job, wasted effort is reduced as valued accomplishment soars. (p. 10)

The Behavioral Engineering Model (BEM) is at the heart of Leisurely Theorem Three (Van Tiem et al., 2012) in that it dives into the causes of the problem within the environment. In Table 7, one can see the workings of Gilbert's Leisurely Theorem Three

in his Behavioral Engineering Model (BEM).

Table 7. Gilbert's Behavioral Engineering Model (BEM)

	Information	**Intrumentation**	**Motivation**
Rooted in the Environmental	Data 1. Feedback 2. Expectations 3. Clear and Relevant Guides	Resources 1. Tools, Resources, Time and Materials	Incentives 1. Financial 2. Non-Financial 3. Career-Development 4. Consequences for Poor Performance
Rooted in the Individual	Knowledge 1. Training 2. Placement	Capacity 1. Flexible Scheduling 2. Physical Aids 3. Physical Shaping 4. Adaptation 5. Selection	Motives 1. Assessment of Workers' Motives 2. Recruitment

Modified from Gilbert's Behavioral Engineering Model. Van Tiem et al., (2012). Used with permission.

Performance improvement specialists have used the PI/HPT model extensively because of its simplicity and effectiveness in eliciting the cause of a performance problem and the nature of HPT is about changing behavior to get results. Within the performance analysis portion of the PI/HPT model the user can assess the data, resources, and incentives within the organization to determine what the environmental causes are that are creating poor performance. Also the user can assess the knowledge, capacity and motives of the individual to understand why there is a gap in performance.

Gilbert looked through the lens of behaviorism to try to understand why performance issues were occurring. Within his BEM, Gilbert focused on environment and

the individual, allowing him to understand six aspects of human behavior with respect to the organization's performance. Broken down these elements are as follows:

1. Data/information: what data or information clogs may exist that impede performance? (i. e. Are expectations clear? Does communication flow through channels appropriately? Is there feedback on what is done right or wrong?)
2. Resources: What resources are not available for the organization to function properly? (i.e. Are the tools to get the job done supplied and adequate? Is there enough time to get the job done as expected? Are materials provided for the work to get done?)
3. Incentives: Are there a lack of incentives for the organization to move forward (externally or internally)? (i.e. Are there financial incentives for desired performance? Is career development available? Are there consequences for poor performance?)
4. Knowledge: Does the worker have the proper knowledge to perform? (i.e. Are the workers skilled in the job they are required to do? Are workers placed correctly?)
5. Capacity: Does the worker have the capacity to perform the tasks they were hired to do? (i.e. Does the worker have what it takes to get the job done? Does the worker need job aides or some sort of adaptation to complete tasks?)
6. Motives: Does the worker have the motivation to perform as needed? (i.e. Does the worker's drive match the work needing to be done? Does the worker's desire match the organization's mission?

By focusing on the performance gaps with these six perspectives, the user can isolate the causes of poor performance. The user can then address the specific needs of the organization to close the gaps; otherwise, it may be a guessing game of what will work.

There are many iterations of BEM. Perhaps the best know is Carl Binder's Six Boxes. Binder was Skinner's last graduate student. Binder stated that

> Tom's [Gilbert] original formulation was not helpful in communicating with many business people. Despite my intellectual heritage, I discovered that in most cases it would be easier to communicate about the Behavior Engineering Model without referencing Skinner or operant conditioning and with some language adjustment. (p. 49)

Table 8. Binder's Six Boxes[tm]

1. Expectations	2. Tools and Resources	3. Consequences
4. Skills and Knowledge	5. Selection and Assignment (capacity)	6. Motives and Preferences (attitudes)

Six Boxes Performance Thinking, *A View from the Top: Human Performance in Organizations*, 2009, p. 8.

Binder's goal has been to bring the BEM to the human resource and business table and to not scare stakeholders away. Binder's Six Boxes model is depicted in Table 8. His relationship with Gilbert and BEM is evident, but there are some subtle differences.

Binder (1998) stated that the lower cells in the Six Boxes model "like Gilbert, is related more to the individual performer than to the environment, we include in the bottom cells factors that reflect influence of the environment as well" (p. 49). The user,

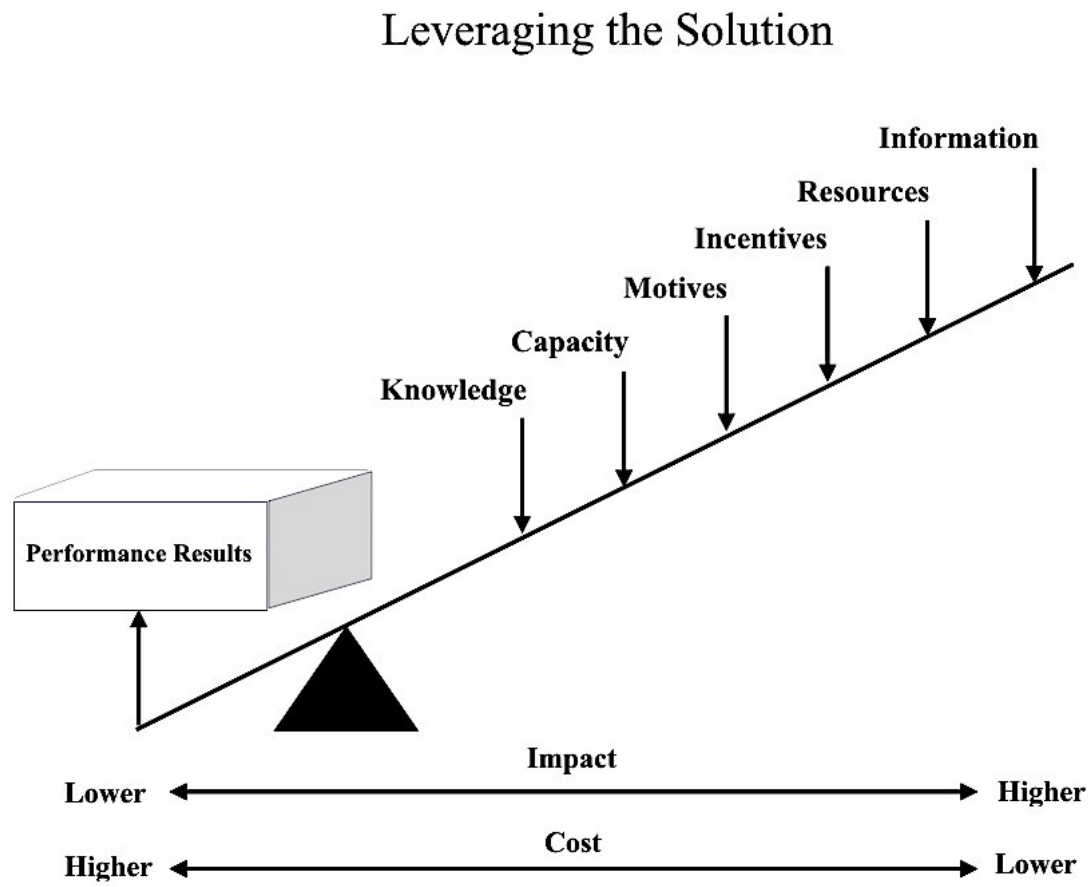
after conducting the gap analysis, can then look within these elements to understand where the cause resides and then have the discussion with the organizational stakeholders of next steps. Binder (1998) also pointed out that if the first five boxes undergo implementation, then the sixth one usually takes care of itself, that is, if all the other elements within the Six Boxes take effect, the motives and preferences (attitudes) will align with what is needed for performance.

Table 9. Chevalier's Updated Behavioral Engineering Model

Information	**Resources**	**Incentives**
1. Roles and performance expectations are clearly defined; employees are given relevant and frequent feedback about the adequacy of performance. 2. Clear and relevant guides are used to describe the work process. 3. The performance management system guides employee performance and development.	1. Materials, tools, and time needed to do the job are present. 2. Processes and procedures are clearly defined and enhance individual performance if followed. 3. Overall physical and psychological work environment contributes to improved performance; work conditions are safe, clean, organized, and conducive to performance.	1. Financial and non-financial incentives are present; measurement and reward systems reinforce positive performance. 2. Jobs are enriched to allow for fulfillment of employee needs. 3. Overall work environment is positive, where employees believe they have an opportunity to succeed; career development opportunities are present.
Knowledge/Skills	**Capacity**	**Motives**
1. Employees have the necessary knowledge, experience and skills to do the desired behaviors. 2. Employees with the necessary knowledge, experience and skills are properly placed to use and share what they know. 3. Employees are cross-trained to understand each other's roles.	1. Employees have the capacity to learn and do what is needed to perform successfully. 2. Employees are recruited and selected to match the realities of the work situation. 3. Employees are free of emotional limitations that would interfere with their performance.	1. Motives of employees are aligned with the work and the work environment. 2. Employees desire to perform the required jobs. 3. Employees are requited and selected to match the realities of the work situation.

Updated Engineering Model: *Updating the Behavioral Engineering Model,* 2002, p. 3. Used with permission.

Chevalier (2002) modified the Behavioral Engineering Model as shown in Table 9. Chevalier contends that this model is a "more efficient method for troubleshooting performance and for discovering the most important opportunities for improving individual performance" (p. 3). Like others who use the BEM as a foundation for their work, Chevalier focused on



Leveraging the Solution: *Updating the Behavioral Engineering Model,* 2002, p. 5. Used with permission.

Figure 5. Leveraging the solution model.

understanding the performance gap and then drilling down to the root cause. Chevalier's (2002) adaptation of ISPI's Performance Improvement Leverage Model, in what he calls Leveraging the Solution, as shown in Figure 5, illustrates that although individual elements may need to be addressed, the environmental elements (information, resources, and incentives) have a greater impact on the performance results. By aligning information, resources, and incentives one tends to have a higher impact with lower cost. In the same respect, training has lower impact but a higher cost factor. This is not to say

that one should not explore training opportunities, but rather if one can make a higher impact for less cost it may be incumbent on an organization to consider the alternative methods for performance improvement.

Table 10. Marker's Synchronized Analysis Model (SAM)

Gilbert's BEM Levels	**At what level is the problem?**	**What are the causes?**			The Organization
		Information	**Instrumentation**	**Motivation**	
Environment	**External**	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	Outside
	Organizational	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	Inside
	Job	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	
Individual	**Worker**	Knowledge Skills	Capacity	Motives	

Synchronized analysis model (SAM): Linking Gilbert's behavior engineering model with environmental analysis model. Marker (2007). Used with permission.

Marker (2007) has developed another evolution of Gilbert's BEM, the Synchronized Analysis Model (SAM). SAM allows the user to analyze cause while concurrently assessing the environment. In Table 10, one can see the intertwining of the environment, individual, outside and inside factors with Gilbert's BEM.

Marker further stratified the first row of Gilbert's BEM into external, organizational, and job categories with respect to the environmental supports and associated the organizational, job and work as elements within the organization. He

allows the user to see the connection of the external portions of the environmental support to the outside of the organization. Marker's model bears many similarities to models of Gilbert and Binder; however, he added in the five whys of Kaizens Total Quality Management (TQM) (Prosic, 2011) to drive further down to the root causes of the performance problem. For example, if a factory worker is only constructing 5 items on an assembly line when the desired amount is 15, the user will ask:

1. Why?
2. When analyzed the user may find out it is due to the worker needing to borrow a tool from another area in the factory. (Instrumentation at the Job level)
3. When asked why the user may find out the worker was never given the tool to use at this or her job site. (Instrumentation at the Organizational level)
4. Again when asked why the user may find there is a feedback loop broken between the worker and his or her supervisor not allowing the supervisor to know the needed tools for the worker. (Information at the Organizational level)
5. When asked why the user may find out there are no incentives for the supervisor to provide the proper tools for workers because their performance is not evaluated on subordinate performance. (Motivation at the Organizational level)

6. When asked why this is so the user may find that upper management has not established clear performance expectations of supervisors of the factory floor. (Informational at the Organizational level)

By asking why the user can dive into the root cause of the problem and then can address this cause with the appropriate intervention.

Applying PI/HPT to Underperforming K-12 Schools

How has PI/HPT been used in underperforming K-12 schools? Is PI/HPT a process that can bring value to the realm of K-12 education?

According to Pershing (2009),

> There is no magic in HPT. There are no easy-to-use cookbooks or templates for doing HPT. To be an effective human performance technologist takes hard work and dedication to its study and practice. Each organization and its performance-improvement challenges are unique and require individualized study and attention. (p. 26)

There have been many interventions implemented to address the underperforming schools within the United States of America. Throughout the country, states and districts have used a myriad of methods such as:

1. Reconstitution: Where a school is reconstructed with personnel and leadership.
2. Educational Management Organizations (EMO's): Outside companies take over the school to increase performance.
3. External Partners: Exterior consultants try to turn around the school or district.
4. Charters: Schools convert or are created to focus on a specific direction.

5. District Takeovers: The state takes over the entire district to implement change.
6. Vouchers: Students who attend poor performing schools have the opportunity to use a voucher to attend a private school.
7. Intervention Teams: Teams come in and analyze the school and implement strategies to close the achievement gap.
8. Financial Incentive: Poor performing schools provide financial incentives to high performing teachers to stay and teach. (Mintrop & Trujillo, 2005; Mintrop, 2003; Figlio & Rouse, 2006; Steele, Murnane, & Willet, 2010)

According to Mintrop and Trujillo (2005), "a variety of corrective action strategies have been tried. . .but none stick out as universally effective or robust enough to overcome the power of local context" (p. 10). Most recently, Page and Hale (2013) have capitalized on PI/HPT as a vehicle to create positive change within struggling schools. To date, their work, primarily conducted with low performing schools in Kentucky, has shown promise.

