A High School Turnaround School Initiative: Effects on Students' Math and Reading Scores

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A HIGH SCHOOL TURNAROUND SCHOOL INITIATIVE: EFFECTS ON STUDENTS’ MATH AND READING PROFICIENCY

by

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ABSTRACT

A HIGH SCHOOL TURNAROUND SCHOOL INITIATIVE: EFFECTS ON STUDENTS’ MATH AND READING PROFICIENCY

by

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Since the middle of the last century, student education in the U.S. public school systems has been deemed inadequate. Critics developed measures in the form of standardized testing to measure student progress in an attempt to help facilitate reforms. In the last thirty years, the federal government has played an increasing role in school reform efforts in the form of laws and unfunded mandates. School districts have attempted to respond to federal pressure by attempting radical changes from replacing all school administration and staff to a complete curriculum overhaul. While school reform efforts have been widely documented by various groups, no actual quantitative studies have been conducted on the dynamics that occur in successful school turnarounds. There is little research concerning specific programs within the context of turnaround schools that contribute to increased student achievement and the small body of research that does exist in more anecdotal accounts. The literature on the turnaround school improvement
process has reported anecdotal evidence and highlighted a few successful schools, but has not provided data on student achievement following implementation of a turnaround program.

Given the lack of specific programs available for high school administrators to utilize, it has been necessary for leadership to use strategies reported to be effective, but not necessarily supported by research that demonstrates effectiveness with student populations involved in the turnaround program. In addition, little information exists about demographic factors that may be related to students’ successes or failures in the high school turnaround process. In a high school, the SIG program requires that student academic proficiency be tracked by student scores in reading and math on a state high school proficiency exam. The academic proficiency of students must be reported as the percentage of all students who passed, as well as percentages of students in specific subgroups (i.e., ethnicity, students with disabilities, and students with limited proficiency in English).

The purpose of this study was to investigate the effects on students’ high school proficiency exam scores in math and reading in the initial two years of implementation of a Turnaround Intervention Package (TIP). The TIP incorporated common formative student assessments and teachers’ use of student assessment data in Professional Learning Communities (PLC) to inform and differentiate instructional practices. The underlying question was whether the use of this package of interventions would contribute to improved student achievement in the critical areas of math and reading as measured by state high school proficiency scores. It was hypothesized that the use of the
TIP would result in significant increases in students’ math and reading high school proficiency exam scores.

The proficiency scores of the pre-turnaround grade 10 cohort students were analyzed to determine growth in the two subsequent years of turnaround. In previous years, any instructional remediation and differentiated instruction that teachers adopted to improve student achievement was not based on the use of a PLC Assessment Cycle by teachers. The Site Improvement Grant under which the Turnaround school worked required growth in the following specified demographic groups: Black, Hispanic, White, IEP (students with disabilities), and LEP (Limited English Proficient). This study examined the effectiveness of the use of the TIP components for required instructional changes in the classroom and its impact upon student proficiency scores.

The TIP was found effective in raising scores on the state proficiency exams in math and reading. While the entire student group raised scores significantly, there were little significant raises in specific groups. A further question of social significance also was addressed with a measure of teacher satisfaction of the PLC Assessment Cycle component of the TIP. Teachers reported satisfaction with the PLC Assessment Cycle as it related to student achievement, but reported little satisfaction with continued use of the cycle. This could be due to the time it takes to master the new skills of data analysis as required by the PLC Assessment Cycle.
ACKNOWLEDGEMENTS

The completion of this dissertation would not have been possible without the help and support of so many other people in my life. I would like to thank my advisors Dr. Pam Campbell for helping me to navigate through the mysteries of the Special Education program and required coursework and Dr. Sherri Strawser whose constant encouragement and guidance has helped to see my dissertation to completion. I am grateful to my committee members, Dr. Susan Miller, Dr. Joe Morgan, and Dr. Cyndi Giorgis for all of their input and recommendations during this process.

I am also grateful to my principal Antonio Rael who supported my efforts in using his school for the laboratory in which to study the actual components of a high school turnaround. Thanks to all the teachers in the math and English departments for answering my many questions and working so hard for the students in our turnaround school.

Thanks so much to my son Kristofer, the statistics wiz who taught himself how to use SPSS during the crunch of running the statistics for this study. Most of all, I would like to thank my husband Bill, who had the misfortune to begin dating me as I began this journey. Through it all, he showed understanding and support of my hectic study and work schedule, and in the middle of it all asked me to marry him. He has been a source of constant encouragement and I could not have completed this without him.
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CHAPTER ONE

INTRODUCTION

Educational equality has been a major focus of the Federal government since 1954 when *Brown v Board of Education* (Yell, 2006) was first heard. The court’s decision essentially changed the perceptions of what constitutes equality of education, and determined that all children were entitled to, but were not receiving a quality education. The definition of equality has shifted throughout the past fifty years as new cases and criticisms of the American education system have arisen.

The Elementary and Secondary Education Act (ESEA) of 1965 was one of the first federal attempts to provide equal educational access. The law directed federal funding to states in order to assist in educating specific groups of disadvantaged students including, students from low income families and those with disabilities (Yell, 2006). A year later, Title VI of the ESEA was added to fund grants for pilot programs to develop educational programs for children with disabilities in order to provide an opportunity of equal outcomes for students at all levels.

In addition, the Equality of Educational Opportunity study was commissioned in 1966 by the U. S. Department of Education and Welfare in order to assess the availability of equal education opportunities to all children regardless of race, color, religion, and national origin. As a result of the report, the concept of equal access was redefined as equality of funding, facilities, teachers, and curriculum. According to McLaughlin, (2010), the study was intended to demonstrate a critical need for equal educational access for different groups of students including minority and poor students. Over the past forty years, the definition of access appears to have shifted from specifically physical access to
an inclusion of educational outcomes. This was driven by the belief that larger societal and cultural forces may have limited the opportunities for students from certain backgrounds (McLaughlin, 2010). Thus, the interpretation of equity measures the equality of outcomes as opposed to the inputs in what Berne and Stiefel (1984) later described as horizontal and vertical equity. Horizontal equity is interpreted as having equal or equivalent inputs for schools such as funding or teacher student ratios; whereas, vertical equity assumes that different or unequal inputs may be required to attain equal outcomes. There are several forms of inequality including low socio-economic status or learning disabilities that require vertical equality. In other words, unequal students require unequal treatment (McLaughlin, 2010). This definition of equity has developed into a driving force in the evolution of federal education policy. Court decisions have validated vertical equity for example; Rose v Council for Better Education (Rose v. Council for Better Education, 790 S. W. 2k. 186, 60 Ed. Law Rep. 1289, 1989). The focus of the litigation concerned finance and its link to educational outputs (Verstegen, 1998). The decision rendered defined the word efficient as adequate. The change took the term efficient as it referred to equal educational outcomes and shifted the interpretation to the requirement that lawmakers and practitioners provide "substantial uniformity, substantial equality of financial resources, and substantial equal educational opportunity for all students" (Fusarelli, 2007, p. 132). In essence, the court case helped shape the way school officials could appropriate funds to schools located in less affluent areas; shifting more money to them as needed.

McLaughlin (2010) explained how the concept of outcomes was further highlighted in the 1983 report, A Nation at Risk which was released by the National
Commission on Excellence in Education. The authors were highly critical of educational curricula and attributed the decline of educational outcomes to the “disturbing inadequacies in the way the educational process itself was often conducted,” (McLaughlin, 2010, p. 268). Six years later, the Educational Summit held in Charlottesville, Virginia called for greater curricular rigor and state imposed standards for what students must achieve. In addition, the 1994 reauthorization of the Elementary and Secondary Education Act (ESEA), and the passage of Goals 2000: Educate America Act increased the importance of the states’ role in ensuring quality educational outcomes (McLaughlin, 2010). If states wanted access to federal education funds, they were required to assure equal access to educational outcomes, and the evidence of this was increasingly measured through academic testing. Suddenly funding was tied to a perceived need for more rigorous academic expectations for all students measured through state standardized testing.

The reauthorization of the Elementary and Secondary Education Act of 2002 was signed into law as The No Child Left Behind Act (NCLB) (Public Law 107-110). This reauthorization was a reaction to the low academic achievement of the nation’s students and expanded the role of the federal government in public education by holding states, school districts, and individual schools accountable for the production of measurable increases in student achievement. The law established a rigorous system that holds states accountable for improving student achievement as measured by state mandated testing. The focus of the law is tied to the equality of outcomes because Adequate Yearly Progress (AYP) is monitored by disaggregated student data. In order for schools to make AYP, they must demonstrate that specific sub-groups meet academic goals, as well as the
overall student population. Specifically, NCLB required states to assure all students meet
prescribed standards in reading and math within a specific time frame. The law forced
states to comply by adding mandatory consequences for schools, districts, and states that
failed to meet the specific performance criteria set forth by the law. If a school does not
make AYP, the law gives parents the choice to enroll their child in a school that does
meet AYP. This has created a problem nationwide within school districts that have fewer
schools that make adequate yearly progress than those that do not. It has restricted choice
in many urban areas due to the availability of seats. School officials have cited the major
obstacles to implementation of school choice are the availability of appropriate grade
ranges, classroom space, and identification of enough schools to which students may
transfer (Fusarelli, 2007). In direct violation of federal law, some district officials have
even placed restrictions on the number of students who may transfer into a school that
made AYP because additional low achieving students in schools may lower those
schools' AYP status. School officials who are willing to take low achieving students may
jeopardize their school’s AYP status as a result (Ilg & Massucci, 2003). As students
transfer out of schools with low AYP status, the schools lose funding for those transfer
students, which confounds the effects of insufficient resources to help raise the level of
education for the remaining students. In order to negate the effects of the aforementioned
cycle, funding formulas began to shift resources to the neediest schools consistent with
the theory of vertical alignment, thus helping to close the achievement gap based upon
race, ethnicity, language, and disability (McLaughlin, 2010).

The push to educate children with disabilities paralleled laws passed to provide
equality of outcomes for students in grades K-12. Beginning in 1970, the Education of
the Handicapped Act was passed, and the legislation was intended to meet the needs of students who were not learning (DuFour, DuFour, Eaker, & Karhanek, 2010). In an attempt to expand the options provided to students, the Education for All Handicapped Children Act of 1975 (P.L. 94-142) required states receiving federal funding to provide a free and appropriate public education to all students with disabilities between the ages of 3 and 21. The law made it illegal to exclude students with disabilities from public schools and required that the students be placed into the "least restrictive environment, and allow those students with disabilities to be moved from institutions to the center of the classroom… and give children who were once ignored…unprecedented access to free appropriate public education," (President's Commission on Excellence in Special Education, 2002, p.3). A later amendment in 1990 renamed the law the Individuals with Disabilities Education Act (IDEA) and substituted the word disability for handicapped in an effort to add person first language to the law. In addition, the law added and clarified types of related services, rehabilitation services, assistive technology, and individualized transition planning. The section on transition planning set up "coordinated activities for a student, designed within an outcome oriented process that promotes movement from school to post-school activities," (Yell, 2006, p. 190). Thus, specific access to educational outcomes is required for students with disabilities.

**School Reform**

As discussed earlier, the state of educational outcomes came under harsh criticism in *A Nation at Risk*. The critical focus on the quality of education provided by public schools has led to reform efforts on various levels for the last 30 years. In spite of the
efforts of government to raise achievement outcomes, three million students in the U.S.
schools continue to attend institutions that are failing by federal standards. Although the
term *failing school* is not used by the U.S. Department of Education (USDOE), NCLB
refers to low-performing schools as "in need of improvement" (Bracey, 2009, p. 58).
Failing schools have been referred to as persistently lowest-achieving schools that fail to
meet AYP for two or more years or have a low graduation rate (U.S. Department of
Education [USDOE], 2010). The No Child Left Behind Act was developed on the
assumption that negative consequences for schools that do not make AYP will somehow
push them to work harder and focus more attention on student outcomes. Once schools
are identified as not making AYP, districts are required to provide support and assistance
in the areas of data analysis, identification of instructional needs and implementation of
research based instructional strategies (National Center for Educational Statistics, 2005).
Unfortunately, the districts rarely recommend strategies for implementing comprehensive
reform. In addition, the law requires states to commit 4% of their Title I budget funds for
school improvement (Public Law 107-110, Title, I §1003). The focus on district and state
assistance suggests the underlying assumption on the part of the federal government that
provision of more resources will provide the opportunity for equitable educational
outcomes for students in failing schools.

The efficacy of high schools in particular has been called into question as the
quality of education debate has raged. In attempts to improve high schools, Sizer (1984)
argued for greater teacher autonomy and authority in the school structure, and Goodlad
(1984) urged more decentralization of school authority within the high school structure in
order to allow teachers to develop innovative programs. Over time, urban high schools
have become a target of reform as these schools have been seen as unresponsive and inadequate to meet the needs of students with disabilities and students from diverse backgrounds. The curricula in these schools tend to be rigid and inflexible. There is little collaboration and curriculum tends to be fragmented and superficial (Ilg & Massucci, 2003). Many reformers were convinced that the traditional comprehensive high schools developed in the 1950s need to be replaced with smaller units in order to accommodate the needs of children in urban centers (Ilg & Massucci, 2003).

Reform efforts have taken many shapes over the years in an attempt to change the perceived ills of secondary schools (Tyack & Cuban, 1995). According to Ilg and Massucci (2003), the overriding themes prevalent in education policy require revamping the entire system rather than creating minor alterations to the schools. Good schools have been characterized as having a strong academic emphasis, a stress on positive rewards, high teacher expectations of student effort, and shared consistent values (Ancess & Darling-Hammond, 2003).

Educators and policy makers have attempted to change school components from creating smaller schools, empowering parents, using school time differently, creating freshman academies, de-tracking schools, and instituting alternative governance structures such as site based management all with varying degrees of results (Clinchy, 2000). In addition, various school reform advocates have created a number of programs in an attempt to replace the failing structure. Since their inception in the 1970s, school reform models have been used by researchers, corporations, and foundations in school systems to test theories and ideas concerning the types of organizational and/or instructional changes deemed necessary to better educate children (Fullan, 2000). Some
of the models have been called comprehensive while others were termed whole-school reforms, but the terms mean the same thing, and all focus on the underlying principle of increasing student academic performance. Comprehensive school reform movements gained more prominence in the 1980s as they provided a clear blueprint for changing a school’s standards, curriculum, and instructional practices (Ross et al., 1997). While models were diverse, their one thing in common was they moved away from traditional notions about school organization, staffing, decision making, and student based services. In many instances, the school districts adopting reform models did so in reaction to the states’ raising of the accountability requirements (Ilg & Massucci, 2003).

As reform movements progressed into the 1990s with even more aggressive program expansions, interest grew when Congress appropriated $150 million for the Comprehensive School Reform Demonstration Program in 1998. Initially, approximately 3,000 schools received awards of $50,000 to implement whole-school reform model; however, applications increased after became NCLB law (Ilg & Massucci, 2003). Interest in school reform stemmed from the federal government’s increased accountability requirements, and the lack of ability on the part of schools’ administrations to meet the law’s demands. This was especially true in urban schools where student proficiency rates were low and drop-out rates high. School reform advocates insisted that school staff must be willing to reexamine and change all parts of school life: attitudes, culture, leadership models, parent involvement, facilities and finance (Rhim & Redding, 2011). The Comprehensive School Reform Program components became key factors in meeting the requirements for federal funding. Although reform models have differing emphases, they all share many of the same characteristics including: professional development, high
academic standards, ongoing evaluation, parent involvement, coordination of resources, and external support and evaluation. The models force educators to shift from the traditional way of thinking about school organization to more innovative ways to educate students.

**Turnaround Movement**

The U.S. Department of Education fully supported a school reform or *turnaround* effort in 2009 when Secretary Arne Duncan pledged to turn around the lowest 5% of all public schools through the expanded and revised School Improvement Grant (SIG) program (Wakelyn, 2011). In essence, the revised SIG program introduced an urgency to dramatically transform school culture and increase student outcomes in each state’s persistently lowest-achieving schools, through robust and comprehensive reforms (The Center for Comprehensive School Reform and Improvement, 2006). While the original allocations for SIG were set at $5.5 million in 2009, Congress raised the amount to $545 million so that states could provide sub-grants to their districts and provide funding for those schools deemed most in need. The American Recovery and Reinvestment Act of 2009 (ARRA) provided an additional $3 million in funding in 2010 for a period of three years to intensify efforts to turn around the most persistently low-achieving schools (Wakelyn, 2011).

