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In It Together: The Impact of Data-Driven Teams on Student Learning, Collaborative Practice, and School Culture

By
Marcie Wilson

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2018

Approval Page

This dissertation was submitted by Marcie Wilson under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Acknowledgements

Over the past 5 years, I have received support and encouragement from so many people including family, friends, and peers, which have been invaluable to this process. While I do not have the space here to mention each of you individually, know that I thank God for you and your influence, support, and love!

To my husband, Wesley, thank you for your constant love, admiration, and encouragement. Regardless of the adventure I undertake, you remain my biggest cheerleader and confidante. Even when I doubt myself, you never do! You have made my dreams your own, and I know I could not have fulfilled this dream without you. My love for you grows deeper each and every day. Forever.

To John, Luke, and Rebekah, thank you for your understanding and patience with the countless hours away from home and the times I could not participate in family activities due to the quest for my doctorate. I love you and so appreciate each of you! I hope you realize you are the reason I started this degree and continue to be the reason I have completed it. Each of you can achieve anything! I am so very proud of and thankful for the young men and young woman you have become!

To my mom, Belva, thanks for always being willing to spend time with my children when I was working, for making sure they were fed and bathed before I arrived home from class, and for cleaning and cooking when I did not have time. Thanks for listening to my frustrations, for telling me to get over it and move on, and for always keeping me focused on my goal. To my dad, Greg, thanks for your willingness to have my children at your house for countless hours on end and for the numerous meals you provided. The unwavering support and encouragement you both give continue to mean

so much to me. It is because of you that I have had the courage to embark on this journey! Love you so much!

To my sweet friend and doctoral program pal, Marsha, how I have enjoyed our time together. I am going to miss our Dissertation Saturdays and so appreciate your encouragement, your willingness to listen when I needed to talk something out, your ability to discern what I am trying to say and help in putting it into words, and your constant, unwavering friendship. How am I going to get through each week without you? Thank you seems inadequate. Your friendship truly is a blessing to me. Love you, my friend!

To my committee chair, Dr. Frye, thank you for your motivating words, your time spent making my study stronger, and for your dedication to my study. I so appreciate your patience, kindness, and high expectations for me! Thank you for pushing me and encouraging me to dig deeper and make my study stronger! I truly appreciate you!

To my committee members, Dr. Brown and Dr. Revis, thank you for your time and wise counsel. Your input has strengthened my study while challenging me to be better! Thank you!

To my cohort, what a journey! I am so thankful for the lifelong friendships this process has grown. I miss our class discussions, disagreements, and laughs. Each of you has brought something special to my life that, while I did not know I needed them, I am so grateful for now that I have them! Best wishes to each of you!

Abstract

In It Together: The Impact of Data-Driven Teams on Student Learning, Collaborative Practice, and School Culture. Wilson, Marcie, 2018: Dissertation, Gardner-Webb University, Data-Driven Teams/Collaborative Practice/School Culture/Student Learning

The goal of this study was to determine the impact of data-driven teams on student learning, collaborative practice, and school culture. The participants in the study were the data-driven team members from four middle schools in a North Carolina county. The study used EOG test results in 6-8 reading and math from before implementation to after implementation of data-driven teams, EVAAS growth in 6-8 reading and math from before implementation to after implementation of data-driven teams, results on Gruenert and Whitaker's (2015) School Culture Survey given after implementation, interviews with the principals of each middle school, and focus group interviews with data-driven team members from each middle school to determine the impact of these teams on student learning, collaborative practice, and school culture.

Based on this research, the implementation of data-driven teams results in increased student learning as well as some positive improvement in collaborative practice and school culture. These findings support the need for the implementation of data-driven teams. The findings of this study also indicate that administrator support and presence is vital to the impact of data-driven teams. Administrators should not only attend the data-driven team meetings but should also provide any necessary support to the teams in order to ensure their success. The findings of this study also indicate the value of the implementation of data-driven teams. Each middle school showed statistically significant increases in student learning as measured by EOG tests since the implementation of the data-driven teams.

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Chapter 1: Introduction

This paper presents a description of a research study designed to evaluate the impact of data-driven teams on student learning, collaborative practice of teachers, and school culture in four middle schools in a North Carolina county. The importance of this study lies within the knowledge that has been gained through the exploration of the practices of data-driven collaborative teams in the middle schools in the rural North Carolina county chosen for this study. The knowledge gained can be used to impact student learning, collaborative practices, and school culture, not only in the schools chosen for this study but in all schools. This chapter begins with an overview of the importance of teacher collaboration and use of student data in improving student learning, collaborative practices, and school culture. The conceptual framework for the study is also presented followed by the research questions and definition of terms.