One may be able to analyze a low performing school and understand the causes for poor performance. Once the cause for low performance is understood then the school leadership could construct a turnaround program that increases student performance and possibly sustain it over time. According to Van Tiem et al. (2012) the standards for a certified school improvement specialist are as follows:

1. Analyze and apply critical judgment,
2. Facilitate meaning and engagement,
3. Focus on systemic factors,

4. Plan and record,
5. Organize and manage efforts and resources,
6. Guide and focus collaborative improvement,
7. Monitor accountability and adoption,
8. Demonstrate organizational sensitivity,
9. Build capacity and
10. Implement sustainability. (pp. 613-615)

Setting the bar for what is looked for from school improvement specialists calls for professionals in the field to seek common expectations. Page and Hale (2013) broke these HPT standards into:

Principles:

1. Focus on Results
2. Take a Systems View
3. Add Value
4. Utilize Partnerships

and Systematic Processes:

1. Assess the Need or Opportunity
2. Analyze the Cause or Performance Requirements
3. Design the Solution
4. Develop the Solution
5. Implement the Solution
6. Evaluate the Solution (Location 305 Kindle Edition)

Page & Hale (2013) studied how to implement the HPT model to create school improvement. Can the first two standards of systematic processes help to find causality within a New Mexico public school? The following chapter will set the stage for how a researcher might approach this challenge. It will call attention to the methods of approach to gain insight on whether the Synchronized Analysis Model (SAM) can determine causality of a low performing elementary school in rural New Mexico and how it compares to the current model being used by the school and district leadership.

CHAPTER 3 METHODOLOGY

Introduction

School and district leaders across the country have been trying to make sustainable change to increase the performance of the their schools. Many methods have been tried and the federal government has allocated billions of dollars to prescribe methods to improve schools and yet the USA still lacks in many areas. Many districts are leaning on outside agencies, private and public, to help with their performance issues, but with mixed success. According to Van Tiem et al. (2012) if one does not know the cause of the performance problem then one is only hoping that the solution will work.

This study sought to learn if the Synchronized Analysis Model (SAM) as compared to the school's current model could be used as an effective tool to determine causality of low performance in an elementary school. This chapter discusses the parameters under which this researcher conducted his research. The researcher discusses the type of research, the sample population studied as well as the method used to select the population. This chapter discusses the theoretical reasoning for the selected type of research, the methods data were collected and the manner in which the researcher analyzed the data.

Research Questions

The following central question guided this study:

Does utilizing Marker's Synchronized Analysis Model improve leadership's understanding of the cause(s) of underperformance in a rural elementary school as

compared to the method currently being used? The following sub questions will help frame the investigation:

1. What level, environmentally and/or individually, does the cause of the performance problem exist?
2. Where, i.e. within the school or outside the school, does the cause of the performance problem exist?
3. What elements of the school, i.e. informational, instrumental and/or motivational, is/are the cause(s) of the performance problem?
4. How can the district or school leaders use the data collected from the SAM to make impactful decisions for performance improvement?

Design for the Study

This researcher sought to understand if the Synchronized Analysis Model (SAM), an evolution of the Behavioral Engineering Model (BEM), allowed the opportunity to see different causes of the performance problem than the current analysis methods. The researcher employed an instrumental case study approach, looking at the application the SAM to one particular low forming school. In this study, the researcher used the SAM to determine causality of low performance. With the use of a survey, interviews, focus groups, and archival data the researcher searched for causality of low performance using SAM.

The researcher conducted a performance analysis, that is, an organizational, environmental, gap, and cause analysis. The primary focus of this research in on the Cause Analysis to understand the cause of low school performance using SAM.

Understanding if SAM could serve as a more effective diagnostic for school and district leaders would further their efforts for sustainable school improvement.

Data was gathered in a baseline focus group with two district leaders and the school principal to compare the school's current analysis model to SAM. Data was gathered from district mission, vision, policies, school performance records and compared to the state, school demographics, and teacher experience to understand the World and Workplace. Following this the researcher surveyed seven participating teachers to gather data on the Workplace, Work, and Worker. The researcher conducted four teacher semistructured interviews and a semistructured interview with the principal of the school to try to uncover causality. Finally, the researcher conducted follow up interviews with teachers to apply the five-whys strategy to determine root cause. The selection of the school site was due to the school's performance as compared to others within the district. Due to the researcher's connection with the community and district as a district leader, he acted as an internal consultant to explore performance gaps. The researcher secured proper permission through the district superintendent and principal to conduct exploratory research on the case of the school's low performance.

Research Design

Due to the need for school improvement across the country there is a need for schools to focus on how to improve what they do so the students can meet the level of proficiency mandated by state and federal governments. This study was an instrumental case study where the *process* of finding performance causes, and not the case itself, was the area of concern and analysis. An instrumental case study is a study of something other

than the case (Stake, 1995). Specifically, here, the SAM can provide clarity for school and district leaders to understand causality beyond the methods currently used. The case was [The] elementary School within [The District] in rural New Mexico. Despite many attempts for school improvement this school has been a low performing school for a number of years while its sister schools have.

This present inquiry was a developmental research Type 2 category of case studies. Van den Akker and Pomp (1993) defined developmental research in a two-fold purpose:

1. Supporting the development of prototypical products (including empirical evidence for their effectiveness)
2. Generating methodological directions for the design and evaluation of such products. (as cited by van den Akker, 1999, p. 3)

Richey, Klein & Nelson (2003) also discussed the emphasis and product of a Type 2 developmental research as follows:

> Emphasis: Study of design, development, or evaluation process, tools, or models
>
> Product: New design, development, and evaluation procedures &/or models, and conditions that facilitate their use. (p. 1103)

With this understanding of Type 2 developmental research, the researcher focused his attention on the Synchronized Analysis Model within an instrumental case study, to understand if it was a useful tool in diagnosing causality of low performance in a K-12 school as compared to the school's current analysis model.

School Characteristics

[The] elementary school serves grades ranging from kindergarten to sixth grade. The student population is largely Hispanic, as shown in Figure 6. [The] elementary also serves population of students with 27% of the students are receiving special education services with a small percentage of the students who are Limited English Proficient (LEP). The teacher population is mostly female, as shown in Figure 7 with almost equal amount of Hispanic or Latino and Non-Hispanic or Latino. Teachers within [The] elementary school have a wide range of years of experience as shown in Figure 8. Although teacher experience varies 85% of them have more than five years of experience and 51% of them would be considered to be seasoned teachers.

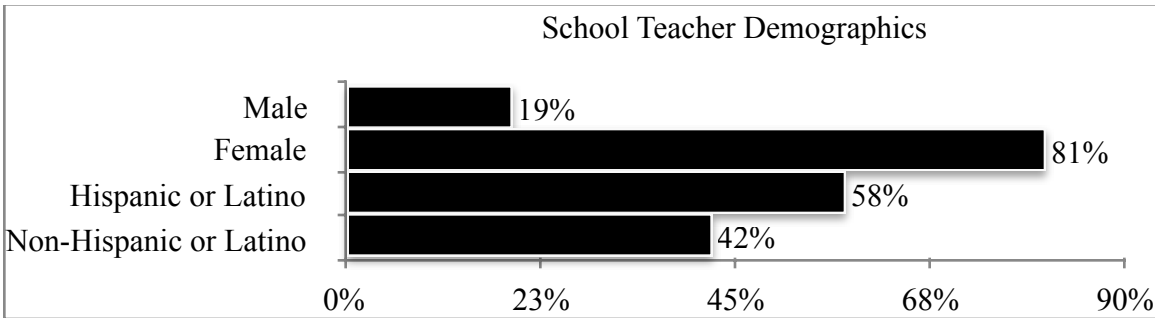


Figure 6. [The] elementary school demographics.

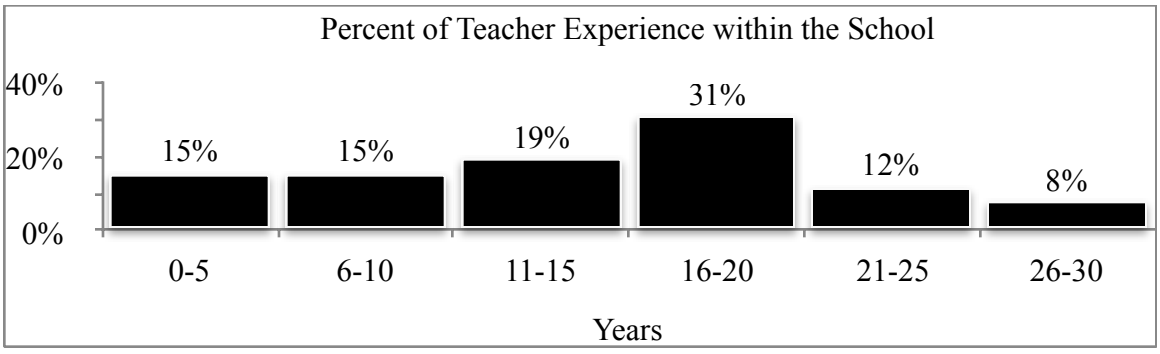


Figure 7. [The] elementary school teacher demographics.

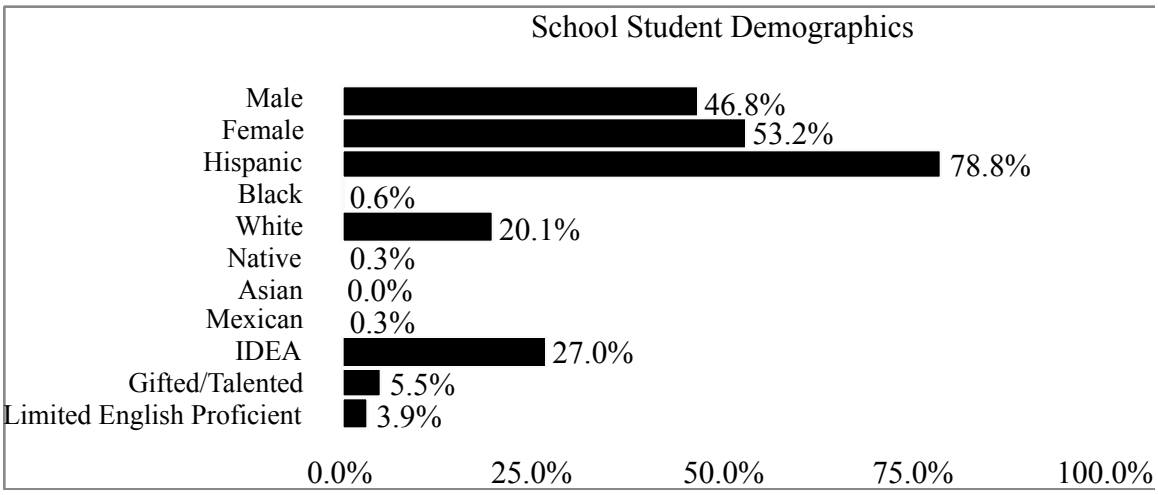


Figure 8. [The] elementary school teacher experience.

Participants

Identification of Participants

According to Martens (2005) it is important "to determine the dimensions of diversity that are important to the study" (p.315). Since the causality of the school's lack of performance is the focus of the study, the teachers', principal's, and district leaders' insight best helped the researcher to understand and describe the root cause through the lens of the SAM. All teachers were included in the request for volunteers for the study even though the performance measures from the state are primarily math and reading. Elective teachers' opinions were important in the educational process even though they did not have as direct and consistent connection to the performance of students as did the homeroom teachers. The principal was of great importance due to her guidance, implementation of school and district initiatives, and the ability to regulate resources. The

district leaders who set expectations/directives, hold principals and teachers accountable, determine budgets, and regulate resources were of interest as well.

Survey Participants

All teachers at [The] elementary were asked, via email, to be part of this study and completed an Employee Survey (see Figure 9). The purpose of the survey was to collect data on where participants see issues within the school/district as part of an environmental analysis. This survey was designed to reflect the Workplace, Work, and Worker elements of the environmental analysis.