The allocation of SIG dollars was prioritized according to a tiered categorical formula which was designed to help not only those schools with a history of weak academic performance on standardized assessments, but also high schools with problematic graduation and drop-out rates. Low performing schools were categorized as
Tier 1, Tier 2, or Tier 3 and required state grantees to prioritize districts serving the largest number of Tier 1 and 2 schools. Tier 1 schools were categorized as any Title I school “in improvement, corrective action, or restructuring that is among the lowest achieving 5% of the Title I schools, or is a high school with a graduation rate of 60% or less over a number of years” and a Tier 2 school was defined as… “any secondary school that is eligible for, but does not receive, Title I funds and is among the lowest achieving 5% of secondary schools in the state that had a graduation rate of less than 60%" (USDOE, 2010, p.1).

The funding for the failing school districts resulted from the notion that when left to their own devices, school districts do little if anything to turn around failing schools. A 2007 Government Accountability Office study found that 40% of schools in restructuring did not enact any of the five options required by NLCB (Wakelyn, 2011). Most of the schools in the study selected the option called other major governance that gives more flexibility and is open to broader interpretation (Wakelyn, 2011), thus allowing schools to continue business as usual while collecting federal funds. In order to receive federal Turnaround funds, state education agencies (SEAs) must ensure that local education agencies (LEAs) use one of the following federally approved interventions (School Improvement Grants, 2010):

- Turnaround Model: Replaces the principal, screens existing school staff and rehires no more than half the teachers; adopts a new school governance structure and improves the school through curriculum reforms, professional development, and extended learning time.
• Restart Model: Converts a school or closes it and reopens it as a charter school or under an education management organization.

• School Closure: Closes the school and sends the students to higher-achieving schools and districts.

• Transformation Model: Replaces the principal and improves the school through comprehensive curriculum reforms, professional development, extended learning time and other strategies.

The federal government has urged schools to utilize the turnaround model of school reform even though the reviews of success as viewed historically were mixed. Much of the Turnaround literature has described how unusually successful Turnaround schools have progressed despite the lack of resources and high levels of student poverty (Duke & Jacobson, 2011; Manwaring, 2011; Salmonowicz, 2009). The schools usually were elementary schools with small student populations and, the success of these restructured schools has been cited as the model for other schools that have not made AYP. However, the literature on reform models is mixed, and educators have begun to question the long term effectiveness of these schools’ successes citing that turning around a failing school is a complex task with no single solution (F. B. Aitken, personal communication, September 24, 2011). The process by which previously failing schools have turned into successful institutions is still a mystery, and research on the process of turning a low performing school into an effective one is sparse and difficult to interpret. Murphy and Meyers (2008) described the factors that create a failing school in an attempt to find what a good school is not. They categorized these factors into external and internal conditions.
External conditions are those over which school leaders have had little or no control. Failing schools tend to be located in urban and rural areas. They are not randomly distributed nor are they located in an even distribution across a single state. The vast majority of failing schools are located in central urban areas with a disproportionate number of minority students (Briefing on Fixing Failing Schools, n.d.). Stringfield and Yakimowski-Srebnick (2005) studied Maryland schools and found a large percentage of African-American students attended failing schools; however, they indicated that immigrant and other minority students are also likely to attend failing schools. Failing schools are more often located in impoverished communities thus perpetuating what the American Federation of Teachers called “a vicious cycle of poverty and failure” (Stringfield & Yakimowski-Srebnick, 2005, p. 50). Research further indicates that a high percentage of the students who attend failing institutions qualify for free and reduced lunch programs. According to Murname (2007), these schools generally face two major challenges “(1) they are often located in a community that has few economic resources and (2) the students who attend come to school beset by problems associated with poverty that require significant services” (p.345). Students who attend these schools arrive unprepared to learn due to a lack of exposure to early childhood education.

Furthermore, Murphy and Meyers (2008) noted that internal causes tend to confound the problems of failing schools. Poor or inadequate teaching is a major factor in school failure. While this is not an indictment of the teachers themselves, it is part of the larger teaching issue in urban schools. Urban schools are often provided with inexperienced teachers who could be successful with the right support. However, most of the inexperienced teachers are asked to overcome serious social student barriers as those
previously cited with no training or prior experience in dealing with such issues. Failing schools experience a high rate of teacher turnover as well, thus exacerbating school failure (Murphy & Meyers, 2008). Due to a dearth of financial resources, failing schools lack the necessary materials for student success. Inadequate supplies and outdated textbooks are among the myriad of obstacles that combine with low morale within the school and in the community the school serves. Many failing schools have developed reputations for low student performance and this stigma places an even heavier burden on the ailing institution (Waklyn, 2011).

**Turnaround Structure**

Despite the controversy surrounding the process, several organizations have devised turnaround programs to help districts in need of restructuring. At the heart of the Turnaround program is a structure that involves the school site, administration, teachers, and curriculum. Students’ academic learning is an interaction with the classroom, teachers, and subject matter that they are taught. As reported by Bryk, Sebring, Allensworth, Luppescu, and Easton (2010), the way a school is structured has a major impact on the instructional exchanges within the classroom. The schools act in a social context to support teaching and sustain student engagement. Bryk (2010) identified the following five organizational features that are required turnaround practices in the restructuring of schools and which he asserts result in increased student achievement.

1. **Coherent Instructional Guidance Systems**

   Schools in which student learning improves have coherent instructional guidelines that articulate what is taught and how instruction is delivered. The learning task posed for
students and the assessment data that measure progress are considered key components in evaluating whether or not classroom instruction has been successful. In fact, this was advocated for SIG schools in the guidance provided to schools (USDOE 2010). Turnaround schools are required to use data and research-based instructional programs aligned from one grade to the next. In addition, continuous use of student data is to be used to inform and differentiate instruction for each student. While teachers are given discretion as to how they use the provided resources, their efforts are dependent upon the quality of support from the instructional community of the school site (Bryk, 2010).

2. Professional Capacity

Schools are only as good as the quality of the teachers who work there. The ongoing use of professional development that supports the continued growth of the faculty is an important factor in building a site’s professional capacity. This action is also tied to the school administration’s ability to recruit and maintain a highly qualified teaching staff. Instructional feedback for the professionals who work together is a critical component of the turnaround process (Bryk, 2010).

3. Strong Parent-Community-School Ties

The disconnect between the school staff and the parents and community that the site serves is a critical issue in the failure of schools (Bryk, 2010). Parents may feel alienated by the lack of ties to the school, its teachers and administrators. It is crucial that the parents of the students who attend the school believe they are a part of the educational process and the quality of the ties between parents and school staff is reflected in improved student motivation and school participation. This connection can serve as a critical resource for the classroom teachers.
4. Student Centered Learning Climate

It is important that all of the adults involved in the school community create a climate that helps students think of themselves as learners. At the very least, school improvement is established through a safe, clean, and orderly learning environment. These elements help to endorse increased academic achievement and it allows students to believe in themselves and ultimately their success (Bryk, 2010).

5. Leadership Drives Change

School change is facilitated by the principal in a dynamic relationship through leadership and facilitation of the necessary cultural changes that lead to school improvement. The instructional leadership provided by the principal is centered on core instructional programs, supplemental academics, and social supports. The hiring and development of staff is a priority as well as the provision of resources and staff development. The principal sets himself or herself as a buffer from externals that might distract the reform (Bryk, 2010).

The University of Virginia (UVA) has created a Turnaround Specialist program used by the local district in its Turnaround schools. The program is designed to train principals and key staff for leadership at their school sites. According to E. Thomas, turnaround specialist from the UVA Turnaround Program (personal communication, January 13, 2012) the program has little research to support its claims of success in aiding turnaround schools, so the evidence that its methods help raise student achievement is anecdotal. In addition, the schools using the UVA program have shown a 56% success rate (David, 2010). The basis of the UVA Turnaround program employs a structure that focuses on the school site, administration, teachers, and curriculum. Students’ academic
learning is an interaction with the classroom, teachers, and subject matter that they are taught. One thing the successful UVA program schools have in common is their small student populations. These successful turnarounds were highlighted at the 2012 University of Virginia Turnaround Conference. The conference was conducted by Bambrick-Santoyo who described the turnaround of his 1,500 student school district in New Jersey. Bambrick-Santoyo discussed methods recommended in his 2010 book on the importance of using classroom assessments and data in the turnaround process, but provided only anecdotal information as evidence of the success of his district's turnaround. No quantitative data was provided to support results of his turnaround methods.

**Assessment and Turnaround**

Bryk (2010) pointed out that there have been no quantifiable studies conducted of the reasons why or the way turnarounds improve student outcomes, although the literature suggests they do have an impact. While leadership has been the focal point of most turnaround literature, the federal guidelines (USDOE, 2010; 2012) require more than just a change in leadership and teachers. Teachers in schools involved in the turnaround process are also required to use data to identify and implement research based instructional programs that align with state standards and lend continuity from one grade to the next. In addition, the SIG process requires that schools make continuous use of all types of data; formative, interim, and summative to inform and differentiate instructional practices (USDOE, 2010; 2012). In other words, teachers and administrators involved in
a school’s turnaround process must focus on student achievement and student outcome data.

The use of student assessment data to drive instruction in the most successful schools also was highlighted during the 2012 Title I School Conference. A session by Boland, Pearson, and Mohajeri-Nelson (2012) discussed cases of nine schools in Colorado that demonstrated significant academic growth over a three year period. The growth was accomplished in spite of the high poverty and language barriers experienced by students attending the schools. According to Boland et al., teachers in the highlighted schools used data to identify student needs and adjusted instruction to meet those needs. In another session, principals from three Midwestern elementary schools described how embedded data was used throughout all classrooms and how the use of assessment data helped teachers design quality instruction to meet student needs (Ramsour, Gianotti, Schofield, & Goerig, 2012).

Formative assessment has been identified as a critical part of the learning process (Yorke, 2001). However, findings on the effectiveness of using formative assessment data to increase student achievement have been mixed (Sly & Rennie, 2000). The one common denominator in presentations at the Title I Conference concerning increased student achievement was in the use of assessment data to address student needs. Teachers whose students made increases met in groups and evaluated student assessment data and used those results to help drive instruction.

Wiliam (2011) discussed the use of an assessment cycle and embedded assessment in his book on formative assessment. The assessment cycle uses regular assessments of student learning during a specific time frame. The assessment is written
before the teaching begins and defines the lessons to be taught. Assessments apply to all students in the class and occur every six to eight weeks. Assessments in the cycle are formative and aligned to the instructional sequence which relates to district and state curriculum standards (Bambrick-Santoyo, 2010). The use of formative assessment allows the teacher to adjust instruction to meet student needs. Wiliam cited several studies that have demonstrated the effectiveness of formative assessment when teachers use the results to drive instruction. The author discussed these studies to support the use of formative assessment to improve student achievement, yet he failed to cite any specific research studies to support the effectiveness of formative data use in the school turnaround process.

**Formative Assessment and Teacher Collaboration**

The use of formative assessment is an important component in the turnaround process to assess student learning and predict achievement. It is also the best way for teachers to create effective lessons and design instruction. The most efficient way for teachers in a school to accomplish these tasks, is through collaboration (DuFour, DuFour, Eaker, & Many, 2010; Venables, 2011). Teachers have worked in groups to create lessons and share ideas for many years, however, the first formalized version of teacher collaboration groups came in the 1980s. Teachers met to critically assess their classroom instruction and the work groups were referred to as Critical Friends Groups (CFG). Their goal was to critically view their teaching by meeting regularly to examine their own work, and that of their students' (Venables, 2011).
With the passage of NCLB, state testing has become an important focus for every principal and most teachers. With this new focus, those CFGs that still functioned shifted from student learning to student performance. As the use of CFGs declined, this task took on a new life with the work of the DuFours and their colleagues (DuFour, DuFour, Eaker, & Many, 2010) in the form of Professional Learning Communities (PLCs). The belief was that by looking at student data in collaborative teacher teams that were focused on results, teachers could change the way they teach and thus improve student achievement on state exams. While the DuFours and Venables (2011) have written much on the theory and practice of PLCs, they have published no research to support their assertions.

**Statement of the Problem**

Although laws have been passed that require improvement of instructional outcomes in schools, the improvements have been slow or results have not been those expected. In addition, the literature on school reform efforts and the turnaround process has focused primarily on leadership and developing the professional capacity of the faculty. The few studies in the literature, such as the work of the University of Virginia Turnaround program, concerned other aspects of the turnaround process such as use of the use formative assessment and data to track students’ academic achievement in elementary schools with small student populations. The Turnaround process requires that teachers do things differently (Bryk, 2010). Beyond this statement however, it is not known how or what *different* means.

While there is a body of research showing that achievement gaps are closing at the elementary level, little has been done at the secondary level (Knoeppel & Brewer,
Site Improvement Grant dollars have been allocated to high schools with a history of poor academic performance and low graduation rates (Rhim & Redding, 2011) with the expectation that student performance will improve. In spite of the significant financial support, little success has been experienced in turnarounds. The problem lies in identifying the specific supports, evidence-based programs, strategies, or teacher trainings that would significantly affect a turnaround effort. Materials available from the USDOE Office of School Improvement Grants website (2013) provide broad guidelines for schools, but each school’s leadership personnel must decide which specific changes to make and how they must be implemented within the context of school turnaround.

**Purpose of the Study**

Given the lack of specific programs available for high school administrators to utilize, it has been necessary for leadership to use strategies reported to be effective, but not necessarily supported by research that demonstrates effectiveness with student populations involved in the turnaround program. In addition, little information exists about demographic factors that may be related to students’ successes or failures in the high school turnaround process. The literature on the turnaround school improvement process has reported anecdotal evidence and highlighted a few successful schools, but has not provided data on student achievement following implementation of a turnaround program. In a high school, the SIG program requires that student academic proficiency be tracked by student scores in reading and math on a state high school proficiency exam. The academic proficiency of students must be reported as the percentage of all students
who passed, as well as percentages of students in specific subgroups (i.e., ethnicity, students with disabilities, and students with limited proficiency in English).

The purpose of this study was to investigate the effects on students’ high school proficiency exam scores in math and reading in the initial two years of implementation of a Turnaround Intervention Package (TIP). The TIP incorporated common formative student assessments and teachers’ use of student assessment data in Professional Learning Communities (PLC) to inform and differentiate instructional practices. The underlying question was whether the use of this package of interventions would contribute to improved student achievement in the critical areas of math and reading as measured by state high school proficiency exam scores. It was hypothesized that the use of the TIP would result in significant increases in students’ math and reading high school proficiency exam scores.

The proficiency scores of the pre-turnaround grade 10 cohort were analyzed to determine growth in the two subsequent years of turnaround. In previous years, any instructional remediation and differentiated instruction that teachers adopted to improve student achievement was not based on the use of a PLC Assessment Cycle by teachers. The Site Improvement Grant under which the Turnaround school worked required growth in the following specified demographic groups: Black, Hispanic, White, IEP (students with disabilities), and LEP (Limited English Proficient). This study examined the effectiveness of the use of the TIP components for required instructional changes in the classroom and its impact upon student proficiency scores. A further question of social significance also was addressed with a measure of teacher satisfaction of the PLC
Assessment Cycle component of the TIP. To address this purpose, the study was guided by the following questions:

1. Is there a difference between scores of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

2. Is there a difference between scores of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

3. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

4. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

5. Do teachers report satisfaction with the PLC Assessment Cycle component of the Turnaround Intervention Package?
Significance of the Study

To date, little empirical data have been collected on the success factors of a Turnaround in a high school and there were no known studies on the student factors that contribute to the success or failure of the Turnaround process. Articles on school improvement and the turnaround process have used anecdotal indicators and highlighted a few successful schools but have failed to provide specific student centered data to explain improvement (Bambrick-Santoyo, 2010; Duke & Jacobson, 2011, Murphy & Meyers, 2008). Researchers recommended structural changes in organization and community involvement that have appeared to help students make academic progress, but have provided no empirical evidence or even an explanation of why or how these changes worked. However, Knoeppel and Brewer (2011) stated the need for shifting the unit of analysis from school to student level as the best way to leverage the growing body of research in the area of methodologies that will help teachers analyze and restructure their practices. The use of formative assessment has been shown to improve student achievement on the elementary level. This study will examine the results of implementation of a package of turnaround interventions in a high school in a large urban school district. Monitoring student progress through assessment in high school is a challenge due to the large numbers of students high school teachers must teach. The study will contribute to the literature base concerning high school restructuring and the Turnaround process, especially in the context of a package of turnaround strategies including common formative assessments and PLCs to improve student scores on secondary level proficiency exams used by state and local education agencies to determine student growth.
Limitations

The limitations of the study were that no single component can be identified as contributing to increased student achievement. Each component must be treated as a whole in order to measure effectiveness. The major pieces of the package included common formative assessments and PLCs, both of which have had documented success in elementary education, but their use in high school has been limited due to the large student populations each teacher sees (F.B. Aitken, personal communication, September 24, 2011). The use of a PLC Assessment Cycle is fairly new and requires a complete shift in the way teachers approach classroom instruction. In addition, teacher use of differentiated instruction and remediation strategies is another limitation of the study. Not all teachers use the same strategies, nor do they use them with fidelity. Other limitations include:

- The case study of a single school with specific demographics within the district used in the study and the lack of a comparison model.
- Limits on the types of data available in testing collection and use of test instruments due to the requirements of the specific school site.
- Reductions in the cohort sample because of a high rate of transiency.
- Teacher fidelity in the use of differentiated instruction within the classroom.