Background

Learning for all students is the goal of all schools (Peterson & Deal, 2002). According to DuFour (2004) and Reeves (2005), collaborative practice centered around data used to drive instructional practices has proven effective in ensuring all learners are proficient in learning objectives as measured by state assessments. Due to the relationships formed and collaborative practices developed while working in a data-driven team, school culture improves (Levine & Marcus, 2007). According to Gruenert and Whitaker (2015), the culture of the school is also an indicator of student learning. "A collaborative school culture provides the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80). However, all of these are interwoven; collaborative practices build culture, culture impacts student learning, culture impacts collaborative practices, and collaborative practices impact student learning (Deal & Kennedy, 1982; Fullan &

Hargreaves, 1996; Gruenert, 2000, 2005; Levine & Marcus, 2007). While there have been many studies on the impact of data-driven teams on student learning, data-driven teams on collaborative practice, and data-driven teams on school culture, there has not been one study on the impact of data-driven teams on student learning, collaborative practice, and school culture in one setting. The importance of this study lies within the knowledge that can be gained through the exploration of the practices of data-driven teams in the middle schools in the North Carolina county chosen for this study. The knowledge gained can be used to not only impact student learning, collaborative practices, and school cultures for schools in this county but also to impact student learning, collaborative practices, and school cultures in all schools.

Statement of the Problem

According to DuFour, DuFour, and Eaker (2008), student learning can only happen when teachers work interdependently and assume responsibility for all students' learning. In order for students to be globally competitive, schools have to embed collaborative tools and concepts into the entire curriculum and educational process (Friedman, 2007). In a study completed by The Institute for Education Sciences focusing on 10 case studies of 35 low-performing schools, researchers found the schools that improved student performance were those where the teachers worked collaboratively to focus on instructional goals and planning informed by the use of student data (Herman et al., 2008). According to McNulty and Besser (2011), structures must be in place for collaborative practice to be effective. Structures must include a weekly time for collaboration, staff development on the model of collaboration chosen for implementation, and administrative training and support (McNulty & Besser, 2011). Thornton (2006) found that a collaborative environment must be a formalized approach

that nurtures collaboration and provides multiple opportunities for teachers to reflect and address classroom issues. Schools must develop policies, procedures, and processes that address the curriculum standards and student learning needs as well as recognizing the essential role teachers play in the education of children (Thornton, 2006). This collaborative process must focus on using student data as an indicator of student needs as well as being inclusive of a decision-making process (DuFour, 2004). Collaborative practices are defined as "a systematic process, in which 'teachers' work together, interdependently, to analyze and impact professional practice in order to improve individual and collective results" (DuFour et al., 2008, p. 464).

Results from DuFour's (2004) research suggested that when teachers model the collaborative practices students are required to use in class, learning improves. As teachers learn from each other and work together to improve teaching practices, learning improves. According to Schmoker (2005), a professional learning community (PLC) involves teachers meeting together regularly to identify essential student learning standards, develop common formative assessments, analyze students' current levels of performance, set student learning goals, share instructional strategies, and create lessons to improve students' current levels of performance. There are several factors that must be considered in order for implementation of these practices to be successful including changing the master schedule to provide the required weekly collaborative time, professional development in the chosen collaborative model, and administrative monitoring of the collaborative process as well as inclusion of all teachers, regardless of their subject, in the collaborative process. Implementing PLCs requires all educators to focus on learning rather than teaching, to work collaboratively on all aspects of learning, and to hold themselves accountable to attain student results that fuel continuous

improvement (DuFour, 2004). The implementation of PLCs can also affect the school climate. In a study involving three large urban high schools in Texas that were implementing PLCs, there was a pervasive atmosphere of student appreciation and respect for staff and a staff commitment to the students and their learning. Educators used consistent instruction, respected their students and students' families, and were focused on the quality of their work. These results were attributed to the implementation of PLCs (McKenzie, Skria, Hawes, Rice, & Joseph, 2011).