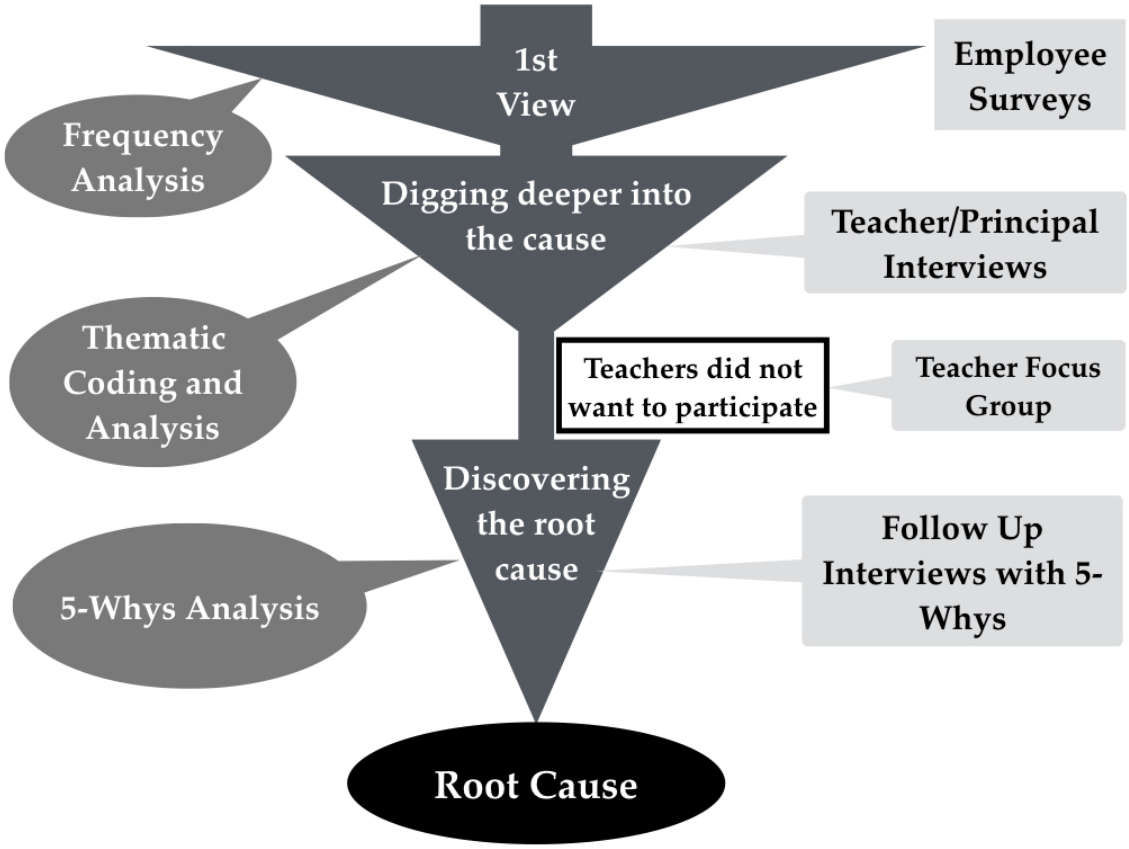


Figure 9. Data gathering process map.

Individual Interview Participants

The intention of the interview was to collect data that had been highlighted as focus areas from the survey results. Questions were semistructured to determine if causality was rooted in a single or a collection of elements within SAM. The interview participants were those who took the survey and were willing to discuss further in an interview. This allowed for a range of input of where the cause may exist as shown in Figure 9.

Focus Group Participants

There were two focus groups conducted. The initial focus group was with the principal, assistant superintendent and superintendent. The researcher sought to find a baseline of what the leaders felt the root cause was upon of their current model of cause analysis. The second focus group consisted of a group of teachers who volunteered to dive into the search for root cause by using the SAM. Although the intent of the researcher was to conduct this focus group with teachers no one attended the focus group. The principal offered incentives of early release but still no teacher attended. As shown in Figure 9 the researcher conducted follow up interviews instead with willing teacher participants to conduct the five-whys of the study.

Design for Acquisition of Data

The researcher accessed public records such as district vision, mission, policy and current state and school performance data. The researcher scheduled a focus group with the principal, assistant superintendent and the superintendent along with an observer.

Questions were asked so the researcher could understand what the leaders thought the cause of the performance problem was. The conversation was recorded, notes were taken by the researcher, and the observer took notes of body language. An email was sent to all potential participants, within the school, describing the research and an invitation to participate. The acquisition of survey data consisted of sending the survey to all participants through a staff meeting. The researcher reminded and asked for teachers, through email four different times, if they would fill out the survey. The researcher included, with the survey, a self-addressed return envelope. The researcher scheduled interviews with the school's teachers and the principal using email and phone calls. The interview data was recorded and notes were taken by the researcher. The researcher lastly scheduled a focus group with volunteer teachers through email. The responses from teachers within the focus group were documented and recorded to explore thoroughly the root cause of performance problems.

Human Subjects Protection

Several steps were taken to protect the rights of the participants during this study. The researcher sought approval from the district superintendent. The researcher then proposed the study to the researcher's dissertation committee. Once approved, the researcher sought approval from the Institutional Review Board (IRB) at the University of New Mexico to conduct the study. When the IRB approved the study the researcher began seeking informed consent from all participants. The informed consent was in the form of a written letter describing the purpose and scope of the study as well as all the procedures the researcher would take to ensure their confidentiality and anonymity

during and after the study. Once the informed consent was signed by participants and secured by the researcher data collection began. All data collected was de-identified to ensure responses were not linked to participants. Coded information was and is kept in separate file from the actual responses. All data was and is locked in a safe to be destroyed five years after this study.

Employee Survey Protocol

The survey was given to the teachers at [The] elementary School to be filled out and sent back to the researcher along with an informed consent form for the participant to sign, if they agreed to be part of the study, in an included pre-addressed envelope to the researcher. An email was sent out prior to the teachers receiving the survey explaining the study and that it was voluntary. The participants who agreed to participate in the study sent the completed and signed informed consent form along with a completed survey back to the researcher in the included addressed envelope.

Individual Interview Protocol

The researcher conducted interviews with four teachers who agreed to be interviewed, either before or after school, during the teachers' prep time. The teachers felt safe in their classroom so this is where the interview took place. The researcher also interviewed the principal. The principals felt the best place to be interviewed was at the district's Teacher Resource Center in the office of the researcher. It would be the most private and least interrupted by school staff. All interviews were semistructured open-ended interviews focusing on possible causes of performance problems. The researcher

also conducted follow up interview when he was unable to obtain participants for a planned teacher focus group. The researcher took notes and audio recorded the response from the interviewees. All participant responses were de-identified to ensure anonymity was maintained.

Focus Group Protocol

During the leadership focus group session the researcher took notes, audio recorded the responses, and the volunteer observer observed and noted body language. The researcher planned on conducting a teacher focus group but after repeated tries was unable to. The questions were open-ended to allow for the researcher to examine the causality according to the SAM.

Data Analysis Procedures

Th researcher analyzed the archival data to understand the current performance of the school. He also reviewed the districts vision, mission and policies to understand the structure of the district that may have impact on school performance. The researcher organized and looked for trends in the survey data. The researcher outsourced the transcription of the interview and focus group recordings. The researcher analyzed the leadership focus group data through a categorical analysis, grouping similar themes through axial coding. He then analyzed the interview data and teacher focus group data through a categorical analysis, grouping similar themes through axial coding. The teacher and principal interview data was then analyzed through the lens of SAM and Kaizen's five-whys. The researcher compared the baseline data, from the leadership focus group,

to that of the SAM causality to understand if there were different results by using one model versus the other.

Positionality

The researcher is a district leader within the school district where the selected school is located. Although it was understood the researcher had positional power over the subjects he repeatedly reassured the participants that the conversations would remain anonymous and would be for the sole purpose of the scope of this study. He continuously asked the participants if they felt comfortable answering the questions and all participants agreed to continue in the process. The researcher understood this study could have impact on how performance improvement efforts are studied and considered by the Principal, Superintendent and/or School Board. Due to his many years within the district as a teacher, principal, and director he leaned solely on the data within the surveys, interviews, focus groups, and used the understanding of the school's performance through school and district artifacts for themes which helped determine causality. Midway through the study, after filling out the annually required Conflict of Interest survey the University of New Mexico Conflict of Interest Committee D requested that the researcher and his Dissertation Committee Chair agree to the committee's proposed Conflict of Interest Management Plan. The management plan was agreed to and signed by both researcher and his Committee Chair. This document was then sent back to the Conflict of Interest Committee D's office to kept on file.

Conclusion

Throughout this study the researcher has collected data through multiple methods. He has considered the current methods of the school and its leaders to determine causality of low school performance. The researcher has gathered data within the lens of the Synchronized Analysis Model to determine causality of the school's low performance. Through out this process the researcher has gathered data to compare the school's current model of causality to that of SAM. In the following chapter the researcher will discuss the findings from the data collection.

CHAPTER 4 RESULTS

Introduction

This chapter discusses the results of this study. The researcher documents each data set starting with leadership focus group data. This data set helps the researcher and the reader understand the current analysis model. The school and district use the data set to determine causality for the selected school's low performance. This data set also acts as a baseline for comparison with the causality determined by using the SAM, which is discussed in chapter five. The researcher presents an organizational analysis based upon archival data outlining the organization's structure. The researcher uses the SAM to present an environmental analysis of the world, workplace, work and worker with data obtained through employee surveys and interviews. The environmental analysis along with a root cause analysis is used to determine what is broken within the school causing low performance. After the above analysis the researcher answers the following guiding questions:

1. At what level, environmentally and/or individually, does the cause of the performance problem exist?
2. Where, i.e. within the school or outside the school, does the cause of the performance problem exist?
3. What elements of the school, i.e. informational, instrumental and/or motivational, is/are the cause(s) of the performance problem?

Population and Sample

The target population of this study included three school/district leaders and 30 elementary teachers. There were three school/district leaders who participated in a focus group, nine teachers returned an employee survey, four teachers and a leader agreed to be interviewed. Due to the small *n* the demographics, tenure, and other specific descriptions of the school/district personnel and students remain concealed to protect the anonymity of participants. Also, throughout the study names, courses taught, and descriptions of the community were masked to protect the anonymity of the participants.

Current Causality Model

The researcher conducted an initial focus group with leaders within the school and district to understand their perceived current causality model. The questions asked of the leaders (see Table 11). were to to understand what their current causality model was. This approach helped the researcher to understand what they thought the cause of the school performance was, how they came to this understanding, and what they thought would be an appropriate solution to solve the performance problem.

Table 11. Leadership Focus Group

Questions
1. What do you believe are the major factors restraining [The] elementary from improving its academic performance?
2. How did you determine this/these cause(s)?
3. How may you increase the performance of [The] elementary?

All participants freely responded to each question. The results of these questions are as follows:

1. What do you believe are the major factors restraining [The] elementary from improving its academic performance?
    a. "The mindset as far as PARCC goes . . . [special education teachers] I don't feel are teaching on the common core standards at grade level." and "The [school's] schedule was a major restraining factor." They also felt that the demands of the union was a major factor restraining the elementary from moving forward.
    b. "It is leadership, PLC's [professional learning communities] and our alignment." This leader also added that climate is another factor. Another leader disagreed that the climate was bad.
    c. Another leader agreed that the special education students are not getting core instruction but rather just receiving intervention type instruction.
2. How did you determine this/these cause(s)?
    a. One leader summed up how cause was determined because they know it is right and by observing special education teachers teach. This leader also stated, "Well we still did PLCs. They did meet but they weren't long enough" and "Teacher feedback. They told me we need more time to

meet." Another leader agreed by stating, ". . . that union members pull it back . . ."

b. "I know because we see it now and we have seen it last year in all the meetings every training that we go to with teachers and principals. That we were not even halfway to the depth as we need to be." This leader also stated, "The quantitative data." This leader gave philosophical reasons to determine cause such as: "Collaboration is key and at [the elementary] if we don't have PLCs and we will have staff meetings, you would never talk about learning issues and how to improve learning. It is the primary mechanism of collaboration and improvement and student performance." and " it is . . . important to have a good principal . . . good principals hire good teachers . . . good principals set good expectations for all teachers and hold them accountable." And about climate this leader responded, "Have seen it first hand."

c. "Because of the data"

3. How may you increase the performance of [The] elementary?

a. One leader felt that establishing a system of intervention called "walk to intervention" would help low performing students to improve.

b. Another leader stated, " . . . I need to break down the barriers in leadership and support . . . focus on learning." and "manage our resources" as well as

"set the bigger climate . . ." by getting " the right people on the bus and get the right people in the seats . . ."

c. A leader stated, "I think it's helping putting the pieces in place we didn't have before." and "work through the union agreement so it's not becoming a barrier" and ". . . have in place mechanisms so that student learning can be the focus. . ." and "support the learning, support the understanding."

Table 12. Current Causality Model

Interviewee	Root Cause (RC)	How RC was Determined	How to Improve School
Leader 1	1. SPED teachers not teaching CCSS	1. Belief that best practices must not be occurring and observation	Implement intervention system
	2. Schedule not working	2. Observations and teacher feedback	
	3. Union pressures	3. Experienced union resistance	
Leader 2	1. Leadership	1. Belief that best practices must not be occurring	Break down barriers, manage resources, and get the right people doing the right job
	2. PLCs	2. Belief that best practices must not be occurring	
	3. Alignment	3. Observations in meetings and quantitative data	
	4. Climate	4. Observations	
Leader 3	1. SPED teachers not teaching CCSS	1. Quantitative data	Put the right pieces in place, put right mechanisms in place, and support learning and understanding

During the last part of the focus group participants noted that professional development was taking more of teacher's time. This indicated resistance from teachers

and the union was not allowing the leader to grow teacher capacity, knowledge, and skills. All leaders within the focus group agreed that union resistance was not only a school issue but a district one as well. A summary of the school/district current causality model is in Table 12.

Organizational Analysis

Vision and Mission

The district's website posted its vision, mission, statement of beliefs and board policies. The documented beliefs of the school board are to educate all children, develop their capacity, and create an educational community that meets the needs of each child, ensuring that the values and traditions of the community reoccur in their educational experience. Its vision is to prepare students for the future. The mission of the school district is to help students grow and become productive community members.