Definition of Terms

The following paragraphs define terms used in this paper.
**Adequate Yearly Progress (AYP)**

This is an accountability plan required under NCLB in which states must define their procedures for reporting a school's performance and the system in place to hold schools accountable for increasing student achievement (Yell, 2006).

**Assessments**

Measures of student achievement used to guide improvements in student learning such as quizzes, tests, writing assignments and other items that teachers administer on a regular basis in their classrooms. Assessments also include large-scale high stakes state and district level tests. All are used to collect data that drive the instructional decisions of teachers based upon student need (Gusky, 2003).

**Differentiated Instruction**

Differentiated instruction is carefully modified and adapted instructional strategies and assessments for essential concepts, principles, and skills to meet the learning needs of individual students (Tomlinson, 1999).

**High School Proficiency Exam (HSPE)**

A standardized, summative standards-based assessment used to measure student achievement by the state at the end of 10th grade. It is used as part of the AYP determination for the high school (Nevada Department of Education, Frequently Asked Questions, 2010).
PLC Assessment Cycle

The timelines created by the members of the PLC in which learning goals are selected based upon subject standards. The teachers in each PLC meet weekly to plan and/or create formative assessments (to measure learning as it occurs) and a lesson calendar for teaching students, analyzing student data in order to determine if learning is taking place, or creating action plans for students who are struggling. There is a culture of transparency of data among all teachers within the PLC (DuFour, DuFour, Eaker, & Karhanek, 2010; Bambrick-Santoyo, 2010).

Professional Learning Communities (PLCs)

Dufour, Dufour, Eaker, & Many (2010) defined Professional Learning Communities as collaborative teams whose members work together to achieve a common goal. Teachers in this case focus on the learning of each student and collaborate on assessment data and instructional practices in order to improve student achievement. Each member of the team is held accountable. These PLCs are normally created by grade level and/or content area.

School Reform Models

School reform models are also known as comprehensive reform and whole-school reform, they seek to improve a school’s academic performance by aligning all aspects of the school’s operations with a single guiding vision (Ilg & Massucci, 2003).
**Student Subgroups (IEP and LEP)**

IEP (Individualized Educational Plan) is the school district designation for the subgroup of students with disabilities. LEP (Limited English Proficient) is the designation for the subgroup of students for whom English is a second language.

**Turnaround Intervention Package (TIP)**

The TIP incorporated common formative student assessments and teachers’ use of student assessment data in Professional Learning Communities (PLC) to inform and differentiate instructional practices.

**Turnaround School**

A specific restructuring option recognized by the NCLB Act that is approved by the USDOE for use in the lowest of low-performing schools. It requires that the school’s principal and at least one-half of the teaching staff be replaced (Bryk, 2010).
CHAPTER TWO

REVIEW OF RELATED LITERATURE

**Search Procedures of Related Literature**

A systematic review of literature was conducted using four computerized databases; ERIC, Education: A Sage Collection, Academic Search Premier, and Education Full Text. The search was conducted using the following descriptors; turnaround model and secondary school, restructuring and secondary schools, school restructuring research, graduation research, disability and Adequate Yearly Progress, African American high school students and AYP, Hispanic high school students and AYP, Hispanic graduation research, African American graduation research, graduation research and poverty, English Language Learners / Limited English Proficiency and graduation research, Special Education and graduation, Professional Learning Communities, data analysis, formative assessment, assessment cycle, instructional research, academic achievement, No Child Left Behind Act, Adequate Yearly Progress, and data driven instructional practices. In addition to the above data bases, a search of the USDOE websites was conducted in order to locate information and articles concerning school turnaround and restructuring under department sponsored grants and guidelines.

Next, a manual search was conducted of articles that were located in the computer data base search. The journals of interest included: *Educational Leadership* (February, 2003 to October, 2010), *American Educational Research* (January, 2002 to October, 2007), *Education Evaluation and Policy Analysis* (January, 2002 to August, 2009),

**Criteria for Selection of Related Literature**

Articles for this chapter were included if they had relevance to the topic of school turnarounds, restructuring, the use of formative assessments to improve student achievement, and professional learning communities. Literature reviewed was published between 1980 and 2012 with a focus on secondary turnarounds and formative assessment at the secondary level. In addition, studies and literature were reviewed that published results and information concern Professional Learning Communities. Literature describing specific methods of student assessment with a focus on secondary targeted populations is also included in this section.
Review and Analysis of Literature

The review of literature in the area of school turnarounds and school restructuring revealed no quantitative research has been conducted to date. The only research located was by Bryk, Bender-Sebring, Allensworth, Luppescu, & Easton. (2010). It detailed a longitudinal study of two elementary schools in the Chicago School System conducted by the Consortium on Chicago School Research. The internal school structure and that of the community in which the schools interacted was studied by the researchers. The authors used a 15 year database to develop, test, and validate a framework for school improvement. Data presented by the authors used a comparative analysis between a school that had the Five Essential Supports for School Improvement and a school that did not have these supports in place. The Five Essential Supports for School Improvement included: “(a) Coherent instructional guidance system, (b) professional capacity, (c) strong parent-community-school ties, (d) student centered learning climate, and (e) leadership that drives change” (Bryk, 2010, p. 24). By using charts comparing the reading achievement of the two schools in question, Bryk et al. demonstrated a correlation between the aforementioned essentials and academic achievement. The study is a small excerpt from the book by Bryk et al. on the improvements of Chicago schools. It provided an in-depth qualitative analysis of the schools previously mentioned. In the last chapter of the book, however, the authors conceded that in order for the study to have more validity, it must be replicated in other places. The problem lies in the need for large-scale longitudinal studies. Their study did not isolate the any single element that might relate to success in a turnaround, but viewed all as necessary to school improvement.
(Bryk et al., 2010). This approach was not conducive to a true experimental study.

The next two articles reviewed were by authors working with the University of Virginia Leadership and Policy Foundation. Neither of the articles presented any type of data to support the authors’ contentions. The University of Virginia’s Curry School of Education in partnership with the Darden Business School offers a Turnaround Specialist Program for principals and district level administrators from across the country (Duke & Jacobson, 2011).

The first of the two articles is a chronicle of two Texas high schools that improved student achievement through the use of data to focus teachers’ efforts on student achievement and tracking student coursework. The schools discussed by the authors had problems before the turnaround efforts with low graduation rates, misuse of resources, and no tracking of student progress. The principals who took over the failing schools took similar steps to turnaround the schools. They improved the school facilities, made schedule adjustments to give teachers time to plan together, and they focused efforts on the 9th grade students in order to provide a structure of support (Duke & Jacobson, 2011). Both principals relied on data to focus teacher efforts on subjects that might hinder student graduation. These quick wins were described by the authors as a key to turnaround success. No data were supplied to support the assertions and in addition, there was no discussion of how long term success would or could be achieved. The author's discussion of school changes was anecdotal and contained no data to support the assertions. The second of the two articles were written by a doctoral candidate from the University of Virginia, Curry School of Education. The researcher states that he has both conducted research on and worked in low-performing schools, but provides no
reference to support his assertions. The article provides seven recommendations meant to help educators improve schools. These seven include: “1) Ensuring that more than enough resources are available, 2) ensure that the principal understands what “turnaround” means, 3) determine key priorities that you must get right the first time- and get them right, 4) show teachers that success in challenging schools is possible, 5) make literacy the centerpiece of your turnaround plan, 6) provided a frequent, targeted, professional development, and 7) don’t scale up until you have a model that works (Salmonowicz, 2009 p. 21). The remainder of the article explains each of the recommendations in detail with no supporting evidence or research to support any assertions.

Articles by Lee and Smith (1994) and David (2010) indicated that school reform efforts were linked to improved student achievement, but the authors provided no empirical evidence concerning how or why it does. The first article from the Center on Organization and Restructuring of Schools defined the difference between *bureaucratic schools* and *restructured schools* (Lee & Smith, 1994). Bureaucratic high schools are large comprehensive schools that offer students broader course choices and activities and more resources than their smaller counterparts. The problem with this type of schools is that the student body tends to be stratified into tracking systems of high and low achievers with matching expectations and course demands (Lee & Smith, 1994). The authors provide a comparison of the reading, science, and math scores of restructured and non-restructured schools. While there is a difference in some scores, the overall results are mixed. The authors caution that while restructuring works, it is not known exactly how it works. Schools with restructuring elements in place showed improvement in
student achievement, but there were no data to support the results of this study in
comparison to student achievement before and after the restructure. According to Lee and
Smith, the statistical manipulation of standardized test results prevented the
determination of actual academic mastery by students. The second point made by the
authors was that a clearer understanding must be gained of how and why restructuring
practices might be statistically associated with improved student academic outcomes.
Challenges lie in isolating the true factor that contributes to improved student outcomes.
The authors agree that the restructuring practices alone do not directly cause gains in
academic achievement. They instead may lead to practices that may make these gains
possible.

One of the articles located in the search explains why turnaround strategies do not
guarantee school change. The basic turnaround strategy has been borrowed from business
where, the author asserts, results have been mixed. David (2010) cites a review of
literature on business turnarounds that found only one-fourth of the businesses that
undertook turnarounds were successful. David discussed the mixed results of school
turnaround literature and cites that the U.S. Department of Education guide for
turnaround school does not even provide support for one of its requirements. The practice
of the complete replacement of staff, a major component of the model most commonly
advocated. The assertion of David is that no single strategy can achieve school reform.
There are too many elements to identify which specific piece is the most effective. The
author concludes that a realistic approach to school improvement is to include some “key
components identified by researchers and …carefully determining how to incorporate
those elements into the existing structure” (David, 2010, p. 79).
Although few of the articles located had an actual study to report, there were two pieces that cited a longitudinal study of the Chicago Public Schools and their attempts to restructure the area schools that were deemed inadequate or failing. It is interesting that the Chicago Public Schools have been under some type of reorganization since the early 1990s. While searching literature, the book titled *Organizing Schools for Improvement: Lessons from Chicago* (Bryk et al., 2010) often was referenced. The book’s authors examined six years of data from 1990 to 1996. They used a variety of data to determine how the two elementary schools chronicled in the study actually progressed. Researchers used the traditional measures of proficiency exam scores in math and reading to partially measure growth, but they cautioned that this is only part of the picture. Measuring the percentage of students at or above a national norm is a “weak statistical indicator” (Bryk, et al., p. 32). A more accurate approach is the use of an *academic productivity profile* that provides a summary of student learning. Researchers used this profile which included measures of learning, average daily attendance and qualitative data gathered from teachers, students and the community to measure the whole school. With this approach, the research group developed a math and reading growth measure of the six years studied. The outcomes of the study demonstrated a growth trend in the academic productivity profile, however, this growth failed to meet required proficiency growth percentages as measured by the Iowa Test of Basic Skills. The authors’ concluded that the changes required by school restructuring were effective in increasing academic achievement, but they are not significant if they are measured only through standardized test growth.

An offshoot of this study was found in an article by Hess (2003) for the Center for
Urban School Policy, Northwestern University. The article is a piece of a larger study of a system wide effort to redesign the inner city high schools within Chicago. This study has relevance in that it is one of the few pieces located concerning high school restructuring. It was part of the Children First Education Plan which began with elementary schools and in 1997 began the restructure effort for high schools. The Design for High Schools was based on the recommendations of a task force report. The task force was made up of 200 teachers, administrators, educational activists and university researchers. The schools were monitored by Northwestern University from October 1997 through June 2000 (Hess, 2003). The monitoring system focused on student achievement data. The researchers visited both the schools that were in need of improvement and those deemed higher achieving to examine what was working in the schools. Teacher surveys were conducted and an ethnographer was employed to track the cultural changes that took place in each school going through the restructuring process. The ethnographer worked in the schools to track changes in the instructional methods by observing teachers in eight classrooms over the course of the three years. During the first year, the ethnographer determined that teachers were teaching below the grade level they observed and asked low level questions that assumed no knowledge on the part of the students. The outcomes of the study were mixed. Through observational data, researchers concluded that in the three years of the study, no real change in teaching methods took place in spite of the use of an external provider to consult with the restructured schools. Reading and math scores did increase slightly, but not significantly enough to meet state testing requirements. Another point of interest in this study was the fact that school enrollment decreased in all but one of the schools studied. The conclusion of the study’s
authors was that the restructuring effort was not successful enough to warrant continuation of the efforts.

**Formative Assessment Literature**

The literature reviewed concerning formative assessment was varied but again no actual experimental studies were located. The research literature on formative assessment and school achievement was field study based and demonstrated a correlation between formative assessment and increased student achievement. The most relevant literature located was in the work of Marzano (2010). His book *Formative Assessment and Standards Based Grading* includes a meta-analysis of the varied body of research conducted in concerning formative assessment. In the book, Marzano presented his findings which were varied in effect size, but he advocated formative assessments as an “effective tool for enhancing student learning” (Marzano, p. 7). While the author cites research to support the use of formative assessment, this book tends to be more instructional in nature and geared toward those involved in the creation of assessment policy in formative assessments and an assessment cycle.

An article located in *Science Scope* was an action research project using formative assessment data. Bakula (2010) discussed the use of formative assessments in a classroom setting. The author cited little research to support her claim that frequent use of formative assessments to check for student understanding and giving feedback to the students helps to enhance student learning. The study was conducted with one of the author’s five 7th grade classes, thus using a sample of convenience for the study. All classes were given the assessments and the feedback, so there was no control group. In
addition, there was no control for variables. The assessments were used as a tool to determine if students understood the information covered in the lesson and if not, the material was re-taught. Item analysis enabled the author to decide which questions might have the most difficult concepts for students, and thus review teaching strategies that would help teach in a different way. The findings in this study proved that 84% of the students were able to master the content taught in the science class through re-teaching and review of concepts. What this study did not explain was why this happened. Since there were no control groups against which to compare, it was not known how the assessments helped to increase student achievement.

Another Marzano (2003) study that was located was a discussion of the correct way to use student assessment data. Marzano advocated the use of student data as a measure of student learning. The main point of this article is the criticism that most schools tend to use standardize tests as an “indirect” measure of student learning (p. 57). This, he contends, is not an accurate measure of student learning. Schools must instead use accurate measures that reflect the curriculum that is taught. Although he advocates the use of curriculum based assessment, Marzano failed to cite any experimental studies that support his assertion.

McTighe and Thomas (2003) wrote an article explaining the method of creating assessments using a backwards model. The authors discussed the importance of planning through identification of the desired outcomes for classroom instruction. This is usually done with the district curriculum and state standards as the focus. However, there was a disconnect between these items and those required by the standardized proficiency tests, so it is important to focus on what students need to understand in order to apply their
knowledge in new situations. They also discuss the importance of analyzing multiple data sources when designing student assessments. Performance-based and constructed response assessments are important and should be considered alongside the multiple choice questions so common on most standardized tests. This gives a complete picture of the students’ strengths and weaknesses. Another method for transforming student achievement data was the summarization of data. This not only provided the teacher with a picture of student achievement, but also parents, administrators and others interested in student achievement data. The last section of this article discusses the importance of using the data analysis to develop an action plan. The data collected through the use of assessments provides teachers with an accurate idea of how they need to adjust instructional practices to accommodate the needs of the learners. The authors ended by restating the assessment design framework, and provided three references to support their assessment framework assertions.

Bambrick-Santoyo (2010) provided a “framework” for effective data driven instruction. Bambrick-Santoyo explains the use of the data driven instruction through case studies. He cited both elementary and secondary examples to explain the assessment cycle he advocates. The book is filled with charts and data which detail how growth was accomplished by schools using an assessment cycle of four-week intervals. Teachers met to plan what they would teach, design the assessment, design instruction, teach students and then within that four weeks administer the assessment to measure student learning. If students didn’t demonstrate proficiency, the teachers met in their groups and, using student data, designed instruction to re-teach and remediate. The author is the director of the North Star Academies, Newark’s first attempt at school reorganization. The
academies include elementary and high schools and Bambrick-Santoyo illustrated his success with these schools’ use of the assessment cycle by providing documentation of school improvement and meeting state testing goals. While the book does not provide any experimental data, it does provide anecdotal data to support the assertion that using an assessment cycle is an effective way to improve student achievement.

Another book entitled, *Embedded Formative Assessment* includes a more in depth examination of the assessment cycle and its use within the classroom. Wiliam (2011), cited studies conducted in the British school systems as well as other countries to support his assertions that formative assessment used to drive instruction is a way to increase student achievement. In his chapter that builds a case for formative assessment, Wiliam cited the work of Benjamin Bloom and Michael Scriven from the late 1960s to support his point that formative assessment is an important key to improving student achievement. The author explained that formative evaluation plays a key role in the ongoing improvement of curriculum and instruction. Although this book’s author provided no evidence of experimental studies to prove his theory that formative assessment works, he does cite authors and research that support the effectiveness of formative assessment.