In a PLC, teachers have to work collaboratively and interdependently to achieve common goals in order to meet each student's learning needs (DuFour, DuFour, Eaker, & Karhanek, 2004). A PLC is defined by DuFour, DuFour, Eaker, and Many (2010) as, "an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (p. 11). Since the implementation of the Improving America's School Act (1994) and the subsequent No Child Left Behind Act (NCLB, 2001), the federal government's role in education has grown from providing funding for education to also managing state use of education funding. The Improving America's School Act required all states to develop federally approved education plans and testing systems that ensure all students made adequate yearly progress as a contingency of receiving federal funding. In 2001, George W. Bush with bi-partisan agreement passed NCLB. NCLB goals were to ensure that all students in all schools were proficient in language arts and mathematics by the year 2014. In 2015, Barack Obama signed the Every Student Succeeds Act (ESSA, 2015), continuing the NCLB focus on high standards, accountability, and closing the achievement gap, while providing some flexibility in the areas of student assessments, academic standards, and accountability goals. ESSA is more specific regarding

identifying schools that need interventions while giving less specific guidelines regarding what interventions should be used. Schools performing in the bottom 5% in their state, high schools with a graduation rate of less than 67%, or schools where subgroups consistently underperform are considered failing and could be subject to state takeover. The state has the flexibility to determine what is done once it takes over these failing schools. In light of this legislation, the importance of the National Board for Professional Teaching Standards' (NBPTS, n.d.) five core propositions for teachers becomes even more important, especially the last core proposition which emphasizes how necessary it is for teachers to be a part of a learning community in order to advance student achievement. Since 1987, many researchers and educators have defined the necessary components of a learning community (Barth, 1990; DuFour, DuFour & Eaker, 2002; DuFour & Eaker, 1998; Fullan & Hargreaves, 1991; Hord & Sommers, 2008; Reeves, 2010; Rosenholtz, 1989).

Due to the increased demands of federal legislation and with consideration of the numerous years of research, schools should become focused on operating in collaborative teams that use collective inquiry based on student data and implement research-based instructional practices to impact student learning results (DuFour et al., 2008). However, many schools do not implement collaborative teams; do not ensure the collaborative teams implemented focus on collective inquiry, student data, and implementation of research-based instructional practices; or do not provide the supports necessary for collaborative teams to be effective (DuFour et al., 2008; Glaze, 2014; Piercey, 2010; Reeves, 2005).

The research problem. McRel International is a "non-profit, non-partisan education research and development organization that since 1966 has turned knowledge

into what works in education into practical, effective guidance and training for teachers and education leaders across the U.S. and around the world" (McRel International, 2016, para. 1). In partnership with the North Carolina Department of Public Instruction, McRel experts in psychometrics and assessment developed educator evaluation instruments based on North Carolina's Framework for 21st Century Learning and the state's standards (McRel International, 2015a). This partnership was precipitated by a change to the State Board of Education's mission and goal statements to focus on 21st century skills, improve school leadership and classroom instruction, and to prepare students for success in college and the workforce (McRel International, 2015a). The resulting research-based teacher evaluation instrument is a rubric-based evaluation process that

> measures teacher performance on demonstrable behaviors that make a difference for students, including
>
> -Using a variety of proven instructional strategies
>
> -Knowing their subjects and how to teach them
>
> -Using data to guide instruction
>
> -Building strong, positive relationships with students
>
> -Creating culturally responsive learning environments
>
> -Conveying expectations that all children can learn
>
> -Creating safe and orderly learning environments
>
> -Demonstrating professionalism and collaborating with other teachers. (McRel International, 2015b, para. 1)

Through the implementation of the North Carolina Teacher Evaluation Process, North Carolina educators are charged with ensuring that "every public school student will graduate from high school globally competitive for work and postsecondary education

and prepared for life in the 21st century" (Mid-continent Research for Education and Learning, 2009, p. 4). In order to meet this demand, principals and teachers must lead schools with the 21st century skills and content that students will need in order to be successful in the future (Mid-continent Research for Education and Learning, 2009) and the skills needed for them to be successful in college, career, and beyond. Student learning and the instructional practices teachers need in order to effectively educate students is present throughout the rubric as evidenced by the list of demonstrable behaviors above (McREL International, 2015b; Mid-continent Research for Education and Learning, 2009). The skills teachers must learn include shared leadership to bring a common vision and purpose for the school (Mid-continent Research for Education and Learning, 2009). "Demonstrating professionalism and collaborating with other teachers" (McREL International, 2015b, para. 1) and "using data to guide instruction" (McREL International, 2015b, para. 1) are also listed in the demonstrable behaviors on the teacher evaluation instrument and are essential practices for North Carolina educators. Teachers must create instructional lessons that incorporate student learning, innovation, collaboration, and communication (Mid-continent Research for Education and Learning, 2009). Teachers must model lifelong learning for their students while encouraging their students to learn and grow (Mid-continent Research for Education and Learning, 2009). Teachers must demonstrate that they have created a "safe and orderly learning environment," have conveyed "the expectation that all students can learn," and have built "strong, positive relationships with students" (McREL International, 2015b, para. 1) in order to score high on the evaluation instrument rubric. This focus on student learning, collaborative practices, using data to inform instruction, and a positive school culture is an expectation of teachers in North Carolina. The school district chosen for this study is