Polices that Influence School Performance

The basis of policies which influence school performance are how standards are to be implemented and developed, resource distribution, assessment expectations, home work guidelines, grades and progress reporting, parent involvement, enrichment programs, remediation programs, methods for students to become enrolled in school, transferring from one school to the next, and student intervention and screening processes. Updates to these policies occurred throughout the years of 1997 to 2016. The expectation of the district, through these policies, demonstrates the importance of

educating students to be successful, by providing opportunity for a diverse education, and by ensuring proper steps are taken when students are struggling.

Applying SAM

Analyzing the Data With SAM

At each data analysis the researcher viewed the data through the lens of SAM, see Table 13. This allowed him to study the usability of SAM to understand not only root cause but environmental analysis as Marker (2012) had intended. Throughout the process information, instrumentation, and motivation guided the consideration of each level of the organization.

Table 13. Marker's Synchronized Analysis Model (SAM)

At what level is the problem?	**What are the causes?**			The Organization
	Information	**Instrumentation**	**Motivation**	
External	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	Outside
Organizational	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	Inside
Job	Data Feedback	Resources Tools Supports	Consequence Rewards Incentives	
Worker	Knowledge Skills	Capacity	Motives	

Synchronized analysis model (SAM): Linking Gilbert's behavior engineering model with environmental analysis models, Marker (2007). Used with permission.

The first stage of data gathering the researcher gave [The] elementary staff an employee survey to obtain a simple view of how staff felt about [The] elementary with respect to

elements of the SAM. Staff to responded to the statements in Table 14 with either: 1-Strongly Disagree, 2-Disagree, 3-Agree, and 4-Strongly Agree. After obtaining the nine returned surveys the data was analyzed to understand basic issues that [The] elementary may have prior to going into interviews. The shaded cells within Table 14 shown whether participants Strongly Disagreed or Disagreed. The data was then viewed through the lens of the SAM to try to make sense of the survey responses as they relate to the Environment and Individual. Percentages that were in the Disagree (D) and Strongly Disagree (SD) categories were placed in the SAM in the appropriate box with their question number for reference. Table 15 illustrates areas of concern includes external supports; organizational supports, consequences, and incentives; job feedback, resources, and supports; worker knowledge and motivation. This data is useful to understand what the perception of the proximate root cause for poor school performance was and how it relates to information, instrumentation or motivation. Without any further data collection one could conclude the root cause was nested somewhere in the external-instrumentation box, organizational-instrumentation box, or organizational-motivation box, however, this conclusion must remain tentative without further analysis of the deeper data collection.

Table 14. Employee Survey Response Frequencies[1]

Questions	1 Strongly Disagree	2 Disagree	3 Agree	4 Strongly Agree
1. My supervisor clearly communicates my job responsibilities to me.	0%	11%	0%	89%
2. My supervisor clearly communicates district initiatives to me.	0%	11%	11%	78%
3. Resources that help me do my job are readily available.	0%	33%	67%	0%
4. I feel supported so I can do my job.	0%	22%	56%	22%
5. My district has positive monetary incentives that promote high performance.	56%	22%	22%	0%
6. My district has positive non-monetary incentives that promote high performance.	44%	33%	22%	0%
7. My district has negative incentives that discourage poor performance.	22%	56%	22%	0%
8. I have the knowledge to perform my job to the level I am expected.	0%	11%	33%	44%
9. My occupational talents are matched to my district job duties.	0%	0%	44%	56%
10. I am motivated to do my job to the level the district expects of me.	0%	22%	33%	44%
11. There are no district-created obstacles that prevent me from performing my job.	0%	56%	33%	11%
12. There are no community-created obstacles that prevent me from performing my job.	0%	44%	44%	11%

[1] *Note.* Nine employees returned the survey.

Table 15. Synchronized Analysis Model (SAM) with Employee Survey Data

At what level is the problem?	**What are the causes?**			The Organization
	Information	**Instrumentation**	**Motivation**	
External	Data Feedback	Resources Tools **Supports** 12. 44% (D)	Consequence Rewards Incentives	Outside
Organizational	Data Feedback	Resources Tools **Supports** 11. 56% (D)	**Consequence** 7. 22% (SD) 56% (D) Rewards **Incentives** 5. 56% (SD), 22% (D) 6. 44% (SD) 33% (D)	Inside
Job	Data **Feedback** 1. 11% (D) 2. 11% (D)	**Resources** 3. 33% (D) Tools **Supports** 4. 22% (D)	Consequence Rewards Incentives	
Worker	**Knowledge** 8. 11% (D) Skills	Capacity	**Motives** 10. 22% (D)	

After the Employee Survey concluded the study continued with interviews of teachers and the principal. Each interview was recorded, transcribed, then thematically categorized which allowed for an initial cycle of coding. The data was once again viewed through the lens of SAM to try to make sense of the interview responses, see Table 16. Each chunk of conversation was identified with seven possible categories with a coding strategy of each subcategory as follows:

1. Environment
    a. External (EX)/(Light Grey)
    b. Organization (ORG)/(Dark Grey)
    c. Job (J)/(Black)

2. Individual
    a. Worker (W)/(Dark Blue)
3. Information
    a. Data (±D)/(+Dark Green & -Red)
    b. Feedback (±FB)/(+Dark Green & -Red)
    c. Knowledge (±K)/(+Dark Green & -Red)
    d. Skills (±SK)/(+Dark Green & -Red)
4. Instrumentation
    a. Resources (±R)/(+Dark Green & -Red)
    b. Tools (±T)/(+Dark Green & -Red)
    c. Supports (±S)/(+Dark Green & -Red)
    d. Capacity (±CAP)/(+Dark Green & -Red)
5. Motivation
    a. Consequences (±C)/(+Dark Green & -Red)
    b. Rewards (±RW)/(+Dark Green & -Red)
    c. Incentives (±I)/(+Dark Green & -Red)
    d. Motives (±M)/(+Dark Green & -Red)
6. Position to the Organization
    a. Outside (OUT)/(Orange)
    b. Inside (IN)/(Light Green)
7. Impact
    a. Positive (+)/(Dark Green)

b. Negative (-)/(Red)

The subcategories within information, instrumentation, and motivation received a positive (+) or negative (-) value if the responses indicated a positive or negative, respectively, in the impact to the improvement of school performance. The coding strategy yielded multiple layers of analysis simultaneously and an example is shown in Table 16.

Table 16. First Cycle of Coding Example

Interviewer	Interviewee	Env: (EX), (ORG), & (J)	Ind: (W)	Info: (D), (FB), (K), & (SK)	Instr: (R), (T), (S), & (CAP)	Moti: (C), (RW), (I), & (M)	Location: (OUT) & (IN)	IMPACT
00:08 Interviewer: Why do you think there is the current academic performance for [The] elementary School? 00:21 Interviewer: Just where [the school] is.	00:18 Teacher 4: In terms of a negative or in terms of both? 00:23 Teacher 4: I think [the school] is continuing to adjust to both school district mandates, state mandates, federal mandates. I think the face of education is really in flux right now and there's a big change with a lot of different demands from a lot of different areas. So I think until the demands stabilize and what's expected from each level of oversight is a little bit more clear, it is gonna be in flux.	EX		-FB			OUT	-

The study then implemented a second cycle of coding to determine a relative theme to each response of chunked data. The SAM-related language, was used to implement a method of consistency. For example, in Table 16 the response from the interviewee was coded as “expectations for teachers are inconsistent.” This coding allowed the researcher to determine that external supports from the outside of the organization having a feedback deficit. This data shows the external supports having a negative impact. This coding method was applied to all five interviews. The only

variation of the color coding was within the principal interview where there are two types of workers: teachers as workers (dark blue) and the principal as a worker of the district (dark blue grey).

Once the second cycle was complete all interviews were combined into a single spreadsheet. The column of relative themes were filtered to reflect key words with respect to the main categories: information (data, feedback, knowledge, skills, and expectations), instrumentation (resources, tools, supports, and capacity), and motivation (consequences, rewards, incentives, and motivation). Each category and its filtered data was then copied into a new spreadsheet called “global themes.” This process allowed the categorization of each relative theme into global themes such as a “knowledge gap” or “feedback loop broken” or “ unreachable expectations” etc. After labeling into global themes, the data were copied into another spreadsheet that included an additional column “Findings,” and sorted with respect to the global themes in the following order:

1. Global Theme
2. Environment
3. Impact

This researcher than merged cells in the findings column that had common global themes with respect to the environment and individual and constructed a finding for the related rows of the global theme. After establishing these findings the researcher created a separate spreadsheet for each category, with the findings, their impact, and the frequency of each occurrence.

Environmental Analysis

Within the district and school, many forces impact performance and through the environmental analysis the researcher sought to understand these forces and where they existed through the multiple lenses of the SAM (i.e. external, organizational, job, and worker). These levels correspond to the environmental analysis of the PI/HPT from ISPI as well as the locations of possible root cause in the BEM (Marker, 2012). The following analyzes each level as it pertains to possible root causes related to information, instrumentation, and motivation.

External

Within the SAM exists the part of the environment that is outside the organization *External* (Marker, 2007). Others in the field labeled this element *World* (Rothwell, 1996), *Mega* (Kaufman, 1991), or part of the *Environment* (Gilbert, 1978). Table 17 represents the frequency of global theme that has negative impact, within a finding, to the total number of global themes with negative impacts externally to [The] elementary.

This external level suggests that the largest contributor to poor performance is from the External-Information box, namely, *external supports of student's family* (7.26%). Almost all of the interviewees suggested that the family unit was a major contributor of success or lack there of. Comments such as:

> "poverty has a huge impact on the performance of a school. And us being a pretty poor school, I think that is has a big impact here."
>
> "I know that one of the greatest obstacles is not having a partnership with parents."

> ". . . I don't think they're [parents] equipped to adequately support their children, so that homework is not a priority."

Table 17. External Frequency1 of Negative Impacts

	Information (8.06%)	**Instrumentation (12.1%)**	**Motivation (10.49%)**
Ext 30.65%	• (2.42%) Analysis of data provided from external supports is lacking • (2.42%) Feedback loop from external is broken • (1.61%) Nation and state set unreachable expectations • (1.61%) National feedback is lacking	• (7.26%) External supports of student's family • (1.61%) Supports from state and district to build knowledge of CCSS lacking. Some supports are present but only for k-3 • (1.61%) Tools provided by state and nation with CCSS inadequate for expectations • (0.81%) External support lacking for teachers • (0.81%) Nation and state do not provide resources	• (3.23%) Nation and state rewards are lacking • (2.42%) National level incentives are lacking • (1.61%) Consequences from nation, state, and community do not have impact • (1.61%) Consequences, rewards, and incentives are absent from the nation and state • (0.81%) Consequences at the nation, state, and community level are ineffective • (0.81%) Incentives from the nation cause negative results at the teacher level

[1] Frequency = (# Global Themes in a Finding/Total # of Global Themes) x100%; *Note.* Only negative impacting global themes were considered.

Although, family supports are the leading contributor of the negative impacts, from external sources, *rewards* are lacking (3.23), *incentives* are lacking (2.42), *data analysis* are lacking (2.42), and the *feedback loop* is broken (2.42) from outside the district and are contributing factors to the poor performance of [The] elementary. The reality of the external situation though does not allow the school to make much, if any, change by

focusing on these negative external factors. According to one of the participants, for example, “I think it’s [poverty] something that we don’t have a lot of control over as teachers.”

The total contributing factors of the negative impacts coming from outside of the school district where the people from within have very little power to make change in impacting school performance is 30.65%.

Organizational

Within the organization there are negative factors impacting school performance. In Table 18 the data in the Organizational-Information box strongly suggests the *feedback loop within the district/school is broken* (12.10%) and is the major contributor to the school’s poor performance at the organizational level. This 12.10% coupled with, *feedback that causes inconsistent expectations not allowing teachers to know what they are supposed to do* (3.23%), in Table 18, increases the total negative impact of feedback, at the organizational level, to 15.33% on school performance. When asking participants about feedback some of them stated:

> “I didn’t get feedback for a year and a half”
>
> “. . . we leave a lot of things that aren’t being discussed, that may have an impact on the performance of the school.”
>
> “The information we get from the district, no. I don’t think it has any impact. No.”
>
> “It [expectations and goals] could be clearer . . . I think when the goal is unclear, if you can’t see the target, you can’t hit it.”

> "If you are a brand new teacher coming in to [x] grade and there is only two of you, you're in a world of hurt."

The leader stated about an upcoming initiative:

> "I didn't send it out, and then I forgot about it. And then today we were supposed to start."

When responding to the statement, "If you don't have the know-how, you're stuck." the participant said:

> "Pretty much, at this school, yeah."

Table 18. Organizational Frequency[1] of Negative Impacts

	Information (20.17%)	**Instrumentation (7.26%)**	**Motivation (8.07%)**
Org 35.50%	• (12.10%) Feedback loop within the district/school is broken • (4.03%) System wide data analysis is lacking • (3.23%) Feedback is broken causing inconsistent expectations that do not allow teachers to know what they are supposed to do • (0.81%) District sets unreachable expectations	• (6.45%) Tools provided by district are inadequate or not available to meet the expectations currently in place • (0.81%) District tools are insufficient	• (2.42%) Incentives at the district level are lacking • (2.42%) Rewards for teachers at the district level do not positively impact school performance • (1.61%) Consequences from the district do not improve school performance • (0.81%) Rewards at the district level do not match desired performance • (0.81%) Rewards for negative behavior exist in the district

[1] Frequency = (# Global Themes in a Finding/Total # of Global Themes) x100%; *Note.* Only negative impacting global themes were considered.