The last literature reviewed concerned professional learning communities. While several articles were theoretical in nature, two actual studies were located that reviewed the effectiveness of forming and maintaining professional learning communities.

Wells and Feun (2007), studied professional learning communities based upon the model of Stevens High School in Lincolnshire, Illinois developed by Rick Dufour, the school's former principal and superintendent. The schools included in the study were six Michigan high schools that volunteered to be part of a training program that utilized the
Illinois model. Teachers from the high schools were chosen as leaders and completed nine days of training. As part of the training, teachers learned to review and analyze student data, and leadership skills to be used back at their home schools. The researchers studied the emotional reaction to changes within each school as well as the attempted changes and evidence of the changes in the behaviors of the faculty at each school.

Of the six schools involved in the study, five were located in high socio-economic areas, while the sixth was located in a semi-rural area with lower socio-economic level and less academically successful students. The researchers used qualitative measures to determine the above factors. They used a Likert-type scale to gather information. The survey included 16 multiple choice questions and six open-ended questions. The instrument was aligned with five dimensions of learning communities designed by Horde (1999): (a) supportive and shared leadership, (b) collective creativity, (c) shared values and vision, (d) supportive conditions, and (e) shared personal practice. In addition to the Likert scale, the researchers conducted 30 minute interviews with the participants who attended the initial trainings.

The findings of the study indicated that while teachers in four of the six schools expressed the need to collaborate as highest on the mean result, they defined collaboration as connection with their colleagues to discuss what and when they wanted to teach various concepts. The areas of lowest agreement centered on comparing student learning results, discussion of what instructional methods were used, and how to assist students who were not learning. The data reflected that high schools seldom spend time analyzing student learning results which is an essential component of a learning community.
Limitations of this study included selection factors. The six schools were not randomly selected, but samples of convenience as they were the first six of 24 schools in the district to volunteer for the training. An additional limitation was the fact that the survey was only given to the teachers once, and as a result, the findings cannot be generalized to other schools.

The second study was an early analysis of the professional learning community concept in context of the school improvement process. Scribner, Cockrell, Cockrell, and Valentine (1999) conducted a two-year study of the school improvement process using professional communities. The study seems to interchange the terms professional community and professional learning communities which is interesting in the light of their development as earlier discussed. The researchers conducted a two-year qualitative study of the relationship between professional communities and school improvement. The authors' used two research questions to guide their study: (a) How does the school improvement process foster the development of professional communities? (b) What organizational factors support and/or impede the development of professional communities? (Scribner et al.).

The research focused on a modified School Improvement Process (SIP) used by a university school improvement center to lead a change effort in 27 schools. Each school, through a faculty vote, was required to commit to the SIP. The school district was also required to commit financially through a $3000.00 a year allocation for participation in the program. The school sites sent teams to attend 10 university sponsored conferences over the 2 years of the program. The team members were required to take specific
leadership roles as they reported conference information back to their individual school sites.

The study was designed using a constructivist method of inquiry which operated from the belief that truth and knowledge are created (Scribner et al., 1999). The research was conducted using a collective case study approach. The schools involved in the university program included eight elementary schools, nine middle schools, and ten high schools. The researchers chose to study only three rural middle schools. The schools had small student populations, low student-to-teacher ratios, and relatively homogenous ethnic populations of predominately Anglo American students.

The authors conducted the study by interviewing principals, leadership teams, and selected teachers. Data were collected from September 1996 through January 1998 using a variety of qualitative sources including interviews, observations, artifacts, and documents. Observations were completed in the form of field notes as the researchers observed interaction among team members of the professional communities as they engaged in work at the school sites. Documents and artifacts were also collected the forms of memoranda, email, faxes, and work-products. Data analysis was ongoing throughout the research and used to guide the direction of future data gathering activities.

The researchers' findings were categorized into evidence that answered each question and examined it in relationship to five elements of professional communities: shared norms and values, focus on student learning, reflective dialogue, de-privatization of practice, and collaboration. The results of the study were then presented in field-note selections of observations from each school site.
The conclusion of the researchers suggested that schools with the most significant shift in effectively using professional communities demonstrated a great shift in the underlying assumptions that guided professional practice and led to a cycle of learning. The most relevant finding was in the relationships between various factions and communities within communities such as new teachers, academic and exploratory teachers, and grade level teachers. However, the combination of the SIP's reliance on leadership teams, a principal's decision to encourage such leadership, and participation of varying groups of teachers led to a meaningful dialogue among group members that focused on deep-seated values and beliefs allowing the members to gradually shift those values and beliefs.

In contrast, the schools that progressed the least were those with leadership that believed they were already leaders and above the norm. They felt they were progressive and not comfortable with doing things the same way, however the data did not support the groups' opinions of themselves. The researchers could not answer the questions after months of data and analysis of where cultural changes occurred that reflected the formation of professional communities. They were unable to determine if the SIP facilitated the formation of strong relationships within the professional communities or if there were pre-existing conditions that allowed this to occur. The limitations of this study are in the fact that it is a limited qualitative case study with no quantifiable aspects to replicate.
Literature Summary

While there is much literature published on turnaround schools that have succeeded, the elements of a successful turnaround, and how to successfully turn a school around, there has been no true experimental study to isolate which elements are truly responsible for the raise in student achievement. The same can be said for the literature concerning formative assessment. While many authors and educators have made names for themselves advocating the use of formative assessments or a cycle of assessment to track student progress, there were no experimental studies that could be located to validate how formative assessment works. It is interesting to note how many authors provide a correlation while implying causation.
CHAPTER THREE

METHODOLOGY

The purpose of this study was to examine the use of a Turnaround Intervention Package that included use of formative assessment cycles and instructional changes teachers made with the aid of analysis of student assessment data in a SIG high school setting. Teachers in the SIG school under study were mandated to use data to decide which intervention in their particular content classrooms improved the academic achievement of their diverse group of learners. During the study, teachers adopted instructional remediation and differentiated instruction to improve student achievement pursuant to their analyses of student data. The SIG under which the Turnaround school works requires growth in specified demographic groups. This study examined the effectiveness of the use of data for required instructional changes in the classroom and its impact upon student proficiency scores. This chapter presents the methods and procedures that were followed during the entire study and provides descriptions of the following components: (a) research questions, (b) participants, (c) setting, (d) instrumentation, (e) design and procedures, and (f) treatment of the data.

Research Questions

The following research questions guided the current study:

1. Is there a difference between scores of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?
2. Is there a difference between scores of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

3. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

4. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

5. Do teachers report satisfaction with the PLC Assessment Cycle component of the Turnaround Intervention Package?

The study used a case technique design to address the research questions relevant to the use of a Turnaround Intervention Package and its effect on students’ state HSPE scores. The chapter is organized into five sections. First, a summarization of the extant participant data is provided. Second, the setting of the research is discussed. Third, the measures and instrumentation are presented. Fourth, the research procedures are described. Finally, the treatment of data is described.
Participants

The research used extant data collected in a large urban high school as required components of the SIG process. These data include the state high school proficiency exam scores in reading and math of a cohort of the 10th grade students who failed to pass the exams on their first opportunity in the pre-turnaround 2010-2011 school year, and their scores on each student’s subsequent testing attempts during the first two years of the SIG Turnaround Intervention Package implementation (i.e., the 2011-2012 and 2012-2013 school years). Students were included only if they took their first and subsequent proficiency exam attempts at the SIG school. All data collected were extant with all identifiers removed. The total student enrollment data and demographics for the pre-turnaround 2010-2011 school year and the first SIG year from the state accountability reports are shown in Table 1 along with the demographic data for the study student cohort.

It is important to note that the demographic categories shown in Table 1 are those the SIG requires to be reported. The Other category comprises Asian, Multi-racial, Pacific Islander, and American Native/Alaskan Native. The SIG does not require reporting on the subgroup of students receiving Free/Reduced Lunch (FRL). To date, the enrollment data and demographics for SIG year 2 have not been released.
Table 1

SIG School Student Body and Study Cohort Enrollment and Demographic Data

<table>
<thead>
<tr>
<th></th>
<th>Pre-SIG: 2010-2011</th>
<th>SIG Year 1: 2011-2012</th>
<th>Study Student Cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Total</td>
<td>2,067</td>
<td>2,055</td>
<td>239</td>
</tr>
<tr>
<td>White</td>
<td>360 (17.4)</td>
<td>317 (15.4)</td>
<td>37 (15.5)</td>
</tr>
<tr>
<td>African-American</td>
<td>650 (31.4)</td>
<td>641 (31.2)</td>
<td>61 (25.5)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>936 (45.3)</td>
<td>926 (45.1)</td>
<td>118 (49.4)</td>
</tr>
<tr>
<td>Other</td>
<td>121 (5.8)</td>
<td>171 (8.3)</td>
<td>23 (9.6)</td>
</tr>
<tr>
<td>IEP</td>
<td>287 (13.9)</td>
<td>309 (15)</td>
<td>21 (8.8)</td>
</tr>
<tr>
<td>LEP</td>
<td>286 (13.8)</td>
<td>171 (8.3)</td>
<td>20 (8.4)</td>
</tr>
<tr>
<td>FRL</td>
<td>1,134 (54.9)</td>
<td>1,373 (66.8)</td>
<td>7 (2.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LEP (Reading exam)</td>
</tr>
</tbody>
</table>

The scoring for the HSPE is between 100 and 500, with a passing score of 242 for the math exam and 300 for the reading exam. However, a score of 100 means only that the student took the test but either a) put his or her name on the test and answered no or only some of the questions, or b) got every answer wrong. The statistical probability of a student answering every question incorrectly is .018%. Therefore, to avoid invalidation of the statistical analyses, it was necessary to exclude all students in the cohort subgroups with scores of 100-109 (See Table 2). In like manner, the students who did not retake their failed exam(s) in a consecutive manner (i.e., in the sequence the HSPE was offered) were excluded from the study data sets. This was necessary to allow for analyses of
results for students who had the same testing experience (i.e., students who retook the exams contiguously) and amount of exposure to the TIP.

Table 2

*SIG School Demographics for Students Scoring 100-109 on First HSPE Attempt*

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Total (N)</th>
<th>Number of Students Scoring 100-109</th>
</tr>
</thead>
<tbody>
<tr>
<td>African-American</td>
<td>86</td>
<td>14</td>
</tr>
<tr>
<td>Hispanic</td>
<td>144</td>
<td>17</td>
</tr>
<tr>
<td>White</td>
<td>46</td>
<td>6</td>
</tr>
<tr>
<td>IEP</td>
<td>38</td>
<td>11</td>
</tr>
<tr>
<td>LEP</td>
<td>17</td>
<td>7</td>
</tr>
</tbody>
</table>

After this procedure was completed, the remaining data were arranged into groups so there were no repeating members among any of the groups. The data sets were then assembled into the following 4 groups:

- **Group 1.** Those who took the exam 1 time
- **Group 2.** Those who took the exam 2 times
- **Group 3.** Those who took the exam 3 times
- **Group 4.** Those who took the exam 4 times

Within these groups, further subgrouping of IEP and LEP was completed to address two of the study research questions.
In addition, the study used extant data with all identifiers removed on a social validity questionnaire taken by teachers to determine their satisfaction with the PLC Assessment Cycle component of the TIP. All content area teachers completed the questionnaire per SIG requirements; however, only extant data for teachers of English (i.e., reading) and mathematics were used in the study.

Setting

The study was conducted in a large urban high school in a school district in the Western United States. The staff of the school consisted of 106 teachers, 5 counselors, and 5 administrators. In 2010, the school was designated as a Tier I high school identified as needing turnaround based upon a comprehensive needs assessment conducted by the State Department of Education and the school district. The determination was derived from demographic data, annual accountability reports, and curriculum audits. The school did not meet AYP for the previous 5 years and was designated as Needs Improvement under the No Child Left Behind Act.

The high school is located in a low socio-economic area with a high transiency rate and low graduation rate. The expected graduation rate computations are reported 2 years prior to the class’ actual graduation year. The school accountability reports computed proficiency based upon testing of the school's 11th grade students. Although students take reading, math, and science exams for the first time at the end of their 10th grade year, the results are not computed for AYP status until the end of that group's 11th grade year. As with the enrollment data and demographics, the academic characteristics for SIG year 2 have not been released to date. Table 3 shows the transiency rate, expected
graduation rates, and academic characteristics reported in state annual accountability reports.

Table 3

*SIG School Academic Characteristics as Reported in State Annual Accountability Reports*

<table>
<thead>
<tr>
<th>Pre-SIG Year: 2010-2011</th>
<th>SIG Year 1: 2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic</td>
<td>Percent</td>
</tr>
<tr>
<td>Transiency rate</td>
<td>39</td>
</tr>
<tr>
<td>Average daily attendance</td>
<td>91.3</td>
</tr>
<tr>
<td>Class of 2013 expected graduation rate</td>
<td>36.3</td>
</tr>
</tbody>
</table>

**High School Proficiency Exam rate (11th grade students)**

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
<th></th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading (met standard)</td>
<td>59.9</td>
<td>Reading (met standard)</td>
<td>57.4</td>
</tr>
<tr>
<td>Reading (exceeded standard)</td>
<td>25.6</td>
<td>Reading (exceeded standard)</td>
<td>5.1</td>
</tr>
<tr>
<td>Mathematics (met standard)</td>
<td>38.9</td>
<td>Mathematics (met standard)</td>
<td>46.0</td>
</tr>
<tr>
<td>Mathematics (exceeded standard)</td>
<td>4.6</td>
<td>Mathematics (exceeded standard)</td>
<td>5.2</td>
</tr>
</tbody>
</table>

*Note.* Proficiency rates for the High School Proficiency Exam in Reading and Mathematics represent cumulative data from a student’s first opportunity to pass the assessments in grade 10 through the student’s second opportunity in grade 11.

**Instrumentation**

The study will employ data from the following measurement instruments.

**High School Proficiency Exam (HSPE)**

The math and reading results for the 10th grade students as reported by the state were disaggregated and followed through any subsequent student test re-takes through grades 11 and 12. Individual student results analyzed as group data and a comparison
were run between pass and fail scores. The proficiency exam is a standards-based, summative, standardized exam in the areas of reading comprehension, mathematics, and science. The exam items include multiple-choice and constructed response questions. Students initially take the exam in March of their 10th grade year. Exam scores are numeric, but placed in categories of Emergent/Developing (failing), Approaches Standard (failing), Meets Standard (passing), or Exceeds Standard (passing).

**PLC Assessment Cycle Procedure Rating Questionnaire**

The second instrument used in the study was a questionnaire developed to evaluate teachers’ perceived satisfaction with the PLC Assessment Cycle and the appropriateness of procedure and data to assist teachers to identify students’ academic difficulties and develop intervention strategies. The questionnaire was a modification of the Intervention Rating Profile-15 developed in 1985 by Martens, Witt, Elliot, and Darveaux (as cited in Witt & Elliott, 1985) (See Appendix A).

**Design and Procedures**

In order to answer the study's questions, it was important to establish the PLCs and train teachers. This is reflected in the first two phases of the design. In addition to the PLCs and use of data to drive instruction, there were several other components of the TIP used that did not fit into a specific phase as they were utilized throughout the time of the study. The other components are described below:

1. Classroom Walk Throughs were used to measure changes in teacher instructional practices (Teachscape, 2011) (See Appendix B).
2. "Late-in Fridays" allowed teachers to meet in PLCs every Friday during the school year to conduct data analysis and planning. Students arrived an hour later for classes on these days.

3. Students who had not passed the state proficiency exams in math or reading were placed in remediation classes during a special period three days per week.

4. Students who had not passed the state proficiency exams in math or reading attended before and/or after school tutoring provided by teachers.

Phase I

1. Teachers were grouped into PLCs by subject and grade level. For the purposes of this study, only 10th grade math and English PLCs are discussed. The 10th grade math and English teachers were trained in the implementation of Professional Learning Communities as described by Dufour, Dufour, Eaker, and Karhanek (2010). The number of teachers in each PLC was determined by the number of teachers teaching 10th grade math and English courses. For example, all 10th grade Algebra teachers formed a PLC; all 10th grade English teachers formed another PLC, etc. Part of training involved establishing norms and procedures to be followed during the PLC meetings. The teachers were then trained in the Plan, Do, Study, Act process (DuFour, DuFour, Eaker, & Karhanek, 2010) (See Appendix C). Teachers underwent continuous professional development during the first year to answer questions and reinforce the Plan, Do, Study, Act Cycle questions on which they were asked to focus their work: (a) What do we want our students to learn? (b) How will we know if each student is learning the skills,
concepts, and dispositions we have deemed essential? (c) What happens in our classes when a student does not learn? (d) What happens in our classes when students already know it? (Dufour, Dufour, Eaker, & Karhanek, 2010). Teachers met each week in their PLCs to plan assessments and/or analyze the results of previous student assessments and make instructional plans that addressed the driving questions.