continually ranked in the top 10% in the state for student performance; however, the middle schools are not performing as well as the other schools in the county. Based on research of successful schools and their knowledge of the expectations for North Carolina teachers as evidenced by the North Carolina Teacher Evaluation Rubric, district instructional leadership introduced data-driven teams to assist schools in improving student performance.

Purpose of the Study

The purpose of this study was to determine the impact of data-driven teams in four middle schools in a western North Carolina county on student learning, collaborative practice, and school culture. This study was a mixed-methods study and used quantitative and qualitative data to answer the research questions.

Location of the Study

The county in which the study took place is in western North Carolina. The population of the county is 108,448 and is made up of 84% Caucasian and 10% Hispanic/Latino. The median household income is $47,371, and the unemployment rate is 6.2%. According to the United States Census Bureau (2014), 13.5% of the county's population lives in poverty. There are 13,364 students enrolled in the public school system, of which 3,057 are enrolled in the four middle schools. The ethnic distribution in the school system is as follows: Caucasian 71.33%, Hispanic 18.76%, African-American 3.69%, Multiracial 3.72%, Asian 1.25%, Hawaiian Pacific .26%, and American Indian .24%. Of the students enrolled in this system, 54.9% are eligible to receive free or reduced meals. This school district has a history of high performance when compared to other districts in the state; however, with the increased emphasis on assessments, 21st century skills, and being globally competitive, the district has made efforts to continue its

efforts to sustain high academic achievement while providing quality staff development. Since 2005, the school system has devoted much of its professional development to developing a common language among educators including adopting the use of specific graphic organizers for all grade levels, developing common benchmark and formative assessments, developing a framework for learning, fostering collaboration among teachers, and using data to make instructional decisions. The professional development topics offered included the following: Thinking Maps (2005), Benchmark Assessments (2005), Learning Focused Training (2005, 2007, 2008, 2009, 2010 and following for teachers new to the district), Grading and Assessment Practices (2009), Reading and Writing in the Content Area (2011), Formative Assessment Training (2011), Data Teams Training with the Leadership and Learning Center (2011), and PLCs training with Rick and Rebecca DuFour (2013 and 2014). Experienced teachers continue to receive updated training on Learning Focused Framework and the county's instructional framework.

Conceptual Framework

Learning for all students is the goal of all schools (Peterson & Deal, 2002). Decades of research have tried to determine the best way to ensure all students are learning (Marzano, 2003). According to DuFour (2004) and Reeves (2005), collaborative practice centered around data used to drive instructional practices has proven effective in ensuring all learners are proficient in learning objectives as measured by state assessments. Data-driven teams work to improve student learning (Reeves, 2005). During the data-driven team process, collaborative practices should improve (DuFour, DuFour, & Eaker, 2002). Due to the relationships formed and collaborative practices developed while working in a data-driven team, school culture improves (Levine & Marcus, 2007).

According to Gruenert and Whitaker (2015), the culture of the school is also an indicator of student learning. "A collaborative school culture provides the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80). However, all of these are interwoven; collaborative practices build culture, culture impacts student learning, culture impacts collaborative practices, and collaborative practices impact student learning (Deal & Kennedy, 1982; Fullan & Hargreaves, 1996; Gruenert, 2000, 2005; Levine & Marcus, 2007). As shown in Figure 1, it is not causal or cyclical but a dynamic process in which one process is constantly impacted by and impacting the other processes. Culture improves as collaborative practices are embraced (Levine & Marcus, 2007). Student learning improves as collaborative practices become part of "the way we do things around here" (Gruenert & Whitaker, 2015, p. 6; Deal & Kennedy, 1982; Gruenert, 2005). As the cohesiveness of educators improves, student learning improves and school culture improves (Easton, 2008; Fullan & Hargreaves, 1996; Giusto, 2011; Gruenert, 2000; Hatchett, 2010; Kraft & Papay, 2014; Levine & Marcus, 2007; Watkins, 2012).