Within the Organizational-Instrumentation box, *tools provided by district are inadequate or not available to meet the expectations currently in place,* occurred 6.45% and *district tools are insufficient* occurred 0.81% and both were considered to have a negative impact on school performance. Participants stated:

> "If you're not gonna provide us with all these really good curriculums, then we gotta go out and look for 'em." That was the big thing with common core, you gotta go find it. It's out there, you just gotta find it, and the only way you can find it is the internet. But if every time you go to look, it's blocked, you're like "Argh!" It's frustrating."

> "I think of the materials I get from the district. And to be honest, this thing [set of books] has been collecting dust since I got it, 'cause it's horrible. And I think I've had to research myself. So my curriculum that I use is stuff that I found, and begged the principal to purchase."

> "No, we definitely don't have good tools, as far as computers or WiFi or anything like that. Since all the testing relies on that now. No, it's terrible."

Again we see rewards (2.42%) and incentives (2.42%) are contributing factors in the motivational section, but not the major elements that create poor school performance.

Job

Located in the Environment of SAM is the Job, where the work is actually happening. We see in the Job-Information box of Table 19 that *feedback loop in the workplace is broken* (1.61%). This is also compounded when looking at other feedback issues in this box where the *feedback loop between principal and teachers about data is broken* (0.81%) and even *some feedback from the principal is negative* (0.81%). When asked:

Table 19. Job Frequency[1] of Negative Impacts

	Information (4.04%)	Instrumentation (2.24%)	Motivation (0%)
Job 6.46%	• (1.61%) Feedback loop in the workplace is broken • (0.81%) Data analysis is lacking in the workplace • (0.81%) Feedback loop between principal and teachers about data is broken • (0.81%) Some feedback from the principal is negative	• (1.61%) Tools are not available to all teachers • (0.81%) Supports are not consistent at the work level creating pockets of inconsistent school performance	
	[1] Frequency = (# Global Themes in a Finding/Total # of Global Themes) x100%; *Note.* Only negative impacting global themes were considered.		

> *Researcher*: "Do you think the feedback that you get from your peers amongst each other, do you think that that has an impact on the performance of your school?"
>
> *Interviewee*: "No."
>
> *Researcher*: "No?"
>
> *Interviewee*: "No."

The principal responded with respect to the feedback on data:

> "I feel like I'm not consistent. I wish I was but I'm not. Sometimes I'll look at [Assessment A], now, data, and bring it forward in a PLC and say, "Look, what do we think here?" And then, I'll get behind for awhile and not pull that up. And it's not consistent, I don't think, per grade level because there are two different testing [expectations] between the [assessments] and that's frustrating. I know that everybody does [Assessment B], but to try to pull different reports 'cause they wanna see the [Assessment A] reports, as well. But I think that it does impact it whenever we do have time to look at it."

It seems that when there is feedback about data it makes a positive impact in performance but due to the inconsistency of this feedback the school struggles to improve their performance. With respect to the negative feedback:

> ". . . the principal takes things so literal. I think [district leaders] were here . . . and she started saying, "Well, they don't like your bulletin board." And she started telling us that, and people were like... It was an uproar, yeah. Usually, teachers will cry. Here, they get mad as hornets."

The principal seems to take the feedback given out of context where it could be useful and does not lead the teachers to a stance of reflection necessary for improvement.

Worker

Within the district lies the worker. The focus on the worker is viewed in a different perspective for the information, instrumentation, and motivation. Factors that impact performance are due to knowledge, skills, capacity, and motives. With [The] elementary there are many factors within the Worker-Information box that impede school performance. The researcher felt that some of these findings could have been put together but keeping them a part allowed for a clearer understanding of what was happing at the worker level. It seems that a *knowledge gap exists caused by lack of external data and feedback* (3.23%). The following statements help support this knowledge gap due to data:

> "I don't think they know because we don't really see overall test scores or whether there's been improvements. We don't get that kind of data to look at. All we get, really, is where we fall."

> "Well we're compared to other states, but, on average, all we really get is, "This is where we fit," and that's it. And so we have no clue why other states do better than we do."

There is a negative factor of *knowledge gap of CCSS* (Common Core State Standards) (2.42%). Some participants, responses to questions pertaining to the Work-Information box of Table 20 were:

> ". . . there were still people who still [with respect to previous year's data] didn't quite get Common Core. There are still people who are griping about Common Core because they don't think it's developmentally appropriate, and yet they're not giving their kids enough credit."

> "I believe that teachers are still learning the... Unfortunately it's taken this long, but they are still learning the Common Core curriculum . . ."

> ". . .the Special Ed teachers are having difficulty teaching the Common Core standards because they're not at that level. I think that's district-wide."

Three factors add up to 4.83% in the Worker-Information box with respect to expectations: expectations are not being known, skill is not meeting expectations, or the lack of skills, capacity, or motivation exists to reach expectations. The participants stated:

> "But I don't think teachers can use the data that we get now, necessarily. As long as every nine weeks or every five weeks that you're testing, you're testing something totally different and, "Okay. So I checked that data, this kid didn't get that. But now, I'm required to test these new skills 'cause I'm gonna be tested on it in four weeks. Can I spend three weeks reviewing these things that they didn't get?" And then I get way behind on this next one"

> "I think it's kinda hopeless the way it is right now. Like I said, it's... You try, you're gonna teach, you're gonna teach those concepts, you're gonna get 'em, you're gonna hit 'em, you're gonna... I just think the way it's made now, it's just darn near impossible for a teacher to... To do it."

A factor that is impacting motivation is also current expectations as we see in the Worker-Motivation box in Table 20. Teacher motivation seems to link with current expectations and multiple failures to meet these expectations 4.3% of the time. Teachers stated,

> "Now, when I get an evaluation that I can't control everything, it's a bummer, [chuckle] for lack of a better scientific word. It's a bummer, it is."

Table 20. Worker Frequency[1] of Negative Impacts

	Information (14.53%)	Instrumentation (7.25%)	Motivation (5.56%)
Worker 27.43%	• (3.23%) Knowledge gap exists caused by lack of external data and feedback • (2.42%) Knowledge gap of CCSS • (1.61%) Knowledge gap of expectations • (1.61%) Skill gap of teachers prevent teachers from meeting expectations • (1.61%) Teachers lack skills, capacity, or motivation to reach current expectations • (0.81%) Knowledge and skill gap of data analysis • (0.81%) Knowledge gap exists due to new tools and lack of training • (0.81%) Knowledge gap of teachers prevent them from meeting evaluation documentation of competency • (0.81%) Skill of the teacher to provide feedback • (0.81%) Resources, tools and supports have unknown impact on school performance according to the principal	• (2.42%) Capacity of principal is limited with respect to current time constraints, knowledge and leadership skills • (1.61%) Principal lacks capacity to reach current expectations • (1.61%) Capacity of teachers struggle to meet expectations in demonstrating their competency through documentation is lacking • (1.61%) Capacity of teachers to meet expectations of CCSS is limited	• (4.03%) Motivation of teachers is lacking due to current expectations, and multiple teacher/school failures. Teachers are not motivated to analyze data • (0.81%) Feedback is lacking to motivate teachers • (0.81%) Some teachers are not motivated to analyze data
	[1] Frequency = (# Global Themes in a Finding/Total # of Global Themes) x100%; *Note.* Only negative impacting global themes were considered.		

“And I don't hear any buy-in from [CCSS]. I hear people just frustrated as "oh heck with it." I mean, I really don't. And most people here, they're professional about everything, and if you think... And I think that if they think that it's gonna make things better, they really try. But after a while, they see that failure again. And it's just…[chuckle]“

Lastly, the Worker-Instrumentation box of Table 20 has a couple of factors that directly relate to the principal as the worker and capacity. The *capacity of the principal is limited with respect to current time constraints, knowledge and leadership skills* (2.42%) and the *principal lacks capacity to reach current expectations* (1.61%). Both results seem to suggest that the leader is struggling to meet current expectations within the system. Some responses were:

> ". . .'Cause I feel like I'm smart enough, I should be able to figure that out, it's just gonna take me a little bit of time to figure it out, and I feel like I waste a lot of time trying to figure things out."

> "I wanna say I have the capacity to do it but I don't have the time to do everything that is expected of me to do it as well as I would like to do it."

The principal, when asked what part of the day was instructional leader versus manager the response was,

> "40-60 because, as I think about things that I spend my day doing, it is a lot of managerial things. I spend, I feel like, a certain time of the day with instructional leader things, but I think it does actually end up being more managerial the more I think about it."

Gap Analysis

Current State

There are pressures for [The] elementary to improve. In the past decade [The] elementary has performed poorly. In Table 21 one can see the performance over time. The highest level of proficiency in the past ten years was in 2008 where [The] elementary scored 57% proficient or higher in reading. The lowest performing year was the latest performance in 2016 with both math and reading scoring at 17% proficient. It is important to note that in 2015 the state of New Mexico started using PARCC for its assessment since it is thought

more rigorous than prior assessments show in the Table 21. Also it is interesting to note that even when the performance was declining in the years of 2013 to 2016 the school moved out of any kind of improvement status.

Table 21. [The] elementary History of Performance

Year	School Grade[1]	Math Proficiency or Higher	Reading Proficiency or Higher	School Status[2]
2007	Not Met	36%	52%	SI-2
2008	Not Met	33%	57%	CA
2009	Not Met	39%	47%	R-1
2010	Not Met	43%	49%	R-2
2011	Not Met	46%	56%	R-2
2012	D	45%	52%	Strategic
2013	C	35%	47%	—
2014	D	28%	41%	—
2015	C	17%	30%	—
2016	C	17%	17%	—

[1] School grading is part of state and federal law that mandates accountability for all public schools.

[2] Status refers to school that in some form of improvement that requires increased monitoring and educational enhancements.
SI-2: School Improvement 2 years not making Annual Yearly Progress (AYP).
CA: Corrective Action 4 years of not making AYP.
R-1: Restructuring-1 5 years of not making AYP.
R-2: Restructuring-2 6 years of not making AYP.
Strategic: Schools that are low performing with large gaps between lower and higher performing groups.
Note. Performance data of [The] elementary from http://www.ped.state.nm.us/ped/DistrictReportCards.html (2007-2016).

Desired State

According to [The] school district's vision, mission, statement of beliefs and board policies the goal is for all students to be proficient or higher on every assessment,

for the school to be highly functioning in efficiency and effectiveness and for the district to support and grow each stakeholder within the school.

Currently the desired state has fallen short of expectations as shown in the previous sections of the Environmental Analysis, through the use of SAM, and Actual State. The elements discussed in the environmental analysis, which impacts the performance of the school, are the focus within the next section of cause analysis. The purpose again is to understand what is the underlying cause of the poor performance keeping the school from getting closer to the desired state.

Cause Analysis

Throughout the use of SAM to this point the researcher analyzed the data from an Employee Survey and interviews. Table 22 compiles all interview data together within the SAM. The researcher then followed up with three of the interviewees with the Five Why's of Kaizen. The following will discuss each of these probes into root cause.

The researcher picked three global themes. These were

1. (12.10%) Feedback loop within the district/school is broken.
2. (2.42%) Knowledge gap of CCSS.
3. (2.42%) Rewards for teachers at the district level do not positively impact school performance.

Table 22.

Frequency of Negative Impacts within SAM

	Information	Instrumentation	Motivation
Ext 30.65%	• **8.06%** • (2.42%) Data analysis of data provided by from external supports is lacking • (2.42%) Feedback loop from external is broken • (1.61%) Nation and state set unreachable expectations • (1.61%) National feedback is lacking	• **12.1%** • (7.26%) External supports of student's family • (1.61%) Supports from state and district to build knowledge of CCSS were lacking. Some supports are present but only for k-3 • (1.61%) Tools provided by state and nation with CCSS were inadequate for expectations • (0.81%) External support is lacking for teachers • (0.81%) Resources are not provided by nation and state	• **10.49%** • (3.23%) Rewards from the nation and state are lacking • (2.42%) Incentives at the national level are lacking • (1.61%) Consequences from nation, state, and community do not have impact • (1.61%) Consequences, rewards, and incentives are absent from the nation and state • (0.81%) Consequences at the nation, state, and community level are ineffective • (0.81%) Incentives from the nation cause negative results at the teacher level
Org 35.50%	• **20.17%** • (12.10%) Feedback loop within the district/school is broken • (4.03%) System wide data analysis is lacking • (3.23%) Feedback is broken causing inconsistent expectations not allowing teachers to know what they are supposed to do • (0.81%) District sets unreachable expectations	• **7.26%** • (6.45%) Tools provided by district are inadequate or not available to meet the expectations currently in place • (0.81%) District tools are insufficient	• **8.07%** • (2.42%) Incentives at the district level are lacking • (2.42%) Rewards for teachers at the district level do not positively impact school performance • (1.61%) Consequences from the district does not improve school performance • (0.81%) Rewards at the district level does not match desired performance • (0.81%) Rewards for negative behavior exist in the district
Job 6.46%	• **4.04%** • (1.61%) Feedback loop in the workplace is broken • (0.81%) Data analysis is lacking in the workplace • (0.81%) Feedback loop between principal and teachers about data is broken • (0.81%) Some feedback from the principal is negative	• **2.42%** • (1.61%) Tools are not available to all teachers • (0.81%) Supports are not consistent at the work level creating pockets of inconsistent school performance	
Worker 27.43%	• **14.53%** • (3.23%) Knowledge gap exists caused by lack of external data and feedback • (2.42%) Knowledge gap of CCSS • (1.61%) Knowledge gap of expectations • (1.61%) Skill gap of teachers prevent teachers from meeting expectations • (1.61%) Teachers lack skills, capacity, or motivation to reach current expectations • (0.81%) Knowledge and skill gap of data analysis • (0.81%) Knowledge gap exists due to new tools and lack of training • (0.81%) Knowledge gap of teachers prevent them from meeting evaluation documentation of competency • (0.81%) Skill of the teacher to provide feedback • (0.81%) Resources, tools and supports have unknown impact on school performance according to the principal	• **7.25%** • (2.42%) Capacity of principal is limited with respect to current time constraints, knowledge and leadership skills • (1.61%) Capacity of teachers struggle to meet expectations in demonstrating their competency through documentation is lacking • (1.61%) Capacity of teachers to meet expectations of CCSS is limited • (1.61%) Principal lacks capacity to reach current expectations	• **5.65%** • (4.03%) Motivation of teachers is lacking due to current expectations, and multiple teacher/school failures. Teachers are not motivated to analyze data • (0.81%) Feedback is lacking to motivate teachers • (0.81%) Some teachers are not motivated to analyze data

Global theme #1, above, is the main area of interest. It is the most frequent global theme with negative impact gathered in the interview data and occurred in the Organizational-Information box. The broken feedback loop result was missing clarity, to the researcher, of what was indeed broken. The researcher added the second global theme, which did not necessarily have a large global theme frequency, but is pivotal in school improvement. The researcher felt it important to find out why teachers have a knowledge gap on the standards they are teaching, resulting in inability to support the students in the classroom. Also many other themes within the Worker-Information Box were connected fundamentally, to the second global theme. The last global theme selected presented a low hanging fruit that could benefit the district if it knew why district rewards were not positively impacting school performance. With these global themes selected the researcher began to dig into root cause.