2. Teachers were trained to use the Datawise assessment tool in order to create their Comprehensive Common Pre-Assessments (See Appendix D).

3. Tenth grade math and English teachers identified students who were non-proficient within their classrooms based upon their pre-assessments, and monitored student progress through teaching and the use of formative assessment during the identified instructional cycle.

4. Teachers also received training on the Classroom Walkthrough (CWT) process and the data used to record observations of their classrooms. A sample data form of classroom instructional practices is shown in Appendix E. This helped teachers identify their strengths as well as areas in need of improvement within classroom instruction.

Phase II

1. The actual PLC cycles began and student progress was monitored. Students who needed extra help were identified for remediation period. This was a time during the longer block class period when students were pulled out by a remediation specialist.
2. Classroom Walkthroughs were conducted in each department at a minimum of 10 a week per administrator and department chair. All participating teachers received feedback from each CWT.

3. Teachers were surveyed in order to provide further professional development to support the work of their PLCs.

**Phase III**

1. The HSPE was taken by 10th grade students, as well all non-proficient 11th and 12th grade students. The HSPE results received from the State were analyzed. Proficiency data from the previous year was converted to a format appropriate for the study with all identifying information removed and compared to the current year's data. Teachers who participated in the PLCs were given the PLC Assessment Cycle Procedure Rating Questionnaire to evaluate their perceived satisfaction with the PLC Assessment Cycle component of the TIP. The questionnaire was administered anonymously. Teachers were only to indicate the academic content area and grade levels taught.

**Treatment of the Data**

Specific data sets used and analysis procedures are discussed following each research question.

1. Is there a difference between scores of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in
the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

2. Is there a difference between scores of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

Analysis: Quantitative data were collected on the results of the HSPEs in reading and math during the cohort's first proficiency exam taken in 10th grade. Upon failure, each student was progress monitored during the Turnaround Intervention Process. Each student continued to retake the proficiency exam(s) until achieving a passing score. The resulting data were then analyzed using the Statistical Package for Social Sciences (SPSS) repeated measures linear modeling to examine means trends. This allowed determinations of whether or not the mean scores of the students had meaningfully increased in the context of the Turnaround Intervention Package.

3. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

4. Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?
Analysis: Quantitative data were collected on the results of the HSPEs in reading and math during the cohort's first proficiency exam taken in 10th grade. Upon failure, each student was progress monitored during the Turnaround Intervention Process. Each student continued to retake the proficiency exam(s) until achieving a passing score. The resulting data were disaggregated by ethnicity, IEP, or LEP group and analyzed using SPSS repeated measures linear modeling to examine means trends. Post hoc tests were run on each group to further compare group means. This allowed determinations of whether or not the mean scores of each group had meaningfully increased in the context of the Turnaround Intervention Package.

5. Do teachers report satisfaction with the PLC Assessment Cycle Procedures?
Analysis: All teachers who participated in the PLCs completed the PLC Assessment Cycle Procedure Rating Questionnaire. For the purposes of this study, only questionnaires from teachers who indicated they taught classes in English (i.e., reading) and math were used. Descriptive statistics were calculated on the Likert scale responses.
CHAPTER FOUR
RESULTS OF THE STUDY

The purpose of this study was to investigate the effects on students’ high school proficiency exam scores in math and reading in the initial two years of implementation of a Turnaround Intervention Package (TIP). The TIP incorporated common formative student assessments and teachers’ use of student assessment data in Professional Learning Communities (PLC) to inform and differentiate instructional practices. In this state, students who do not pass the exam may continue to retake the exam until they pass each content area exam. For this study, the collected data were high school proficiency exam scores in reading and math of a cohort of 10th grade students who failed to pass the exams on their first opportunity in the pre-turnaround 2010-2011 school year, and each student’s scores on subsequent retake attempts during the first two years of the SIG Turnaround Intervention Package implementation (i.e., the 2011-2012 and 2012-2013 school years). Upon failing the exam, each student became part of the TIP cohort and received monitored instruction.

Sample grouping

As previously stated, students scoring between 100 and 109 were removed from the sampling group due to the lack of score validity. This is part of the reason that the numbers were so low for the IEP and LEP groups. Students in these two subgroups tended to score much lower on their initial test. It is important to clarify the IEP and LEP designations. IEP refers to students with learning disabilities and is used by the state department of education to designate this subgroup of students. LEP is also a term used
by the state to refer to students with limited English proficiency. These two subgroups have traditionally struggled to pass the state high school proficiency exam.

The remaining data were arranged into groups so there were no repeating members among any of the groups, and the data sets were then assembled into the 4 groups:

Group 1. Those who took the exam 1 time
Group 2. Those who took the exam 2 times
Group 3. Those who took the exam 3 times
Group 4. Those who took the exam 4 times

As previously stated within these groups, further subgrouping of IEP and LEP was completed to address two of the study research questions.

Students’ scores on the two content area exams were analyzed using general linear modeling repeated measures analyses for Groups 2, 3, and 4 with specific focus on the means trends. This allowed determination of whether or not the means of the students' scores had meaningfully increased in the context of the TIP. Each subsequent retake of the exam was also analyzed and, after determining that the modeling was valid, the data were assessed for each of the analytical tests run.

Validity of Critical Statistical Assumptions

It was important to first address the assumptions that govern statistical analytic methods: that the data are normally distributed and has sphericity, that is, an assumption that variances of differences between data taken from the same participant are equal (Field, 2013). It was therefore of utmost importance to determine if the proficiency data
came from a normally distributed population. Unfortunately, school district privacy policies prevented access to specific population data. The only district-wide population data available were the descriptive statistics for mean, standard deviation, population size, and standard error. Because descriptive statistics cannot be used to determine if raw data is normally or non-normally distributed, it was necessary to test for normality on the sample data sets. Thus, it was necessary to run tests for normality on the existing sample group data sets to determine whether or not they came from a normally distributed population. Once it was established that the population of students that took each test is normally distributed, students from that population can be grouped for research purposes on the premise that any sample from a population is, by definition, normal if that population itself is normal. This was to avoid Type I errors due to grouping our samples. The findings of this assumption were mixed and not all data met expectations.

**Testing for Assumptions of Normality and Sphericity for HSPE Math Proficiency Exam Scores**

Table 4 shows the results of normality testing of all student score data for each administration of the math proficiency exam during the pre-SIG year 2010-2011, and SIG years 1 and 2 (2011-2012 and 2012-2013).

Test1 and Test 2 failed to meet the criteria for normality as the Shapiro-Wilk $p$-values are < 0.05. For this analysis, a significant $p$-value suggests the distribution in question is significantly different from a normal distribution (Field, 2013). This result suggests that these data come from a non-normally distributed population, and that the differences between results of students’ scores on the first test administration (Test 1) and
the second test administration (Test 2) are not statistically significant. However, both Test 3 and Test 4 have a Shapiro-Wilk \( p \)-value of > 0.05 that suggests the distribution of the samples is not significantly different from a normal distribution.

Table 4

Tests of Normality for Math Proficiency Exam Scores

<table>
<thead>
<tr>
<th>Testing Scores</th>
<th>Kolmogorov-Smirnov(a)</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>df</td>
</tr>
<tr>
<td>Test 1</td>
<td>.054</td>
<td>239</td>
</tr>
<tr>
<td>Test 2</td>
<td>.090</td>
<td>148</td>
</tr>
<tr>
<td>Test 3</td>
<td>.070</td>
<td>97</td>
</tr>
<tr>
<td>Test 4</td>
<td>.109</td>
<td>63</td>
</tr>
</tbody>
</table>

\* This is a lower bound of the true significance.

\(a\) Lilliefors Significance Correction

Note. Test 1 denotes data for the first take of the HSPE in the pre-SIG year 2010-2011. Test 2 and Test 3 denotes data for the second and third takes of the HSPE in SIG year 1 (2011-2012). Test 4 denotes data for the fourth take of the HSPE in SIG year 2 (2012-2013).

To further validate the assumptions of normality, a test for sphericity was run using Mauchly's W hypothesis testing to examine whether or not the variances of the differences in scores between treatment levels are equal. The tests were only run for test Groups 3 and 4 because there were not enough data sets in Groups 1 and 2 to show any variance disagreement and produce valid results. Table 5 shows the results of the tests of sphericity for the two test groups.
Table 5

Tests of Sphericity for Math Proficiency Exam Test Groups

<table>
<thead>
<tr>
<th>Sphericity Test</th>
<th>Within Subjects Effect</th>
<th>Mauchly’s W</th>
<th>Approximate Chi-Square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 3</td>
<td>Test Number</td>
<td>.982</td>
<td>1.636</td>
<td>2</td>
<td>.441</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test Number</td>
<td>.852</td>
<td>8.630</td>
<td>5</td>
<td>.125</td>
</tr>
</tbody>
</table>

If the Mauchly’s W test statistic is not significant \( p > 0.05 \), it is reasonable to conclude that the variances of differences are approximately equal (Field, 2013). The Mauchly’s W test statistics for both Group 3 and Group 4 were not significant, which supports validation of further analyses as mathematically sound.

The use of a general linear model repeated measures analysis for the math exam data sets is suggested by the repeated testing over time while providing the groups with the instructional treatment components of TIP. The tests for normality and sphericity validate the analysis as mathematically sound.

**HSPE reading proficiency exam scores**

As with the math data, examination of normality was completed for Test 1, Test 2, Test 3, and Test 4. Table 6 shows the results of normality testing of all student score data for each administration of the reading proficiency exam during the pre-SIG year 2010-2011, and SIG years 1 and 2 (2011-2012 and 2012-2013).
Table 6

Tests of Normality for Reading Proficiency Exam Scores

<table>
<thead>
<tr>
<th>Testing</th>
<th>Kolmogorov-Smirnov(^a)</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scores</td>
<td>Statistic</td>
<td>df</td>
</tr>
<tr>
<td>Test 1</td>
<td>.111</td>
<td>250</td>
</tr>
<tr>
<td>Test 2</td>
<td>.057</td>
<td>202</td>
</tr>
<tr>
<td>Test 3</td>
<td>.088</td>
<td>132</td>
</tr>
<tr>
<td>Test 4</td>
<td>.188</td>
<td>91</td>
</tr>
</tbody>
</table>

* This is a lower bound of the true significance.
\(^a\) Lilliefors Significance Correction

Note. Test 1 denotes data for the first take of the HSPE in the pre-SIG year 2010-2011. Test 2 and Test 3 denote data for the second and third takes of the HSPE in SIG year 1 (2011-2012). Test 4 denotes data for the fourth take of the HSPE in SIG year 2 (2012-2013).

For the reading HSPE results, Test 1 failed to meet the criteria for normality as the Shapiro-Wilk \(p\)-value is < 0.05. However, Test 2, Test 3, and Test 4 significantly passed the test for normality with Shapiro-Wilk \(p\)-values of > 0.05. Thus, one can assume that the Test 2, Test 3, and Test 4 scores came from a normal distribution.

To further validate the assumptions of normality, Mauchly's W test for sphericity was run to examine whether or not the variances of the differences in scores between treatment levels are equal. As with the math analysis, tests were only run for Groups 3 and 4 because there were not enough data sets in Groups 1 and 2 to show any variance disagreement and produce valid results. Table 7 shows the results of the tests of sphericity for the two test groups.
Table 7

Tests of Sphericity for Reading Proficiency Exam Test Groups

<table>
<thead>
<tr>
<th>Sphericity Test</th>
<th>Within Subjects Effect</th>
<th>Mauchly's W</th>
<th>Approximate Chi-Square</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 3</td>
<td>Test Number</td>
<td>.970</td>
<td>2.321</td>
<td>2</td>
<td>.313</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test Number</td>
<td>.463</td>
<td>31.378</td>
<td>5</td>
<td>.000</td>
</tr>
</tbody>
</table>

If the Mauchly’s W test statistic is not significant ($p > 0.05$), it is reasonable to conclude that the variances of differences are approximately equal (Field, 2013). The Mauchly’s W test statistic for Group 3 was not significant, which indicates the variances of the differences are equal. The Mauchly’s W test statistic for Group 4, however, showed a significance value $p < 0.05$ that suggests the variances of the differences are not equal. Therefore, further analyses adjusted for sphericity using the Greenhouse-Geisser and Huynh-Feldt procedures to correct the data (Field, 2013).

The use of a general linear model repeated measures analysis for the reading exam data sets is suggested by the results. Although Test 1 in the pre-SIG year failed the test for normality, the data from Tests 2, 3, and 4 that were taken by students during the first 2 years of the SIG all passed the test for normality. These results provide confidence that further analyses are adequate to answer the research questions.
Research Questions and Related Findings

This section addresses the analyses of data to address the following questions:

Research Question 1

Is there a difference between scores of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

As previously described, the study cohort students took their first math proficiency exam in 10th grade of the pre-SIG 2010-2011 school year. The students who failed (i.e., 61.9% of the students) received TIP progress monitoring and interventions, and continued to retake the math proficiency exam until achieving a passing score. The resulting data were analyzed using SPSS repeated measures linear modeling to examine means trends to determine whether or not the mean scores of the students had meaningfully increased in the context of the Turnaround Intervention Package. The following section presents results for the groups of students who successively took the exam twice (Group 2), three times (Group 3), or four times (Group 4) during the first 2 years of the SIG. Table 8 shows the descriptive statistics for each group of students.
Table 8

*Descriptive Statistics for Cohort Student Group Scores on the Math Proficiency Exam*

<table>
<thead>
<tr>
<th>Group</th>
<th>Math HSPEs taken</th>
<th>n</th>
<th>Mean Score</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 2</td>
<td>Test 1</td>
<td>160</td>
<td>186.1500</td>
<td>35.99934</td>
</tr>
<tr>
<td>Group 2</td>
<td>Test 2</td>
<td>160</td>
<td>215.7063</td>
<td>47.70238</td>
</tr>
<tr>
<td>Group 3</td>
<td>Test 1</td>
<td>99</td>
<td>178.5556</td>
<td>35.19515</td>
</tr>
<tr>
<td>Group 3</td>
<td>Test 2</td>
<td>99</td>
<td>194.1010</td>
<td>36.79715</td>
</tr>
<tr>
<td>Group 3</td>
<td>Test 3</td>
<td>99</td>
<td>221.2222</td>
<td>41.28214</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test 1</td>
<td>63</td>
<td>172.0476</td>
<td>35.63725</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test 2</td>
<td>63</td>
<td>183.6984</td>
<td>36.43759</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test 3</td>
<td>63</td>
<td>199.8889</td>
<td>29.54773</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test 4</td>
<td>63</td>
<td>239.1111</td>
<td>45.99688</td>
</tr>
</tbody>
</table>

**Math HSPE Group 2 results.** Students in study cohort Group 2 did not pass their first math proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the first semester of the SIG year1, and 34% of the group passed the second time they took the math proficiency exam (i.e., a score ≥ 242). Table 8 shows the descriptive statistics for students in this group. Table 9 presents the analysis of results for this group.
Table 9

*Cohort Group 2 Tests of Within-Subjects Effects for the Math Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Number</td>
<td>Sphericity Assumed</td>
<td>69885.753</td>
<td>1</td>
<td>69885.753</td>
<td>75.830</td>
</tr>
<tr>
<td></td>
<td>Greenhouse-Geisser</td>
<td>69885.753</td>
<td>1.000</td>
<td>69885.753</td>
<td>75.830</td>
</tr>
<tr>
<td></td>
<td>Huynh-Feldt</td>
<td>69885.753</td>
<td>1.000</td>
<td>69885.753</td>
<td>75.830</td>
</tr>
<tr>
<td></td>
<td>Lower-bound</td>
<td>69885.753</td>
<td>1.000</td>
<td>69885.753</td>
<td>75.830</td>
</tr>
</tbody>
</table>

The repeated measures test shows a $p$-value (Sig.) of $p < 0.01$ which means that the mean scores for the group between the first and the second test session are significantly different as shown in Figure 1.

*Figure 1. Trend of Group 2 mean scores on the HSPE in math*
**Math HSPE Group 3 results.** Students in study cohort Group 3 did not pass their first math proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the both semesters of the SIG year1, and 35% of this group passed the third time they took the math proficiency exam. Table 8 shows the descriptive statistics for students in this group. Table 10 presents the analysis of results of for Group 3.

Table 10

*Cohort Group 3 Tests of Within-Subjects Effects for the Math Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>92322.970</td>
<td>2</td>
<td>46161.485</td>
<td>57.805</td>
<td>.000</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>92322.970</td>
<td>1.973</td>
<td>46794.977</td>
<td>57.805</td>
<td>.000</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>92322.970</td>
<td>2.000</td>
<td>46161.485</td>
<td>57.805</td>
<td>.000</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>92322.970</td>
<td>1.000</td>
<td>92322.970</td>
<td>57.805</td>
<td>.000</td>
</tr>
</tbody>
</table>

For Group 3, the repeated measures test shows a \( p \)-value (Sig.) of \( p < 0.01 \) which indicates that the mean scores for the group between each test session (i.e., first to second and second to third) are significantly different. Figure 2 shows a graphic representation of the trend of the mean scores of Group 3.
**Math HSPE Group 4 results.** Students in study cohort Group 4 did not pass their first math proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the both semesters of the SIG year1 and the first semester of SIG year. For this group, 46% of the students passed the fourth time they took the math proficiency exam. Table 8 shows the descriptive statistics for students in this group. Table 11 presents the analysis of results of for Group 4.
Table 11

*Cohort Group 4 Tests of Within-Subjects Effects for the Math Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>161901.663</td>
<td>3</td>
<td>53967.221</td>
<td>60.571</td>
<td>.000</td>
</tr>
<tr>
<td>Test Number</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>161901.663</td>
<td>2.710</td>
<td>59731.892</td>
<td>60.571</td>
<td>.000</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>161901.663</td>
<td>2.846</td>
<td>56880.099</td>
<td>60.571</td>
<td>.000</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>161901.663</td>
<td>1.000</td>
<td>161901.663</td>
<td>60.571</td>
<td>.000</td>
</tr>
</tbody>
</table>

For Group 4, the repeated measures test shows a p-value (Sig.) of \( p < 0.01 \) which indicates that the mean scores for the group between each test session (i.e., first to second, second to third, and third to fourth) are significantly different. Figure 3 shows a graphic representation of the trend of the mean scores of Group 4.

*Figure 3.* Trend of Group 4 mean scores on the HSPE in math (passing score = 242)
Each successive, contiguous group of testing students experienced a statistically significant increase in mean exam scores. Moreover, in the data that were used, the passing rate of the first math exam was 38%. It would be expected that successive testing of the remainder of the cohort students would yield lower pass rates because the students who had the ability to achieve passing scores had already been sorted out of the group. Interestingly, the opposite was found. The second time the test was taken by cohort students, 34% of the students passed. The third time had a passing rate of 35% and the passing rate was 46% for the fourth time. This is very strong evidence that suggests each cohort group was better prepared to pass the math exam on successive retakes.

**Research Question 2**

Is there a difference between the scores of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in subsequent academic year(s) after the implementation of the Turnaround Intervention Package?

Like for the math results in the previous section, the study cohort students took their first reading proficiency exam in 10th grade of the pre-SIG 2010-2011 school year. The students who failed (i.e., 65.3% of the students) received TIP progress monitoring and interventions, and continued to retake the reading proficiency exam until achieving a passing score. The resulting data were analyzed using SPSS repeated measures linear modeling to examine means trends to determine whether or not the mean scores of the students had meaningfully increased in the context of the Turnaround Intervention Package. The following section presents results for the groups of students who successively took the exam twice (Group 2), three times (Group 3), or four times (Group
4) during the first 2 years of the SIG. Table 12 shows the descriptive statistics for each group of students.

Table 12

Descriptive Statistics for Cohort Student Group Scores on the Reading Proficiency Exam

<table>
<thead>
<tr>
<th>Group</th>
<th>Reading HSPEs taken</th>
<th>n</th>
<th>Mean Score</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Test 1</td>
<td>191</td>
<td>191.9162</td>
<td>61.75174</td>
</tr>
<tr>
<td>Group 2</td>
<td>Test 2</td>
<td>191</td>
<td>285.6545</td>
<td>69.99884</td>
</tr>
<tr>
<td></td>
<td>Test 1</td>
<td>86</td>
<td>196.1279</td>
<td>46.40786</td>
</tr>
<tr>
<td>Group 3</td>
<td>Test 2</td>
<td>86</td>
<td>246.1395</td>
<td>44.44221</td>
</tr>
<tr>
<td></td>
<td>Test 3</td>
<td>86</td>
<td>290.6279</td>
<td>49.32510</td>
</tr>
<tr>
<td></td>
<td>Test 1</td>
<td>48</td>
<td>186.9583</td>
<td>46.93679</td>
</tr>
<tr>
<td>Group 4</td>
<td>Test 2</td>
<td>48</td>
<td>233.1875</td>
<td>42.79325</td>
</tr>
<tr>
<td></td>
<td>Test 3</td>
<td>48</td>
<td>257.0417</td>
<td>32.53735</td>
</tr>
<tr>
<td></td>
<td>Test 4</td>
<td>48</td>
<td>293.4792</td>
<td>66.36648</td>
</tr>
</tbody>
</table>

Reading HSPE Group 2 results. Students in study cohort Group 2 did not pass their first reading proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the first semester of the SIG year1, and 45% of the group passed the second time they took the reading proficiency exam (i.e., a score ≥ 300). Table 12 shows the descriptive statistics for students in this group. Table 13 presents the analysis of results for this group.
Table 13

*Cohort Group 2 Tests of Within-Subjects Effects for the Reading Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>839144.545</td>
<td>1</td>
<td>839144.545</td>
<td>367.896</td>
<td>.000</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>839144.545</td>
<td>1.000</td>
<td>839144.545</td>
<td>367.896</td>
<td>.000</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>839144.545</td>
<td>1.000</td>
<td>839144.545</td>
<td>367.896</td>
<td>.000</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>839144.545</td>
<td>1.000</td>
<td>839144.545</td>
<td>367.896</td>
<td>.000</td>
</tr>
</tbody>
</table>

The repeated measures test shows a $p$-value (Sig.) of $p < 0.01$ which means that the mean scores for the group between the first and the second test session are significantly different. A graphic representation of the trend of the mean scores of Group 2 is shown in Figure 4.

*Figure 4.* Trend of Group 2 mean scores on the HSPE in reading (passing score = 300)
**Reading HSPE Group 3 results.** Students in study cohort Group 3 did not pass their first reading proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the both semesters of the SIG year, and 43% of this group passed the third time they took the reading proficiency exam. Table 12 shows the descriptive statistics for students in this group. Table 14 presents the analysis of results of for Group 3.

Table 14

*Cohort Group 3 Tests of Within-Subjects Effects for the Reading Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>384438.008</td>
<td>2</td>
<td>192219.004</td>
<td>138.594</td>
<td>.000</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>384438.008</td>
<td>1.903</td>
<td>201987.490</td>
<td>138.594</td>
<td>.000</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>384438.008</td>
<td>1.946</td>
<td>197582.820</td>
<td>138.594</td>
<td>.000</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>384438.008</td>
<td>1.000</td>
<td>384438.008</td>
<td>138.594</td>
<td>.000</td>
</tr>
</tbody>
</table>

For Group 3, the repeated measures test shows a *p*-value (Sig.) of *p* < 0.01 which indicates that the mean scores for the group between each test session (i.e., first to second and second to third) are significantly different. Figure 5 shows a graphic representation of the trend of the mean scores of Group 3.
Reading HSPE Group 4 results. Students in study cohort Group 4 did not pass their first reading proficiency exam attempt in 10th grade of the pre-SIG school year. They received TIP progress monitoring and interventions during the both semesters of the SIG year1 and the first semester of SIG year. For this group, 52% of the students passed the fourth time they took the reading proficiency exam. Table 12 shows the descriptive statistics for students in this group. Table 15 presents the analysis of results of for Group 4.
Table 15

*Cohort Group 4 Tests of Within-Subjects Effects for the Reading Proficiency Exam*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphericity Assumed</td>
<td>287127.542</td>
<td>3</td>
<td>95709.181</td>
<td>60.424</td>
<td>.000</td>
</tr>
<tr>
<td>Greenhouse-Geisser</td>
<td>287127.542</td>
<td>2.350</td>
<td>122176.933</td>
<td>60.424</td>
<td>.000</td>
</tr>
<tr>
<td>Huynh-Feldt</td>
<td>287127.542</td>
<td>2.482</td>
<td>115701.111</td>
<td>60.424</td>
<td>.000</td>
</tr>
<tr>
<td>Lower-bound</td>
<td>287127.542</td>
<td>1.000</td>
<td>287127.542</td>
<td>60.424</td>
<td>.000</td>
</tr>
</tbody>
</table>

For Group 4, the repeated measures test shows a *p*-value (Sig.) of *p* < 0.01 which indicates that the mean scores for the group between each test session (i.e., first to second, second to third, and third to fourth) are significantly different. Figure 6 shows a graphic representation of the trend of the reading mean scores of Group 4.

*Figure 6. Trend of Group 4 mean scores on the HSPE in reading (passing score = 300)*
Each successive, contiguous group of testing students experienced a statistically significant increase in mean exam scores. Moreover, in the data that were used, the passing rate of the first reading exam was 35% which was slightly lower than for the math exam. Like with math, it would be expected that successive testing of the remainder of the cohort students would yield lower pass rates because the students who had the ability to achieve passing scores had already been sorted out of the group. For the reading exam, the opposite also was found. The second time the test was taken by cohort students, 45% of the students passed. The third time had a passing rate of 43% and the passing rate was 52% for the fourth time. This is very strong evidence that suggests each cohort group was better prepared to pass the reading exam on successive retakes.

**Research Question 3**

Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

For this question, the student data on the HSPE for math exam were disaggregated by subgroups. Each student was assigned an ethnic code as follows: Hispanic, E; Black (African-American), B; White, A; and Other, O. It was necessary to account for the non-specified groups in order to maintain validity of the n-count and maintain the integrity of the sample size.

A test analyzing effects between-subjects was run on the data for Groups 3 and 4 only because there were not enough data sets for valid testing of Groups 1 and 2. In
addition, sphericity only applies when there are at least three sets of test results (i.e., groups) which also supported the analyses of only Groups 3 and 4.

Table 16 provides the effects for Group 3 on tests of between-subjects effects for the HSPE group mean math test scores.

Table 16

*Cohort Group 3 Tests of Between-Subjects Effects for the Math Proficiency Exam by student subgroups*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>35291.174</td>
<td>3</td>
<td>11763.725</td>
<td>5.506</td>
<td>.002</td>
</tr>
<tr>
<td>LEP</td>
<td>300.318</td>
<td>1</td>
<td>300.318</td>
<td>.141</td>
<td>.709</td>
</tr>
<tr>
<td>IEP</td>
<td>7266.526</td>
<td>1</td>
<td>7266.526</td>
<td>3.401</td>
<td>.068</td>
</tr>
</tbody>
</table>

The results show a *p*-value of *p* < 0.05 for ethnicity which means there is a possible difference between the means of each ethnic subgroup. This difference is examined between ethnic groups by post hoc analysis. For the IEP and LEP subgroups, results indicate there is no statistically significant difference between the means of the IEP and LEP groups.

In order to further analyze the results, Table 17 shows the results of Post hoc analysis on Group 3 data.
### Table 17

**Cohort Group 3 Tukey Post Hoc Multiple Comparisons of Scores from Ethnic Subgroups on the Math Proficiency Exam**

<table>
<thead>
<tr>
<th>Ethnicity (I)</th>
<th>Ethnicity (J)</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>95% Confidence Interval Lower Bound</th>
<th>95% Confidence Interval Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Other</td>
<td>1.3778</td>
<td>13.78040</td>
<td>1.000</td>
<td>-34.7026</td>
<td>37.4582</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>-13.8712</td>
<td>6.05528</td>
<td>.108</td>
<td>-29.7254</td>
<td>1.9830</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>-27.4588</td>
<td>11.90206</td>
<td>.104</td>
<td>-58.6212</td>
<td>3.7037</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>-13.5876</td>
<td>11.50573</td>
<td>.640</td>
<td>-43.7124</td>
<td>16.5372</td>
</tr>
<tr>
<td>Other</td>
<td>White</td>
<td>-1.3778</td>
<td>13.78040</td>
<td>1.000</td>
<td>-37.4582</td>
<td>34.7026</td>
</tr>
<tr>
<td></td>
<td>African-American</td>
<td>27.4588</td>
<td>11.90206</td>
<td>.104</td>
<td>-3.7037</td>
<td>58.6212</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>13.5876</td>
<td>11.50573</td>
<td>.640</td>
<td>-16.5372</td>
<td>43.7124</td>
</tr>
</tbody>
</table>

*Based on observed means. The error term is Mean Square (Error) = 712.123.*

*The mean difference is significant at the .05 level.*

This analysis reveals the only significant difference found was between the means of the Group 3 White and Black (African-American) subgroups (*p* < .05). Differences between comparisons of the other ethnic subgroups did not reach the level of statistical significance.
Table 18 provides the results for Group 4 on tests of between-subjects effects for the HSPE group mean math test scores.

Table 18

Cohort Group 4 Tests of Between-Subjects Effects for the Math Proficiency Exam by student subgroups

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>17254.189</td>
<td>3</td>
<td>5751.396</td>
<td>2.508</td>
<td>.068</td>
</tr>
<tr>
<td>LEP</td>
<td>22399.273</td>
<td>1</td>
<td>22399.273</td>
<td>9.768</td>
<td>.003</td>
</tr>
<tr>
<td>IEP</td>
<td>11450.132</td>
<td>1</td>
<td>11450.132</td>
<td>4.993</td>
<td>.030</td>
</tr>
</tbody>
</table>

The results show no statistically significant differences between mean scores of ethnicity subgroups for the Group 4 cohort students on the HSPE math test ($p > 0.05$). Statistically significant values were found for the IEP and LEP subgroups ($p < 0.05$) which may suggest statistically significant difference between the means of the IEP and other subgroups and between the LEP group and other subgroups. However, post hoc tests were not run for the IEP ($n = 20$) and LEP ($n = 3$) subgroups because their group sizes were not large enough to be able to determine statistical significance.

While there were no statistically significant gains in math proficiency in any specific subgroup, there were gains in the math testing group as a whole. This could be due to the small sample sizes of some subgroups which makes it difficult to ascertain significant results.
Research Question 4

Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

For this question, the student data on the HSPE for reading exam were disaggregated by subgroups. Each student was assigned an ethnic code as follows: Hispanic, E; Black (African-American), B; White, A; and Other, O. It was necessary to account for the non-specified groups in order to maintain validity of the n-count and maintain the integrity of the sample size.

A test analyzing effects between-subjects was run on the data for Groups 3 and 4 only because there were not enough data sets for valid testing of Groups 1 and 2. In addition, sphericity only applies when there are at least three sets of test results (i.e., groups) which also supported the analyses of only Groups 3 and 4.

Table 19

*Cohort Group 3 Tests of Between-Subjects Effects for the Reading Proficiency Exam by student subgroups*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>7659.063</td>
<td>3</td>
<td>2553.021</td>
<td>0.950</td>
<td>.421</td>
</tr>
<tr>
<td>LEP</td>
<td>15026.111</td>
<td>1</td>
<td>15026.111</td>
<td>5.592</td>
<td>.021</td>
</tr>
<tr>
<td>IEP</td>
<td>13462.343</td>
<td>1</td>
<td>13426.343</td>
<td>5.010</td>
<td>.028</td>
</tr>
</tbody>
</table>
Table 19 provides the effects for Group 3 on tests of between-subjects effects for the HSPE group mean reading test scores.

The results show a $p$-value of $p > 0.05$ for ethnicity which means there are no statistically significant differences between the means of each ethnic subgroup. It may be possible that there exists a difference for IEP ($n = 21$) and LEP ($n = 7$) subgroups; however, these groups contain a very small number of students and differences may not be statistically significant. Results of Post hoc tests are not reported for the Tukey analysis between all ethnic subgroups because there are no statistically significant differences between each subgroup’s means, and IEP and LEP were not run because of their small group sizes.

Table 20 provides the between-subjects effects for Group 4 on the HSPE group mean reading test scores.

Table 20

*Cohort Group 4 Tests of Between-Subjects Effects for the Reading Proficiency Exam by student subgroups*

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>$df$</th>
<th>Mean Square</th>
<th>$F$</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity</td>
<td>24116.688</td>
<td>3</td>
<td>8038.896</td>
<td>2.112</td>
<td>.102</td>
</tr>
<tr>
<td>LEP</td>
<td>12149.460</td>
<td>1</td>
<td>12149.460</td>
<td>3.344</td>
<td>.075</td>
</tr>
<tr>
<td>IEP</td>
<td>25791.060</td>
<td>1</td>
<td>25791.060</td>
<td>7.098</td>
<td>.011</td>
</tr>
</tbody>
</table>

As for Group 3, the results show a $p$-value of $p > 0.05$ for ethnicity which indicates no statistically significant differences between the means of each ethnic subgroup. It may be possible that there exists a difference for the IEP ($n = 21$) subgroup.
(p < 0.05); however, this group is very small and differences may not be statistically significant. Again, results of Post hoc tests are not reported for the Tukey analysis between ethnic subgroups because no statistically significant difference was found for the subgroup means.