Kaizen Five Whys

The practices of Kaizen's Five Whys is to take a presenting problem and ask repeatedly why does this exist in order to understand what the actual cause of the presenting problem is. The researcher followed this strategy with two of the interview participants, whose responses were strikingly similar. The responses were compiled and created the resulting root caused in Figure 10.

The global theme that was impacting school improvement was a broken feedback loop within the district/school. Asking why this was the case participants confirmed the fragmented quality of the communication from the leader. When asked why a participant stated, "Feedback is last minute." Probing deeper into the cause with another "why?" the

Feedback loop is Broken.	*Why?*
Fragmented communication from the school leader	*Why?*
Communication comes last minute from school leader	*Why?*
School leader not understanding teacher needs	*Why?*
School leader not obtaining feedback from teachers to understand their need	*Why?*
Leader struggles with expectations	*Why?*
Leadership capacity is lacking	

Figure 10. Five whys to determine why leadership capacity is lacking causing a broken feedback loop.

reply was the leader did not really understand the needs of the teachers when communicating and the reason for that was due to the school leader not seeking feedback from the teachers. When asked why a participant responded, “I think [the leader] struggles with what she has to do.” To follow up with asking why one more time the researcher found the root cause:

1. The leaders does not have the capacity to support teachers with the given time constraints and knowledge.

The researcher then applied the same process towards the next global theme of a knowledge gap in CCSS yielding the summarized version of Kaizen in Figure 11. When participants were asked why, they gave couple of reasons:

“new teachers coming in without being taught about common core standards”

“teachers didn’t have access to materials”

All respondents stated:

"teachers are resistant to change"

Knowledge gap of CCSS	Why?
Teachers resistant to change	Why?
Teachers not motivated to change	Why?
Easier not to change	Why?
No consequences	Why?
School leader not aware of what is happening in classrooms	Why?
School leader does not walk through classrooms during instruction	Why ?
School leader struggles with current leadership demands	Why?
Leadership capacity is lacking	

Figure 11. Five whys to determine why leadership is lacking causing knowledge gap of CCSS.

Due to the inability to change what higher education does from a district and school standpoint the researcher felt the process of finding root cause would not benefit the study. Also after the teacher stated that teachers did not have materials she promptly stated but that has changed for this year and again the researcher felt finding root cause would not benefit this study. The researcher instead focused on why teachers were resistant to change, especially because the participants both felt that this was a cause. When asked why this was the case participants stated "some teachers were return to work teachers and wanted to teach the way they had in the past" and "teachers were just not motivated to change." The researcher pushed further with another why and found out that

it was “easer not to change.” When asked why it was stated that “teachers did not receive any consequences for not doing what was expected.” When asked why a participant stated “the school leader didn’t know that teachers were not complying with the expectation due to the leader not walking through classrooms during instructional times.” Although a participant stated that teachers, during evaluation times, did follow through, most of the other times they did not follow common core. When asked why the participant stated, “I think the leader struggles with all that [the leader has] to do.” And lastly the researcher asked the participant why do you think this is so? The participant stated, with much trepidation due to not wanting to start any problems, “the leader doesn’t have the [know-how] to make things happen.” Which can be summarized as the root cause for this global theme to be:

2. Leadership lacks capacity to support teachers with current leadership demands.

Lastly this study investigated the global theme of rewards for teachers at the district level do not positively impact school performance (see Figure 12). When the participants were asked why they thought this was so, responses revealed there were no real positive rewards. When asked why they felt it was not “real,” they responded that the rewards were too general and not for any particular reason. When asked why one responded, “there are no qualifications to get a reward.” Wondering why this was so the researcher persisted with questions and discovered that rewards were basically a last minute thing. The researcher ask why they thought this was so and the response was there

is “not a system in place” to reward teachers for a job well done. So the cause of rewards for teachers not making a desired impact is:

3. No reward system in place.

Rewards for teachers do not make the desired impact	Why?
Teachers do not get real positive rewards	Why?
Rewards are too generalized and random	Why?
There are not qualifications to get a reward	Why?
Rewards are last minute	Why?
No system in place	

Figure 12. Five whys to determine why rewards system in place is causing undesired impact.

Table 23. Root Cause Analysis Results

Global Theme	Root Cause
1. (12.10%) Feedback loop within the district/ school is broken.	Leadership lacks capacity when supporting teachers
2. (2.42%) Knowledge gap of CCSS.	Leadership lacks capacity when supporting teachers
3. (2.42%) Rewards for teachers at the district level do not positively impact school performance.	No system in place

Table 23 sums up the root cause analysis results with regard to the global themes focused on. When these global themes are reexamined within SAM one can see a relationship between the global themes focused on and other global themes. Although it is important

to understand all the negative factors that impact school performance, in Tables 24, 25, and 26 external global themes

Table 24. Frequency of Negative Impacts within SAM

	Information	Instrumentation	Motivation
Ext 30.65 %	• **8.06%**	• **12.1%**	• **10.49%**
Org 35.50 %	• **20.17%** • (12.10%) Feedback loop within the district/school is broken • (3.23%) Feedback is broken causing inconsistent expectations not allowing teachers to know what they are supposed to do	• **7.26%**	• **8.07%** • (1.61%) Consequences from the district do not improve school performance
Job 6.46 %	• **4.04%** • (1.61%) Feedback loop in the workplace is broken • (0.81%) Feedback loop between principal and teachers about data is broken • (0.81%) Some feedback from the principal is negative	• **2.42%** • (0.81%) Supports are not consistent at the work level creating pockets of inconsistent school performance	
Worker 27.43 %	• **14.53%** • (3.23%) Knowledge gap exists caused by lack of external data and feedback • **(2.42%) Knowledge gap of CCSS** • (1.61%) Knowledge gap of expectations • (1.61%) Skill gap of teachers prevent teachers from meeting expectations • (1.61%) Teachers lack skills, capacity, or motivation to reach current expectations • (0.81%) Knowledge and skill gap of data analysis	• **7.25%** • **(2.42%) Capacity of principal is limited with respect to current time constraints, knowledge and leadership skills** • (1.61%) Capacity of teachers to meet expectations of CCSS is limited • (1.61%) Principal lacks capacity to reach current expectations	• **5.65%** • (4.03%) Motivation of teachers is lacking due to current expectations, and multiple teacher/ school failures. • (0.81%) Feedback is lacking to motivate teachers • (0.81%) Some teachers are not motivated to analyze data

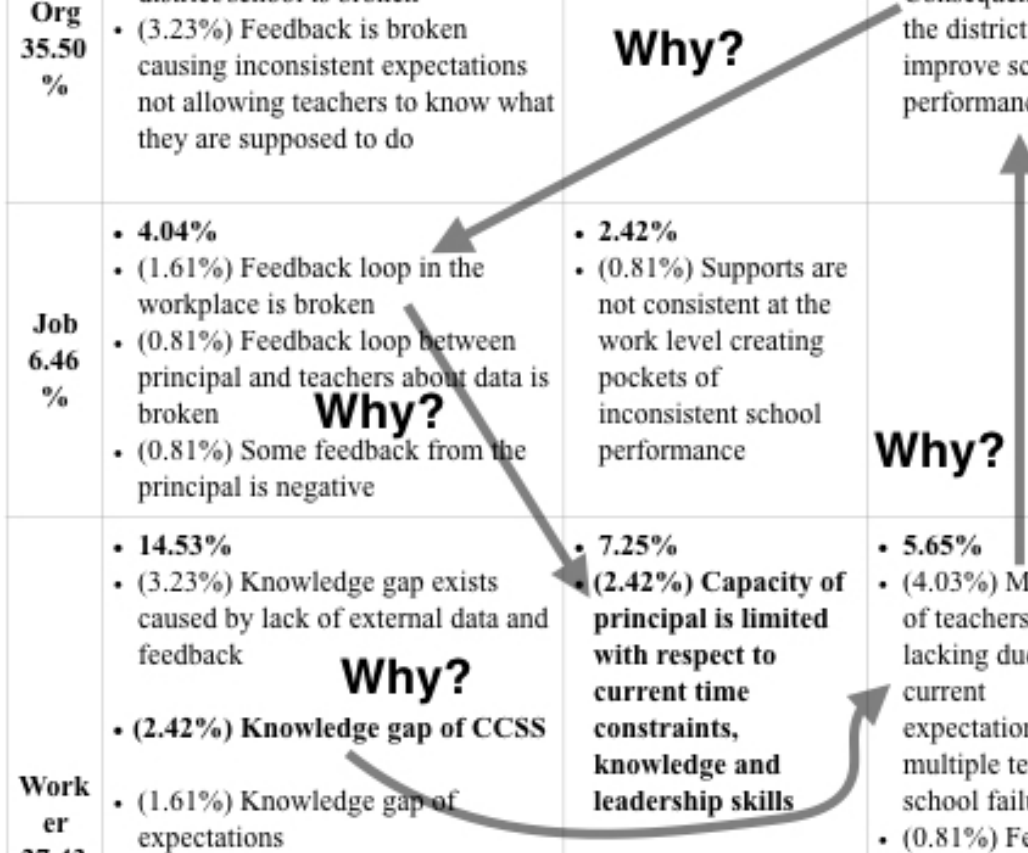
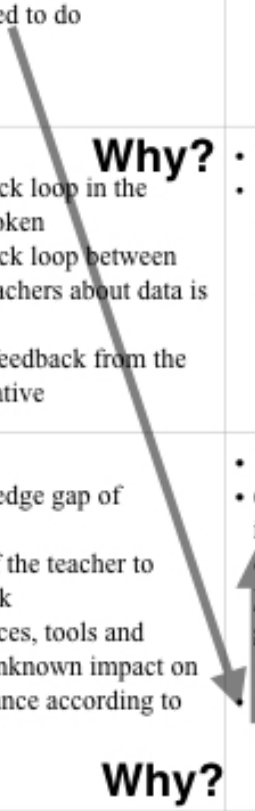


Table 25. Frequency of Negative Impacts within SAM

	Information	Instrumentation	Motivation
Ext 30.65%	• **8.06%**	• **12.1%**	• **10.49%**
Org 35.50%	• **20.17%** • **(12.10%) Feedback loop within the district/school is broken** • (3.23%) Feedback is broken causing inconsistent expectations not allowing teachers to know what they are supposed to do	• **7.26%**	• **8.07%**
Job 6.46%	• **4.04%** • (1.61%) Feedback loop in the workplace is broken • (0.81%) Feedback loop between principal and teachers about data is broken • (0.81%) Some feedback from the principal is negative	• **2.42%** • (0.81%) Supports are not consistent at the work level creating pockets of inconsistent school performance	
Worker 27.43%	• **14.53%** • (1.61%) Knowledge gap of expectations • (0.81%) Skill of the teacher to provide feedback • (0.81%) Resources, tools and supports have unknown impact on school performance according to the principal	• **7.25%** • **(2.42%) Capacity of principal is limited with respect to current time constraints, knowledge and leadership skills** • (1.61%) Principal lacks capacity to reach current expectations	• **5.65%** • (0.81%) Feedback is lacking to motivate teachers
	Note. Between the first and second why there were a series of whys to gain clarity of what a broken feedback loop was.		



were removed due to the inability to change them. The other global themes that were not directly related to the global themes focused on were removed to allow a clear view of

how the root cause analysis developed. Within Table 24 the global themes that remained the researcher felt resulted uniquely from the feedback loop being broken. One can trace the root cause analysis through the SAM from the Organizational-Information box to the Worker-Instrumentation box, where the worker in this case is the principal. Table 24 shows the root cause analysis for the feedback loop being broken. In Table 25 the root cause analysis for knowledge gap of CCSS is shown. The global theme is that there is a knowledge gap in CCSS but when diving deeper into the root cause one can see it is that the school leadership is lacking in capacity to support and hold teachers accountable with the current leadership demands. By the leader not being able support teachers in this manner the school leadership is actually sustaining the teachers current knowledge gap of CCSS and therefore negatively impacting the performance of the school.