While the entire cohort groups who received the TIP interventions showed significant increases in reading proficiency scores over exam retakes, the specific subgroups did not show the same trend. This could be due to the fact that each group is too small to gain any significant measure.

In the analyses of data, a few trends were found. With regard to the reading proficiency data, a strong trend of improved exam scores among successive test takers was found. The results suggest that as cohort students took successive retakes of each exam, they appeared to be better prepared for the exams and had increased mean scores. This trend was found to be true across ethnicity, but not for IEP or LEP students. Of special note are the increased percentages of students who passed successive administrations of the reading and math exams. This may be due to the Turnaround Intervention Package or other factors which will be discussed in the section for further study.

Research Question 5

Do teachers report satisfaction with the PLC Assessment Cycle component of the Turnaround Intervention Package?

All teachers who participated in the PLCs completed the PLC Assessment Cycle Procedure Rating Questionnaire (see Appendix A). For the purposes of this study, only
response data from questionnaires completed by teachers who indicated they taught classes in English (i.e., reading) and math were used. The questionnaire was completed 8 English teachers and 7 Math teachers, which was a 100% response rate. The teachers reported perceived levels of satisfaction concerning the PLC Assessment Cycle as it related to their teaching practice by circling their choices on a 6-point Likert scale with 1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = slightly agree, 5 = agree, and 6 = strongly agree.

Most teachers reported that they found the PLC Assessment Cycle appropriate to use in any content area ($M = 4.67$; $Mdn = 5$; range = 3-6). In addition, teachers reported that they felt the approaches used in the PLC Cycle were consistent with their previous instructional approaches ($M = 4.53$; $Mdn = 5$; range = 2-6). There were some discrepancies with teachers’ perceptions of extending the use of the PLC Assessment Cycle. The question that dealt with continued use of the PLC Assessment Cycle received lower ratings ($M = 3.93$; $Mdn = 4$; range = 1-6), as was the item about teachers’ likelihood to recommend the use of the PLC Assessment Cycle procedure to others ($M = 4.00$; $Mdn = 4$; range = 1-6). This could be due to fact teachers are still learning to become proficient with the procedures.

Teachers did report a moderate satisfaction with the PLC Assessment Cycle as it related to student achievement and addressing student academic needs. The two questions in the survey that dealt specifically with the appropriateness of the PLC Cycle for student academic needs showed Mean scores of 4.67 and 4.73 and ranges of 3 - 6. It was interesting to note that overall teacher response to the PLC Assessment Cycle was only moderately positive. This could be due to the fact that most teachers had not used
data to drive student instruction before coming to the Turnaround school. It also appeared affected by the considerable variation among responses from the English teachers compared to the math teachers. The range of Mean scores of individual teachers for all items on the questionnaire was 2.13 to 6.00 for the English teachers and 3.93 to 6.00 for the math teachers. Table 21 shows descriptive statistics of the teachers' ratings by item.
Table 21

Results of Teachers’ Perceived Satisfaction with the PLC Assessment Cycle as Evaluated by the PLC Assessment Cycle Procedure Rating Questionnaire

<table>
<thead>
<tr>
<th>PLC Assessment Cycle Procedure Rating Questionnaire Item</th>
<th>( M )</th>
<th>( Mdn )</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The PLC Assessment Cycle procedure is an acceptable approach to develop interventions for students' academic problems.</td>
<td>4.73</td>
<td>5</td>
<td>3 - 6</td>
</tr>
<tr>
<td>2. Most teachers would find the PLC Assessment Cycle procedure appropriate for academic problems in additional content subjects.</td>
<td>4.67</td>
<td>5</td>
<td>3 - 6</td>
</tr>
<tr>
<td>3. The PLC Assessment Cycle procedure should prove effective in changing students' academic behaviors.</td>
<td>3.93</td>
<td>4</td>
<td>1 - 6</td>
</tr>
<tr>
<td>4. I would suggest the use of PLC Assessment Cycle procedure to other teachers.</td>
<td>4.60</td>
<td>5</td>
<td>1 - 6</td>
</tr>
<tr>
<td>5. The students' academic problems are severe enough to warrant the use of the PLC Assessment Cycle procedures.</td>
<td>4.79</td>
<td>5</td>
<td>3 - 6</td>
</tr>
<tr>
<td>6. Most teachers would find the PLC Assessment Cycle procedure suitable for the academic problems addressed.</td>
<td>4.53</td>
<td>5</td>
<td>2 - 6</td>
</tr>
<tr>
<td>7. I would be willing to use the PLC Assessment Cycle procedure in the future.</td>
<td>4.73</td>
<td>5</td>
<td>1 - 6</td>
</tr>
<tr>
<td>8. The PLC Assessment Cycle procedure would NOT result in negative side-effects for the students.</td>
<td>4.00</td>
<td>5</td>
<td>1 - 6</td>
</tr>
<tr>
<td>9. The PLC Assessment Cycle procedure would be appropriate for a variety of students.</td>
<td>4.87</td>
<td>5</td>
<td>2 - 6</td>
</tr>
<tr>
<td>10. The PLC Assessment Cycle procedure is consistent with approaches I have used to deal with students' academic problems.</td>
<td>4.53</td>
<td>5</td>
<td>2 - 6</td>
</tr>
<tr>
<td>11. The PLC Assessment Cycle procedure is a fair way to handle the students' academic problems.</td>
<td>4.13</td>
<td>4</td>
<td>1 - 6</td>
</tr>
<tr>
<td>12. The PLC Assessment Cycle procedure is reasonable to use for students' academic problems.</td>
<td>4.53</td>
<td>5</td>
<td>1 - 6</td>
</tr>
<tr>
<td>13. I liked the activities used in the PLC Assessment Cycle procedure.</td>
<td>4.00</td>
<td>4</td>
<td>1 - 6</td>
</tr>
<tr>
<td>14. The PLC Assessment Cycle procedure was a good way to handle the students' academic problems.</td>
<td>4.47</td>
<td>4</td>
<td>2 - 6</td>
</tr>
<tr>
<td>15. Overall, the PLC Assessment Cycle procedure would be beneficial for secondary students.</td>
<td>4.53</td>
<td>4</td>
<td>2 - 6</td>
</tr>
</tbody>
</table>
Summary of Findings

Analysis of math and reading proficiency results demonstrate a strong upward trend in overall math and reading scores. Math and reading analyses further show statistical significance which reinforces the trend analysis. The Turnaround Intervention Package appears to have had an effect on overall growth in student proficiency math and reading scores. The analyses of the subgroups, however, were not as positive when viewed as trends or through statistical analyses. The TIP was effective among these specific sub-groups but showed no more of an increase than the whole group rise in scores. The IEP and LEP groups proved especially problematic in this area due to their extremely small numbers that were related to several factors. Most notably, there were a high number of students in these two groups who scored 100 on their initial take of the exams, therefore their data were eliminated from the analyses. In addition, the students in these groups were among the highest transients. It is also important to note that students who withdraw from district schools for more than 10 days no longer count in the reporting of exam results. These factors may have combined to influence the final numbers of students who were included in the study student cohort group, and made some statistical analyses difficult to perform.

As the students included in the study passed the proficiency exams, they were removed from each group, and the pass rate either remained the same or significantly increased for the overall group results. This strongly correlates to an increased preparedness in the successive testing groups who were exposed to the turnaround interventions. While Black (African-American), Hispanic, and White cohort student subgroups all showed growth in HSPE scores in both math and reading, statistical
analyses revealed no subgroup showed significantly more growth than another. Even if the two groups were combined for analysis, results did not show significant growth. The combination of factors related to low numbers of students in each of the IEP and LEP groups, the students’ low initial scores, and their high transiency may have skewed the results for the two subgroups. In viewing the raw data, there were small gains in both LEP and IEP student scores. Nine of the 10 LEP students raised their math proficiency scores, and this number includes 8 students who scored 100 on their first exam. Eleven of the LEP students raised their proficiency scores in reading including 7 with initial scores of 100. The IEP student group showed smaller numerical gains with 12 of 38 students increasing math proficiency scores, including 9 students who initially scored 100. Fifteen IEP students raised their reading proficiency scores, including 11 with initial scores of 100. It is important to note that the passing rate of successive testing did increase in the subgroups. This could be the result of the small numbers of students in each of the subgroups. While the initial testing group was fairly large; 486 students, those who passed on the first take and those students scoring 100 were dropped from the study student cohort.

The measure of perceived satisfaction with the PLC Assessment Cycle procedure demonstrated mixed results. While most teachers agreed that the PLC Assessment Cycle provided positive instructional effects for students, a smaller group (i.e., 4 of the English teachers and 1 math teacher) responded with moderately to quite negative perceptions regarding its use, whether they would recommend the procedure to other teachers, and if they would want to continue using the procedures in the future. This could be due to the
fact that this is a new academic process which takes time to master, and personal issues that may have affected the ratings.
CHAPTER 5
DISCUSSION AND FINDINGS

The purpose of this study was to examine the components of turnaround interventions which included Professional Learning Communities, common formative assessment, and the use of student data to inform instructional practices and their relationships to increased student performance on state math and reading proficiency exams.

Past research in the areas of turnaround structures and school improvement have been few with only anecdotal results. In addition, the focus of these studies has only been in the realm of administrative, staff, and community involvement changes. There have been no known studies concerning the components of effective instructional practices as they relate to school turnaround processes. This study was the first to identify and analyze turnaround components and their relationships to increased student performance on state math and reading proficiency exams. While the results of this study are mixed, they do add to future avenues of research on the specific instructional components used in turnaround and their influence on student achievement data.

While the discussion of results link back to previously discussed literature, they may not relate directly to previous studies of turnaround practice or components. As stated earlier, there is little actual research concerning the specific components of school turnaround because of the difficulty in separating all the different pieces involved in school turnarounds as well as variables that cannot be controlled.
Discussion of the Five Research Questions

There are five research questions to be discussed. Due to similar natures and analysis for questions 1 and 2, the findings will be discussed together, as well as the discussion and findings for questions 3 and 4. Question 5 is the social validity question and will be discussed separately.

Research Question 1: Is there a difference between scores of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

Research Question 2: Is there a difference between scores of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

The analysis for questions 1 and 2 indicated that students who were part of the Turnaround Intervention Package instruction showed a significant increase in their mean exam scores for both reading and math on the state HSPE. The pass rate between each subsequent math exam increased from 38% for Test 1 to 46% for Test 4. Teacher instructional changes that occurred as part of the PLC Assessment Cycle were primarily focused on student data that measured student learning (Marzano, 2003). In addition, the use of formative data to inform classroom practice helped teachers address student deficits and continue instruction to meet the needs of all students in the diverse classroom (Wiliam, 2011). While state proficiency exams were used as an outcomes based measure for student achievement, it is important for teachers to use multiple data points to inform
classroom instructional practices. This allows students to apply their knowledge in new situations i.e. translating classroom learning to proficiency achievement (McTighe & Thomas, 2003).

The assessment cycle used by each PLC helps teacher as they collaborate to create student assessments, analyze the data from these assessments and make critical decisions of whether to progress with curriculum or re-teach material students must master before continuing on with the curriculum. The results of the data analyses for Questions 1 and 2 appear to support the assertion that students who were part of the Turnaround Intervention Package processes benefit as a whole from the changes in assessment and resulting instructional practice.

Research Question 3: Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial math state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

Research Questions 4: Is there a difference between scores of subgroups (Black, Hispanic, White, IEP, and LEP) of the cohort of students who failed their initial reading state high school proficiency exam in 10th grade and their scores in the subsequent academic year(s) after implementation of the Turnaround Intervention Package?

The analysis run on the data from the Black, Hispanic, and White subgroups showed no significant gain between the groups. Statistics run on these subgroups showed only a trend in raised scores across all groups including the groups which were not
separated out. When Post hoc tests were run on the specific groups, there were no significant raises in between group scores. This means that the groups not tracked contributed significantly as well to the increase in mean scores for both the math and reading proficiency results.

The IEP and LEP subgroups proved more problematic due their small sample sizes. It was not possible to run separate Post Hoc tests on the individual subgroups, so they were run as a whole. The resulting data would suggest that the IEP and LEP subgroups did not benefit from the Turnaround Intervention Package as their math and reading state proficiency scores showed no significant increase.

These findings would provide an area of further research, especially since the IEP and LEP student groups tend to lag behind in most standardized state assessments. The limitations of sample sized for the study was another problematic area. In addition, the research focused on the components of the Turnaround Intervention Package as a whole which made it impossible to narrow which components were effective and which were not when examining classroom instructional practices concerning specific groups of students.

This problem could also apply to the smaller growth in the subgroups analyzed for the study. With the exception of the White subgroup, the Black and Hispanic subgroups have traditionally lagged behind in proficiency performance on state exams as well. Specific instructional strategies used to target student abilities were not studied and this lack is also another area for further study.

Research Question 5: Do teachers report satisfaction with the PLC Assessment Cycle component of the Turnaround Intervention Package?
The social validity assessment indicated teachers' overall perceived satisfaction with the PLC Assessment Cycle. They seemed to feel that planning assessments and using that data to drive instruction was of use and beneficial to student achievement, but they did not indicate a high degree of interest in continuing to use the PLC Assessment Cycle nor would they recommend its use to others. This finding is in alignment with the few studies found in the literature concerning Professional Learning Communities.

Teachers feel that collaboration is important and were trained to review and analyze student data (Wells & Feun, 2007). The real challenges have been in affecting actual change, and the time it takes for teachers to shift their instructional practices (Scribner et al., 1999). This could be the case for the teachers surveyed as part of this study. While they see the value in a PLC Assessment Cycle, it may take more time for teachers to become comfortable and in turn, proficient with the process of collaboration, creating formative assessments and sharing data to analyze in an effort to change classroom instructional practices. Scribner et al. (1999) suggested that teachers who were the most effective in Professional Learning Communities have been able to make a significant shift in their assumptions regarding professional practice and the cycle of student learning. The greatest contributing factor to this shift was administrative encouragement of leadership teams that led meaningful dialog among group members that focused on deep-seated values and beliefs of the members to gradually shift values and beliefs. Given the time involved in changing teacher beliefs it would be of further value to focus on continued study of the teacher changes in Professional Learning Communities.
Limitations

The limitations of the research concerning participants were in the selection as a population of convenience. The school selected for the study was one of two available turnaround high schools in the school district. Due to federal guidelines concerning the number of high schools that can receive Site Improvement Grants, the school was selected and the resulting student participants were due to limitations. While individual students were not participants, the resulting proficiency data is subject to confounding variables. One of the biggest confounding variables was the high rate of transiency in the school. Students who left the school and returned were no longer counted for proficiency data as well as those who left the school completely. The other limitation of the study was the fact that students who scored 100 on the initial exam were not included in the n-count which further shrunk the numbers of students included in the analysis of data. The researcher had no control over student and teacher variables, so the resulting data could be a result of other influences as well.

Conclusions

The conclusions that can be drawn from this study fall into two areas. The first conclusion concerns student performance on state proficiency exams. While students as a whole appear to increase proficiency scores in subsequent retakes of the math and reading exams, the specific subgroups do not seem to have the same results. This shows a need to further investigation into specific classroom interventions necessary for increasing student achievement with all groups.
The second conclusion relates to social validity and teacher perceptions of PLC Assessment Cycles used as part of the Turnaround Intervention Package. While teachers understand the need for changes in assessment and instructional practices, their fundamental beliefs may not allow for a complete paradigm shift in this area. It will be necessary to follow-up with extended training and support for teachers and re-survey the PLCs after they have been in practice for another two years.

**Practical Implications**

There are several practical implications present in the research findings. The biggest is in the area of formative assessment and its relationship to classroom instruction. Teachers who collaborate in Professional Learning Communities can use these structures to share best practices as they relate to the students whom they serve in their classrooms. The use of student data to make instructional decisions is also an important piece of this study. If teachers use student data to measure what they have learned and in what areas of content they need remediation, then students will experience higher success in the classroom and ultimately higher achievement on state mandated proficiency exams.

School administrators are another group who would benefit from the results of this research. When making site based decisions concerning curriculum and instruction, administrators can use the PLC framework for professional development with teachers and continue to support the work of PLCs while at the same time understanding the time it takes to change teacher attitudes and beliefs. They can identify teacher leaders who are
effective in the use of formative assessments and data analysis and use them to lead PLCs and model those best practices.

**Suggestions for Future Research**

More specific research needs to be conducted with the specific separate components of the Turnaround Intervention Package. While this study examined the components as a whole, it would be important to examine each component of the package in the context of the entire turnaround process as well as controlling for variables related to teacher classroom practices, choice of evidence-based practices used across curricular content, teacher data analyses preferences, etc.