In Table 26 the root cause analysis shows that the cause for rewards not making the desired impact is that there is no system in place. This lack of a system to make rewards meaningful, even if they are not monetary, is having a negative impact on school performance. Teachers are seeing other teachers receive rewards for no or generalized reasons which makes the reward lacking any impact when recognizing a worker for seemingly stellar work.

Table 26. Frequency of Negative Impacts within SAM

	Information	Instrumentation	Motivation
Ext 30.65%	• **8.06%**	• **12.1%**	• **10.49%**
Org 35.50%	• **20.17%** • **(12.10%) Feedback loop within the district/ school is broken (no system in place)** • (4.03%) System wide data analysis is lacking • (3.23%) Feedback is broken causing inconsistent expectations not allowing teachers to know what they are supposed to do	• **7.26%** **Why?**	• **8.07%** • **(2.42%) Rewards for teachers at the district level do not positively impact school performance** • (0.81%) Rewards at the district level do not match desired performance • (0.81%) Rewards for negative behavior exist in the district
Job 6.46%	• **4.04%**	• **2.42%**	
Worker 27.43%	• **14.53%**	• **7.25%**	• **5.65%** • (0.81%) Feedback is lacking to motivate teachers
	Note. There were a series of whys between rewards and root cause of feedback loop being broken (no system in place).		

Comparison Between Current Model of Causality and SAM

The school and district has a current model of deciding what is causing low school performance. As discussed in the beginning of this chapter in Table 27 the district and school leaders determined that the root cause of low school performance was due to special education teachers not teaching Common Core State Standards, the schedule was

not working, union pressures, leadership, PLCs, standard alignment, and school climate. They determined through belief, observation, teacher feedback, and quantitative data.

Table 27. Current Causality Model

Interviewee	Root Cause (RC)	How RC was Determined
Leader 1	1. SPED teachers not teaching CCSS	1. Belief that best practices must not be occurring and observation
	2. Schedule not working	2. Observations and teacher feedback
	3. Union pressures	3. Experienced union resistance
Leader 2	1. Leadership	1. Belief that best practices must not be occurring
	2. PLCs	2. Belief that best practices must not be occurring
	3. Alignment	3. Observations in meetings and quantitative data
	4. Climate	4. Observations
Leader 3	1. SPED teachers not teaching CCSS	1. Quantitative data

The researcher used the Synchronized Analysis Model to determine root cause and found many negative factors, which were grouped into global themes, throughout the levels of external, organizational, job, and worker that caused low school performance. The global themes this study focused on were selected due to either the large frequency size, educational impact, or easy win if fixed (see Table 28). The root cause for both global themes one and two in table 28, is that the school leadership lacks capacity to meet leadership expectations. The result is the school leader cannot adequately support teachers with feedback in a timely manner for improvement and close a teacher

knowledge gap in CCSS. The school struggles to impact school performance due to no system existing to reward teachers for their stellar performance.

Table 28. Using SAM to Determine Root Cause

Global Theme	Root Cause (RC)	How RC was Determined
1. Feedback loop within the district/school is broken	1. Leadership lacks capacity when supporting teachers	1. Data gathering, organizing data with SAM, and five whys
2. Knowledge gap of CCSS	2. Leadership lacks capacity when supporting teachers	2. Data gathering, organizing data with SAM, and five whys
3. Rewards for teachers at the district level do not positively impact school performance	3. No system in place	3. Data gathering, organizing data with SAM, and five whys

Similarities

The similarities between the two models are that each model uses quantitative and qualitative data to understand root cause. Each model focuses on data that were within the school. Both models were subject to human error and incompleteness of all the variables which impact school performance. Both models use language that is specific to the model. Both models use data based upon what people feel the problems are within the school and district.

Both models found that there is a leadership cause for low school performance. Both models discovered there is a feedback issue (i.e. PLCs and feedback loop broken). Each model uncovered that teachers were having trouble with teaching CCSS (i.e. special education teachers not teaching CCSS and knowledge gap of CCSS). Also each model

found some element of school climate to be an issue with respect to low school performance (i.e. union issues, climate and rewards for the teachers do not make desired impact).

Differences

Although there are a few similarities there are some major differences. Most notably that difference is the depth to which the user looks at data within the SAM. In SAM the user conducted interviews and sifted through data to find themes and then conducted a formal root cause analysis using Kaizen's five whys. The school's model seemed to be more of a gut feel or intuition of what was the cause for poor school performance, while the SAM focused on data and drove down to a more granular level of causality. The school/district model presented the root causes in generalities but SAM found specific root causes and located specifically where the cause existed in the organization. The school/district model considered the root cause as a whole school performance focus but the SAM took the whole environment, internal and external and broke it down into levels all the way to the individual. The school/district model took a little more than an hour to sum up while the SAM took many hours and days of interviews, sifting through data and asking follow up questions while driving down to the cause with Kaizen's five whys. The school/district model uses quick at hand quantitative data with the user gathering qualitative data mentally through passing or in observation while the SAM allows the user to document data gathered either qualitative or quantitative.

The difference in the results was striking. Where the school/district model ended with a specific root cause the SAM started the root cause analysis and went deeper to understand why. So with this understanding the school/district's model looked at generalities as the root cause and the SAM was able to dive much deeper to where the school/district was actually broken. The SAM also allowed the user to prioritize the focus and then drive to root cause while the school/district's focus was unique to each leader present based on their perspective of the cause.

CHAPTER 5 DISCUSSION

Summary

The focus of this study was to compare the current model of determining causality of [The] elementary School to the use of the Synchronized Analysis Model (SAM). The method was an instrumental case study that became the framework to understand the usability of the SAM for determining the cause of low school performance. The researcher used the structure of the SAM's 12 factors which are divided into four levels: external, organizational, job, and worker; and three categories: information, instrumentation, and motivation. The SAM is a extension of Gilbert's Behavioral Engineering Model (1978) that adds additional levels of granularity to discover where the root cause of the problem exists. Chapter five summarizes this study and discusses if the SAM would be a better model to determine causality of low performance than the current model being used by the school or district. Also discussed here is how the SAM may benefit public school leaders in determining the causality of low school performance in the future and discuss the SAM's limitations. Finally, discussed in this chapter is future research that could shed further light on how leaders can more accurately determine causality of low school performance to make sustainable and measurable change in a school's performance.

Research Question

Does utilizing Marker's Synchronized Analysis Model improve leadership's understanding of the cause(s) of underperformance in [The] Elementary School as

compared to the method currently being used? The following sub questions will help frame the investigation:

1. At what level, environmentally and/or individually, does the cause of the performance problem exist?
2. Where, i.e. within the school or outside the school, does the cause of the performance problem exist?
3. What elements of the school, i.e. informational, instrumental and/or motivational, is/are the cause(s) of the performance problem?
4. How can the district or school leaders use the data collected from the SAM to make impactful decision for performance improvement?

Need and Findings

In the ever growing need for quality education of youth in the U.S. it is imperative that leaders have an understanding of what drives low performance. Efforts to answer this throughout the years have produced a plethora of solutions but without truly understanding the cause of low performance. The nation's leaders have designed and funded interventions, within the past few of decades. Examples include: such as Race to the Top, School Improvement Grants, and Investing in Innovation Fund (whitehouse.gov, 2014) to name a few. These approaches have had mixed results. Many of these efforts predetermine the cause of low performance without uniquely understanding the causes for low performance within the schools. The need for a model to determine causality of low school performance is vital to reach societal demands for an educated workforce which starts in the K-12 grade levels.

The use of the instrumental case study provided a data set for comparing if the lens of SAM is better to determine causality of school performance than the current model. The SAM differs from the current model of finding causality due to its deep dive into the cause rather than the assumption and surface level understanding of what may be the cause. The current methods of causality, for the school and district, yields a low level of understanding of causality when compared to the SAM's method of determining the cause in a thorough manner. The SAM targets the root cause and then allows the user to design a solution/intervention specifically aligned to the root cause rather than generalizing the cause leading to a generalized solution. According to Woodley (2005) "Cause Analysis helps identify what, why, and how something happened. The main goal is to solve this problem so it doesn't happen again" (p. 15).

The SAM provides a structured framework for conducting an environmental and cause analysis simultaneously and therefore highlighting the links between the two. Prior models such as Gilbert's BEM (1978) and Binder's Six Boxes (1998) did not allow for the granularity provided by the SAM's treatment in environmental analysis. In the BEM the four levels, world, workplace, work and worker, did not match up with the cause analysis which analyzed the performance at only two levels, the environment and the individual. The SAM, on the other hand, extended levels in the cause analysis to focus on all four elements in similar terms, external, organizational, job, and worker. Although these are different terms than the four levels within the environmental analysis, they are indeed synonymous (i.e. world = external, workplace = organization, work = job, and worker = worker). The SAM assists the user in determining, not only the root cause of

low performance, but where the root cause is at the same time. In each model there were claims for causality but the SAM allowed the researcher to obtain supporting evidence to determine the why and where of the root cause. The SAM, when coupled with the five whys of Kaizen, allowed the researcher to dig more deeply into the cause and find out just where the low performing school was broken.

Using the SAM and Kaizen's five whys allowed the discovery that there is a broken feedback loop. The root cause is that the school leader lacks the capacity to be successful with current expectations. In the current school/district model for causality it was determined that leadership was a cause for low performance but it stopped there. In the SAM and five whys of Kaizen the study discovered not only was it the leader but it was the leader lacking in capacity to lead with current expectations and time constraints. The contrast of models differ in that the current model does not provide the root cause of school performance and only points to the leader as a possible cause. By using the data produced through SAM and Kaizen's five whys it provides evidence and gives direction of appropriate interventions for school and district leaders. As illustrated in Table 29 the global theme, in SAM finding #1, there is a feedback loop within the school/district which is broken and by using Kaizen's five whys the data suggests the root cause is that the school leader is lacking capacity when supporting teachers. A proposed intervention to decrease the negative impact of this cause is to provide the school leader with professional development and training to know how to delegate low priority activities, manage time more efficiently, construct clear and timely communication for teachers, and leadership skills. Thus, the school leader would establish a healthy feedback loop so

teachers can notify the school leader of their needs and the communication will not be at the last moment. Teachers will have a clear understanding of what they are expected to do, when to do it, and how to do it with the support of the school leader. By doing so the leader will be able to impact school performance with skilled leadership.

Table 29. SAM Findings and Recommended Interventions for District Leadership

	SAM Finding #1
Global Theme	• Feedback loop within the school/district is broken.
Root Cause	• School leader lacking capacity when supporting teachers.
Recommended Intervention	• Provide school leader with professional development and training to know how to delegate low priority activities, manage time more efficiently, construct clear and timely communication for teachers, and leadership skills.
Desired Outcome	• Healthy feedback loop which increases school performance.
	SAM Finding #2
Global Theme	• Teacher knowledge gap of common core state standards (CCSS).
Root Cause	• School leader lacking capacity when supporting teachers.
Recommended Intervention	• Provide school leader with professional development and training to know how to delegate low priority activities, manage time more efficiently, conduct scheduled classroom observations, establish appropriate and effective consequences, aligned with union agreement, for those teachers unwilling to implement current CCSS.
Desired Outcome	• Increased teacher knowledge of CCSS which increases school performance.
	SAM Finding #3
Global Theme	• Rewards for teachers do not make the desired impact.
Root Cause	• No system in place.
Recommended Intervention	• District and school leaders establish clear parameters for high level job performance, employee selection method, employee recognition method, and meaningful recognition for high level performance.
Desired Outcome	• Employees desire to increase their level of performance which increases school and district performance.

The second root cause is the same as the first, the leader lacks capacity to be successful with current expectations. Although, the global theme is different, teachers

have a knowledge gap of the CCSS, the root cause comes back to the leader not having the capacity when supporting these teachers. The current model from the school/district determined that the knowledge gap was with special education teachers but the data would suggest it is wider spread than a subsection of the teaching population. Due to the leader not being able to manage time, enter into classrooms to ensure CCSS are being taught, and hold teachers accountable teachers are maintaining status quo of past standards and practices. This is causing and maintaining a knowable gap in CCSS among teachers not willing to change. Table 29, SAM findings #2, illustrates this connection. Also it allows for a possible solution to reduce the impact on school performance. It is the recommendation of this researcher for district leaders to provide the school leader with professional development and training to know how to delegate low priority activities, manage time more efficiently, conduct scheduled classroom observations, establish appropriate and effective consequences, aligned with union agreement, for those teachers unwilling to implement current CCSS. By building the school leader's capacity in this area the leader will be able to impact the teachers' knowledge of CCSS and ensure that they follow through with school/district expectations of teaching CCSS. By making these changes the leader will directly impact, through leadership, student performance on standardized assessments based off of CCSS and hence school performance.