**Turnaround Staffing and Community Involvement**

While this study focused on the components of Professional Learning Communities, formative assessment and the instructional changes made by teachers in response to student data, the literature concerning school turnarounds has focused on changes in leadership, new teaching staff, and community involvement (Duke & Jacobson, 2011). Little research on the effectiveness of these components has not been conducted to this point. It would be useful to understand how the change in administration and teachers impacts any changes in classroom instruction and how that impacts students. Is there a commonality in changes made by administration as they respond to the requirements of Site Improvement Grants? This is a critical area of future research since the proponents of these elements need to quantify these elements in order
to ascertain if they indeed are effective elements that contribute to the raise in student achievement.

**Professional Learning Communities**

Continued research in teacher participation in Professional Learning Communities and the effects of instructional changes made as a result of student data is another important area. Studies of this nature need to be conducted as longitudinal studies due to the slow shifts in behavior and classroom instruction that previous research has demonstrated (Wells & Feun, 2007). Another important area of study could involve Professional Learning Communities in the context of a turnaround school. It would be of interest to understand what impact these groups play in the changes to instruction and its impact on learning in the classroom. In relation to PLCs, it would be necessary to measure long-term the length of time it takes for PLC members to shift their belief systems and build trust in each of the members so that they work effectively as a team to openly analyze each teacher's student data and collaboratively plan instruction. Future studies could focus on the changes that teachers make as a result of collaboration in Professional Learning Communities and how they make deliberate use of student assessment data to drill down into the specific causes of low achievement. This information can then be used to inform instructional differentiation and best practices for the inclusive classroom. A measure of student growth might be appropriate to truly measure the effects of instructional changes made as a result of PLC collaboration. The next logical step in future research would be to compare these changes to changes in student proficiency scores.
Student Achievement

Another critical area of future turnaround research should focus on the long-term instructional changes needed to really impact students with IEPs and limited English proficiency. Since the student subgroups appear to be the least impacted by the Turnaround Intervention Package, the question remains as to what interventions and/or instructional available in a turnaround would be the most effect in producing higher achievement with the subgroups. These two groups seem to have the most academic difficulty and rarely show significant growth in state mandated testing. Turnaround schools are required to show growth in these two groups, but success has been minimal. Turnaround schools are ideal laboratories to study needed changes in inclusive instructional practices for students with IEPs and LEP students place into the general education environment. It is within the context of these classes’ studies on PLC data analysis and its use to inform differentiated instruction for individual students is of importance. It would be particularly important to focus on the fidelity with which teachers use differentiated instructional methods to address student academic needs. Since the student subgroups appear to be the least impacted by the Turnaround Intervention Package, the question remains as to what interventions and/or instructional available in a turnaround would be the most effect in producing higher achievement with the subgroups. Wiliam (2011) suggested that the use of learning evidence helps teachers to better meet the needs of students by adapting their teaching methods to student needs. The use of data to drive instruction for students with IEPs and limited English proficiency is necessary and in need of further research.
Common Formative Assessment

Part of this study examined the use of common formative assessment that teachers developed in their PLCs. Marzano (2003) advocates using student data as a measure of student learning. Much of his writing concerns planning instruction based upon desired student learning outcomes as they relate to formative assessments in each teacher's classroom. In addition, Bambryk-Santoyo (2010) advocates the use of an assessment cycle to drive classroom instruction. The use of an assessment cycle was part of the components included in this research, but it was not studied in isolation and can only be viewed as a contributing factor. More research needs to be conducted to identify how formative assessment and classroom instruction contribute to increased student achievement.

Summary

This research studied Professional Learning Communities, common formative assessments and their impact on teacher instructional changes as part of a package. The results of the research suggest that together these components contribute to an increase in student achievement as measured by state mandated proficiency exams in math and reading. The components were not isolated nor were there controls for teacher fidelity in making instructional changes in response to the data analyzed during the PLCs.

Improvements in achievement were more significant when analyzed in the context of the whole group as opposed to disaggregated data. There were improvements in all subgroups, but one group did not achieve higher than another. This would suggest the
need for future research in isolating methods that could be linked to higher student achievement.
APPENDIX A

PLC ASSESSMENT CYCLE PROCEDURE RATING QUESTIONNAIRE
PLC Assessment Cycle Procedure Rating Questionnaire

All items will be rated on a Likert Scale 1-6

1 = strongly disagree  
2 = disagree  
3 = slightly disagree  
4 = slightly agree  
5 = agree  
6 = strongly agree

The purpose of this questionnaire is to obtain information that will aid in the future use of the PLC Assessment Cycle procedure to assist teachers to identify students' academic problems and develop intervention strategies.

Please select department in which you teach.

Math       English       Science       Social Studies

Please circle the grade(s) you teach.

9th 10th 11th 12th

Please choose the number that best describes your agreement or disagreement with each statement.

1. The PLC Assessment Cycle procedure is an acceptable approach to develop interventions for students' academic problems.
   1 2 3 4 5 6

2. Most teachers would find the PLC Assessment Cycle procedure appropriate for academic problems in additional content subjects.
   1 2 3 4 5 6

3. The PLC Assessment Cycle procedure should prove effective in changing students' academic behaviors.
   1 2 3 4 5 6

4. I would suggest the use of PLC Assessment Cycle procedure to other teachers.
   1 2 3 4 5 6
5. The students' academic problems are severe enough to warrant the use of the PLC Assessment Cycle procedures.

6. Most teachers would find the PLC Assessment Cycle procedure suitable for the academic problems addressed.

7. I would be willing to use the PLC Assessment Cycle procedure in the future.

8. The PLC Assessment Cycle procedure would NOT result in negative side-effects for the students.

9. The PLC Assessment Cycle procedure would be appropriate for a variety of students.

10. The PLC Assessment Cycle procedure is consistent with approaches I have used to deal with students' academic problems.

11. The PLC Assessment Cycle procedure is a fair way to handle the students' academic problems.

12. The PLC Assessment Cycle procedure is reasonable to use for students' academic problems.

13. I liked the activities used in the PLC Assessment Cycle procedure.
14. The PLC Assessment Cycle procedure was a good way to handle the students' academic problems.

1 2 3 4 5 6

15. Overall, the PLC Assessment Cycle procedure would be beneficial for secondary students.

1 2 3 4 5 6
1. Focus on Curriculum

1a. What is the learning goal(s) for the lesson?
Goal(s)?

1b. Learning goal(s) is evident to the students? (select one)
   - Evident
   - Not evident
   - Unable to determine

1c. Learning goal(s) on target for grade-level standards (select one)
   - Yes
   - No
   - Unable to determine

2. Focus on Instruction

2a. Identify Instructional practices
   - Coaching
   - Formal Assessment
   - Modeling
   - Providing Opportunities for Practice

2b. Identifying grouping format
   - Whole group
   - Small group
   - Paired
   - Individual

2c. Identify research-based instructional strategies (2c. Teacher, 2d. Student)

<table>
<thead>
<tr>
<th>T</th>
<th>S</th>
<th>High Yield Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Identifying Similarities and Differences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Summarizing/Note-taking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reinforcing Effort/Recognition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Homework/Practice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nonlinguistic Representations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooperative Learning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Setting Objectives/Providing Feedback</td>
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<tr>
<td></td>
<td></td>
<td>Generating/Testing Hypotheses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cues/Questions/Advance Organizers</td>
</tr>
</tbody>
</table>

3. Focus on the Learner

3a. Identify student actions
   - Listening
   - Speaking
   - Reading
   - Writing To Learn
   - Learning to Write
   - Working with Hands on Materials
   - None

3b. Identify instructional materials
   - Computer Software
   - Lab/Activity Sheet
   - Student created materials
   - Website
   - None

3c. Determine level(s) of student work
   - Recalling information (Knowledge)
   - Using information (Application)
   - Organizing information together in new ways (Synthesis)

3d. Determine levels of class engagement
   - Highly engaged—Most students are authentically engaged
   - Well-managed—Students are willingly compliant, fluidly engaged
   - Off-Task—Many students actively reject the assigned task or substitute another activity

4. Focus on Classroom Environment

   - Materials are available in the classroom
   - Routine and procedures are evident
   - Students interact with classroom environment
   - Student work is displayed

5. Focus on the Needs of All Learners

   - The teacher is responding to specific learning needs through differentiation of:
     - Content
     - Learning Environment
     - Process
     - Product
     - Unable to Determine
     - None

6. Capturing Kids Hearts Strategies

   - Evident
   - Not Evident
   - Not Applicable
APPENDIX C

SHORT CYCLE ASSESSMENT ACTION PLAN
Classroom PDSA Form

After each Comprehensive Predictive Assessment and each short cycle assessment, please complete all information and answer each question.

**STUDY** - Use the “Moon” data report and the PLC identified prioritized standards to complete the following table.

<table>
<thead>
<tr>
<th>List the students for each category below.</th>
<th>1st Prioritized Standard</th>
<th>2nd Prioritized Standard</th>
<th>3rd Prioritized Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partially Proficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Proficient</td>
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<td></td>
</tr>
</tbody>
</table>
**PLAN** – For each targeted group of students, identify intervention strategies that can be used to differentiate instruction for each specific standard.

<table>
<thead>
<tr>
<th></th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Prioritized Standard</th>
<th>2&lt;sup&gt;nd&lt;/sup&gt; Prioritized Standard</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Prioritized Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>List intervention strategies/resources for each targeted group of students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partially Proficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Proficient</td>
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<td></td>
<td></td>
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</tbody>
</table>
**Do** – List the action steps necessary to accomplish your plan.

<table>
<thead>
<tr>
<th>Step(s)</th>
<th>Actions to Accomplish Plan</th>
<th>Resources Needed</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>#2</td>
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<td>#3</td>
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<td>#4</td>
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<tr>
<td>#5</td>
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</tbody>
</table>

**STUDY** - Answer the following questions based upon your Action Plan above.

1. What were the accomplished improvements and outcome results?

2. What strategies or action steps assisted in the improvement results?

3. What strategies or action steps hindered the improvement results?

**ACT** – Answer the following questions.

1. How can this action plan be refined or improved?

2. What have you learned about effective instruction that can be shared with PLC?
A Father Sees a Son Nearing Manhood

Carl Sandburg

A father sees a son nearing manhood.
What shall he tell that son?
"Life is hard; be steel; be a rock."
And this might stand him for the storms
5 and serve him for humdrum and monotony
and guide him amid sudden betrayals
and tighten him for slack moments.
"Life is a soft loam; be gentle; go easy."
And this too might serve him.
10 Brutes have been gentled where lashes failed.
The growth of a frail flower in a path up
has sometimes shattered and split a rock.
A tough will counts. So does desire.
So does a rich soft wanting.
15 Without rich wanting nothing arrives.
Tell him too much money has killed men
and left them dead years before burial:
the quest of lucre beyond a few easy needs
has twisted good enough men
20 sometimes into dry thwarted worms.
Tell him time as a stuff can be wasted.
Tell him to be a fool every so often
and to have no shame over having been a fool
yet learning something out of every folly
25 hoping to repeat none of the cheap follies
thus arriving at intimate understanding
of a world numbering many fools.
Tell him to be alone often and get at himself
and above all tell himself no lies about himself

14
whatever the white lies and protective fronts
he may use amongst other people.
Tell him solitude is creative if he is strong
and the final decisions are made in silent rooms.
Tell him to be different from other people
if it comes natural and easy being different.
Let him have lazy days seeking his deeper motives.
Let him seek deep for where he is a born natural
Then he may understand Shakespeare
and the Wright brothers, Pasteur, Pavlov;
Michael Faraday and free imaginations
bringing changes into a world resenting change.
He will be lonely enough
to have time for the work
he knows as his own.

"A Father Sees a Son Nearing Manhood" poem #9 from THE PEOPLE, YES by Carl Sandburg, copyright 1936 by Harcourt, Inc. and renewed 1964 by Carl Sandburg, reprinted by permission of the publisher. This material may not be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the prior written permission of the publisher.

21. What is the poet’s purpose in devising this advice for a son?
   (a) to share insight he has gained from experience
   (b) to respond to his son’s request for guidance
   (c) to fulfill a request made by a close friend
   (d) to convince his son to follow in his footsteps

22. Why does the narrator seem to give contradictory advice in lines 3 and 8?
   (a) He wants his son to choose between being strong or gentle.
   (b) He is emphasizing that there will be a time for each approach.
   (c) His thoughts were confused at the beginning of the poem.
   (d) His son likes solving riddles so he gave him one to solve.
23. What is the meaning of lines 10 through 12?
   (a) Sometimes, objectives can be accomplished with subtle, gentle approaches.
   (b) The son must know how to deal with brutes he will encounter.
   (c) Native flowers are the major cause of the destruction of rocks.
   (d) Harsh circumstances in life will always require harsh reactions from the son.

24. What does the poem suggest has ruined many good men?
   (a) humdrum and monotony
   (b) iron-strong wills
   (c) too much wealth
   (d) shameful deeds and actions

25. The poet uses all of the following devices except
   (a) metaphors.
   (b) repetition.
   (c) clear language.
   (d) flashbacks.

26. Given the theme of the poem, which idea connects best with the line "... the final decisions are made in silent rooms"?
   (a) Silence is necessary to think about important decisions.
   (b) Important paths to creativity can be found only in silence.
   (c) Ultimately each person will have to make his or her own important decisions.
   (d) Friends tend to leave when someone has an important decision to make.
APPENDIX E

CWT SAMPLE DATA FORM
2. Focus on Instruction

2a. Identify instructional practices

Number of Responses=237

A. Coaching
B. Discussion
C. Hands-on experiences
D. Informal assessment
E. Learning centers
F. Lecture
G. Modeling

H. Presentation
I. Providing directions/instructions
J. Providing opportunities for practice
K. Teacher directed Q A
L. Testing
M. None


CURRICULUM VITA

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DEGREES

Bachelor of Arts, 1992
   University of Nevada, Las Vegas
   Las Vegas, Nevada

Master of Arts, English, 1999
   University of Nevada, Las Vegas
   Las Vegas, Nevada

ADDITIONAL EDUCATION

Doctor of Philosophy in Special Education, 2013
   University of Nevada, Las Vegas
   Las Vegas, Nevada

PROFESSIONAL EXPERIENCE

August 2010-Present
   Site Improvement Grant Project Facilitator and Title I Coordinator.
   Responsibilities include tracking grant budget, progress reporting to the Nevada
   Department of Education, coaching teachers, teaching professional development
   classes for teachers. Title I responsibilities include, tracking budget, completing
   all Title I paperwork, providing PD for teachers, and writing Title I plans.

   August 2008-2010
   English Teacher-Department Chair-Mentor Teacher
   Fremont Professional Development Middle School
   1100 E. St. Louis Ave., Las Vegas, Nevada
   Responsibilities included planning and holding English Department meetings,
   planning and teaching classes. Additional duties included training student
   teachers from UNLV's teacher training program.

   August 2005-2008
   Resource English Teacher
   Foothill High School
   100 College Dr
   Henderson, Nevada
Responsibilities included writing IEPs, meeting with parents concerning IEPs. Teaching English III and IV, preparing students to take the Nevada State Proficiency Test. Teach reading to resource students who are below level in reading skills. Prepare students to take the Reading portion of the proficiency test. In addition, I chaired the Northwest Accreditation Committee, a secondary schools accreditation process.

2002-2004
English Teacher
Coronado High School
1001 Coronado Center Dr.,
Henderson, Nevada
Responsibilities in this job included teaching Composition and English Literature in grade 12, taught Language and Composition AP in grade 11, and Assistant Debate coach. Served on the School Improvement Team steering committee. Served on the DRSL committee and chaired the Research committee.

1997-2002 English and Forensics Teacher
Silverado High School
1650 Silver Hawk Lane
Las Vegas, Nevada
Responsibilities in this job include teaching Composition II in grades 11 and 12 and Speech and Debate in grades 10- 12. Coach, Speech and Debate at the District. Taught English Read/Write and lower level literature and writing classes.

1999-2002, Adjunct Instructor
Community College of Southern Nevada
3200 East Cheyenne Avenue
North Las Vegas, Nevada
Responsibilities in this position included teaching undergraduate courses in English 101, 102, and 95A.

1995-1997, English Teacher
Becker Middle School
9151 Pinewood Hills Drive
Las Vegas, Nevada
Responsibilities included teaching writing and composition, as well as coordinating cooperative lessons with History, Reading, and Math teachers on team.

ADDITIONAL EXPERIENCE

March 2009, March 2010
Presenter at National Professional Development Conference.

January 2005- 2009:
Education columnist for the Henderson/Green Valley News

October 2005:
   Won 3rd award for non-staff writer from the Nevada State Press Association.
   Appeared as a guest on Education Week, a PBS local program.

   Supervising teacher for University of Iowa student teaching program,

   Substitute teacher, Clark County School District, Las Vegas, Nevada

1992
   Reader and Table Leader for Nevada State High School Proficiency Examination;
   Chair, Clark County Forensics Tournament.

PROFESSIONAL AFFILIATIONS

Council of Exceptional Children
National Council of Teachers of English