Lastly the root cause for the SAM finding #3, rewards for teachers at the district level do not positively impact school performance, was simply due to no system in place to make it possible for meaningful rewards to be given to teachers for performing at a high level. The current causality model determined the climate is probably lacking and

this was determined through observation of an interviewed leader. The SAM provided evidence of a contributing cause of less than stellar climate. Table 29, SAM finding #3, illustrates this conclusion and provides an intervention at a district and school level. It is recommended that district and school leaders establish clear parameters for high level job performance, an employee selection method, an employee recognition method, and a meaningful recognition for high level performance. By doing so rewards will not be last minute but thought out with specific intentions of those who perform in a manner that is high performing. These elevated performances will be celebrated thereby increasing the motivation for employees to improve performance. When employees increase their performance school performance will increase.

Sam in concert with Kaizen's five whys, provided evidence of causality. Thus, rather than guessing at the causes with the current methods, a leader can determine the causality of a problem at a granular level through SAM and Kaizen's five whys and appropriately address the problem. The current model of determining causality may lead to the implementation of incorrect interventions. This approach not only falls short of mitigating the problem but also results in a frittering away of already scarce resources.

Limitations

Even though the SAM allowed the user to dive deep into the root cause of low performance of [The] elementary school it also had its limitations. The SAM had terms that needed to be explained to the participants in the study. The researcher almost had to retrofit the SAM to the people he talked to so he could obtained the information needed. Terms such as feedback and data made the participants respond in a certain way due to

their perspective of their work, but in the model these terms had much broader meanings which had to be explained. The terms resources and tools had to be explained because almost all of the teachers and the school leader equated resources and tools to be the same thing. The word supports was almost a foreign concept as far as supports give to them. The teachers understood supports in the context of their support toward their students. The terms consequences, incentives, and rewards were almost synonymous with each other depending how one considered them. According to the teachers and school leader, in general, if one did not get an incentive they did not receive a reward and the reason they did not receive a reward was due to a consequence for poor performance. The researcher had to explain repeatedly the difference between all of these elements. Marker (2016) stated that sometimes it is best to stick to Gilbert's BEM rather than the SAM because the customer may not be very familiar with root cause analysis models. This study would support this wisdom.

Another limitation is that the SAM is an arduous process that, if time is limiting, may fail to obtain the level understanding it should. When using the SAM, if the user does not have time to get into the school, gather data quickly, and analyze the root cause and do it quickly, then the information obtained may be outdated unless it is a leadership, structural, or system root cause, like this study found. Otherwise it may be the wrong model to use.

Throughout this study the researcher dealt with a trust issue. The researcher was a district administrator, who tried to make it as safe as possible, but participants were still reluctant to share or even become part of the study. Initially the researcher had planned to

conduct a final focus group in the hope of conducting Kaizen's five whys, but no one volunteered to participate. The principal offered anyone who participated two 30 minute early releases from work if they participated in the focus group. There were still no volunteers. The researcher instead conducted follow up interviews with willing participants. After reflecting on some of the conversations the researcher had with the principal to elicit more participation, on the employ survey, the researcher remembers the principal saying that teachers feared that the district would know who sent in the survey and the information would bring retaliation upon them. Even when the principal said it was anonymous and the researcher sent out a number of emails stating it would be a confidential participation, the request yielded only nine survey responses out of 30 possible. The researcher feels that even if he was not a district leader the teacher resistance to share could have still occurred due to the lack of trust in all outsiders.

Another limitation of this a single case study was a small sample size. Although data was collected it could have been slanted due to the limited amount of participants. Of a school with 30 teachers only nine participated in the employee survey and four participated in interviews. There could have been potential for selection bias in that those who desired to participate could have had a negative reason for such participation. By not having more participants those who participated could have skewed the conclusions of this study. Another limitation that compounds the limitation of small sample size is that the data gathered are perspectives of the participants. If their perspectives were misguided then the study could have errors in its conclusion.

Recommendations for Future Research

Root cause analysis is a necessary process for schools wanting to improve school performance. Often teachers, principals, district leaders, state leaders, and national leaders have prescribed a solution without the understanding of what was causing the problem only to find out that performance did not improve. With this in mind further research is needed to find a quick way to enter schools and find the root cause of the performance problem so that appropriate solutions can be prescribed. This will ultimately support a stronger educational system and impact the community, state and nation as a whole but even more importantly the students in the classroom will benefit. Further research on the SAM would be helpful to possibly modify the terms for the participants being studied and to investigate quicker methods of accessing the qualitative data that tells the story of what is broken and where it is occurring.

More research is needed to determine transferability due to this study being a single case study with a small sample size. It is recommended that a multicast study be conducted with a larger sample size to establish a deeper understanding of the usefulness of the SAM. Quite possibly a study with quantitative measures would help understand the usefulness of the SAM for the field of education. Another suggestion for future research would be to implement a refined process of data collection as well as data analysis to decrease the amount of time it takes to conduct a root cause analysis using the SAM and Kaizen's five whys. By doing so leaders may be more inclined to use this model in determining root cause. Also within the refinement process would be to establish

terminology that is appropriate for the field of education. Finally a long term study should be conducted to evaluate if the SAM and Kaizen's five whys actually make a measurable impact on school performance after school leaders know what the root cause(s) is/are and interventions have been administered. This will truly determine the value of the SAM and Kaizen's five whys in the educational arena.

APPENDICES

APPENDIX A: Email Recruitment Script

Email Recruitment Script
Subject Line: Research Request

[The School District] Employee,

Hello - My name is Matt Williams. I am a Doctoral Candidate in Organizational, Instructional, & Learning Sciences at the University of New Mexico. I am conducting research to compare the current model with a model called Synchronized Analysis Model to determine the cause of school performance. I am inviting you to participate because of your connection with [The] Elementary school.

Participation in this research includes taking a survey to understand what factors are impacting school performance, which will take approximately 5-10 minutes. If you agree to participate in an interview to dig deeper into cause of school performance it will take up to 60 minutes. If you agree to be involved in a focus group it will take approximately 90 minutes.

Your involvement in this study is voluntary and you may choose not to participate. You can refuse to answer any of the questions at any time. There are no names or identifying information associated with your responses. There are no known risk in this study, but some individuals may experience discomfort or may feel a loss of privacy when answering questions in a focus group. Data will be secured and destroyed 5 years after the completion of the study.

Let me know if you have any questions or need more information. You can contact me at: xxx-xxx-xxxx or mattwill@unm.edu, or my advisor Patricia Boverie pboverie@unm.edu.

Thank you in advance for your participation, your assistance is highly appreciated.

Sincerely,
Matt Williams

APPENDIX B: Verbal Recruitment Script

Verbal Recruitment Script

Hello - My name is Matt Williams. I am a Doctoral Candidate in Organizational, Instructional, & Learning Sciences at the University of New Mexico. I am conducting research to compare the current model with a model called Synchronized Analysis Model to determine the cause of school performance. I am inviting you to participate because of your connection with [The] Elementary school.

Participation in this research includes taking a survey to understand what factors are impacting school performance, which will take approximately 5-10 minutes. If you agree to participate in an interview to dig deeper into cause of school performance it will take up to 60 minutes. If you agree to be involved in a focus group it will take approximately 90 minutes.

Your involvement in this study is voluntary and you may choose not to participate. You can refuse to answer any of the questions at any time. There are no names or identifying information associated with your responses. There are no known risk in this study, but some individuals may experience discomfort or may feel a loss of privacy when answering questions in a focus group. Data will be secured and destroyed 5 years after the completion of the study.

Let me know if you have any questions or need more information. You can contact me at: xxx-xxx-xxxx or mattwill@unm.edu, or my advisor Patricia Boverie pboverie@unm.edu.

Thank you in advance for your participation, your assistance is highly appreciated.

APPENDIX C: Reminder to Return Survey

Reminder to return the survey via email:

Subject: A gentle reminder to send me your survey.

[The School District] Employee,

A week ago you were given a survey to help me gather data about the cause of current school performance. I am very interested in your input and understanding of [The] Elementary's characteristics which may be holding it back from higher performance. I urge you to fill out the survey and return it to me via the provided envelop in intercampus mail.

If you have any questions about the survey or research please don't hesitate to contact me at xxx-xxx-xxxx, mattwill@unm.edu or my advisor Patricia Boverie pboverie@unm.edu.

Thank you for your participation and I look forward to receiving your input from this survey.

Matt Williams

APPENDIX D: Informed Consent Letter

THE UNIVERSITY of NEW MEXICO

Comparing Models of Determining Causality of School Performance
Informed Consent for a Survey, Focus Group, and Interview
6/21/2016

Patricia Boverie, from the Organization, Instruction, and Learning Sciences Department is conducting a research study which will be facilitated by Matthew Williams. The purpose of this qualitative case study is to compare the Synchronized Analysis Model (SAM) to that of the current model used by school leaders to determine performance causality in their school. You are being asked to participate in this study because you are either a teacher or an administrator employed by [The District] who have knowledge of the processes and culture of [The] Elementary.

Your participation will involve 1st: filling out a 12 question survey and discussing elements of the school and its performance; 2nd possibly attending a focus group to discuss causes of performance gaps; and 3rd possibly be interviewed to discuss further causes for performance gaps. The survey will take 5 to 10 minutes; focus group should take up to 90 minutes; and the interview should take up to 60 minutes to complete. The survey will include rating statements such as: "I feel supported in my job" and "My occupational talents are matched to my district job duties." The focus group will include questions such as: "What do you believe are the major factors restraining [The] Elementary school from improving its academic performance?" The interview will include questions such as: "How does the resources, tools, and supports from the district impact performance of our school?"

Your involvement in the study is voluntary, and you may choose not to participate. You can refuse to answer any of the questions at any time. There are no names or identifying information associated with your responses. There are no known risks in this study, but some individuals may experience discomfort or may feel a loss of privacy when answering questions in a focus group. Data will be secured and destroyed five years after the completion of the study. Any data gathered from you if you choose to withdraw will be separated and only analyzed up to that point of the study but may aid the researcher in answering the research question.

The findings from this project will provide information to support school and district leaders to make targeted and wise decisions to improve school performance.

If you have any questions about this research project, please feel free to call Patricia Boverie at 505-277-2408 or Matt Williams at [xxx-xxx-xxxx] ; you have questions regarding your rights as a research subject, or about what you should do in case of any harm to you, you may call the UNM Office of the IRB (OIRB) at (505) 277-2644 or irb.unm.edu.

By signing below and returning this form in the envelope provided you will be agreeing to participate in the above described research study.

Name of Adult Participant	Signature of Adult Participant	Date
Matthew Williams Name of Research Team Member	Signature of Research Team Member	Date

APPENDIX E: Leadership Focus Group Questions

Leadership Focus Group

1. What do you believe are the major factors restraining [The] Elementary from improving its academic performance?

2. How did you determine this/these cause(s)?

3. How may you increase the performance of [The] Elementary?

APPENDIX F: Teacher and Principal Interview Questions

Teacher and Principal Interview

1. Why do you think there is the current academic performance for [The] Elementary School?
2. How does the data, information, and feedback from:
    1. The nation, state and community impact performance of your school?
    2. The district and school impact performance of your school?
    3. The work you do impact performance of your school?

3. Does your knowledge and skills impact the performance of your school? In what way?

4. How do the resources, tools, and supports from:
    1. The nation, state and community impact performance of your school?
    2. The district and school impact performance of your school?
    3. The work you do impact performance of your school?

5. Does your capacity impact the performance of your school? If so how?

6. How do consequences, rewards, and incentives from:
    1. The nation, state and community impact performance of your school?
    2. The district and school impact performance of your school?
    3. The work you do impact performance of your school?

7. Does your motives impact the performance of your school? If so how?

APPENDIX H: Employee Survey

Employee Survey

As an employee of your school district consider yourself and others in your job role as you rank each item. Please rank the statement from one (1) to four (4) (see categories below).

This survey is confidential. Your identity will not be shared with the district and your anonymity will be permanently preserved.

Ranking:

1	2	3	4
Strongly Disagree	Disagree	Argee	Strongly Agree

	Statement	Ranking
1	**My supervisor clearly communicates my job responsibilities to me.**	1 2 3 4
2	**My supervisor clearly communicates district initiatives to me.**	1 2 3 4
3	**Resources that help me do my job are readily available.**	1 2 3 4
4	**I feel supported so I can do my job.**	1 2 3 4
5	**My district has positive monetary incentives that promote high performance.**	1 2 3 4
6	**My district has positive non-monetary incentives that promote high performance.**	1 2 3 4
7	**My district has negative incentives that discourage poor performance.**	1 2 3 4
8	**I have the knowledge to perform my job to the level I am expected.**	1 2 3 4
9	**My occupational talents are matched to my district job duties.**	1 2 3 4
10	**I am motivated to do my job to the level the district expects of me.**	1 2 3 4
11	**There are no district-created obstacles that prevent me from performing my job.**	1 2 3 4
12	**There are no community-created obstacles that prevent me from performing my job.**	1 2 3 4

APPENDIX I: Employee Survey Verbal Reminder

Verbal Reminder to Return the Survey:

Hello - My name is Matt Williams. A week ago you were given a survey to help me gather data about the cause of current school performance. I am very interested in your input and understanding of [The] Elementary's characteristics which may be holding it back from higher performance. I urge you to fill out the survey and return it to me via the provided envelop in intercampus mail.

If you have any questions about the survey or research please don't hesitate to contact me at xxx-xxx-xxxx, mattwill@unm.edu or my advisor Patricia Boverie pboverie@unm.edu.

Thank you for your participation and I look forward to receiving your input from this survey.

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