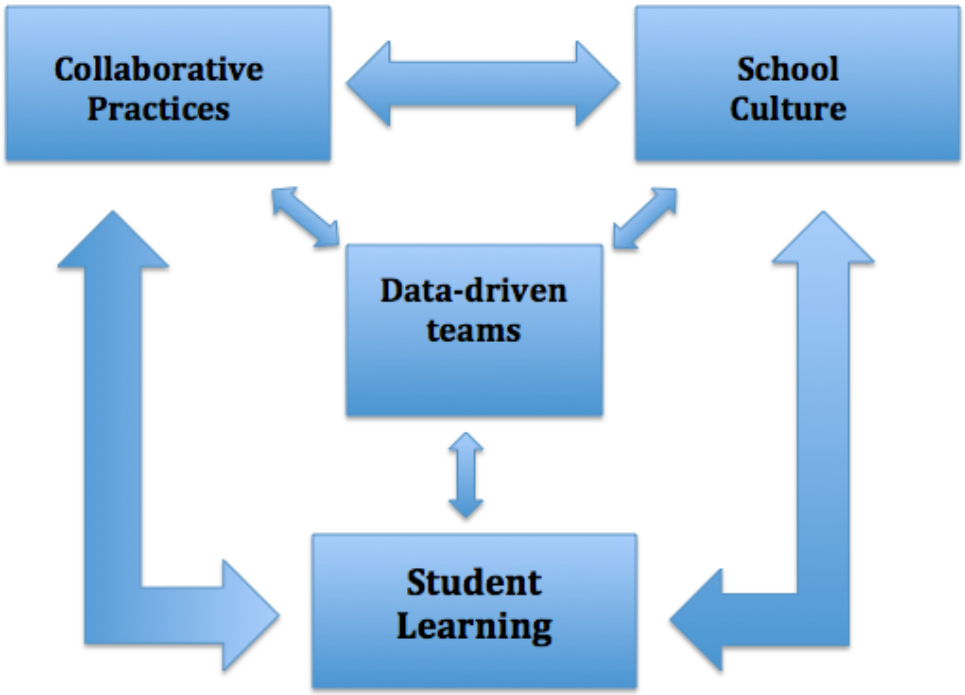

Figure 1. Conceptual Framework.

Research Questions

1. What is the impact of data-driven teams on student learning?
2. What is the impact of data-driven teams on collaborative practice?
3. What is the impact of data-driven teams on school culture?

Nature of the Study

The study was a mixed-methods study in which both quantitative and qualitative data were gathered from four middle schools. A mixed-methods approach allowed for the use of both predetermined and emerging methods of research, open-ended and close-ended questions, and also allowed the researcher to investigate the results of multiple measures providing a more complete understanding of the research problems (Creswell, 2014). The purpose of this study called for both qualitative and quantitative

approaches using survey measures; interviews; focus groups; a quantitative comparison of the percentage of agreement on items on the North Carolina Teacher Working Conditions Survey (NCTWCS, n.d.); a quantitative analysis of the results using Gruenert and Whitaker's (2015) School Culture Survey (Appendix A); a quantitative comparison of student results on the North Carolina end-of-grade (EOG) tests in 6-8 reading, 6-8 math, and 8 science; and a quantitative comparison of student growth using the Education Value-Added Assessment System (EVAAS). The validity and reliability provided by using a survey results in more meaningful interpretations of data (Creswell, 2014).

Definition of Terms

Data-driven teams. For the purpose of this study, a data-driven team is one devoted to "an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (DuFour et al., 2010, p. 11). Data-driven teams "are designed to ensure that all students are learning and making progress towards reaching proficiency levels" (Allison et al., 2010, p. 4) through the use of "a systematic process to look at student learning and student evidence" (Allison et al., 2010, p. 2).

Student learning. Student learning as measured by outcomes on North Carolina EOG tests and EVAAS data.

EOG tests. Multiple choice tests given to students in Grades 3-8 in reading and math and Grades 5 and 8 in science at the end of each school year to "measure performance on the goals, objectives, and grade-level competencies specified in the NC Standard Course of Study" (North Carolina Department of Public Instruction, n.d.a, para. 1).

EVAAS. EVAAS "examines the impact of teachers, schools, and districts on the

learning of their students in specific courses, grades, and subjects" (North Carolina Department of Public Instruction, n.d.b, para. 2). Ratings are given to show the amount of growth students have made in a particular subject with a particular teacher in a given year.

Collaborative practice. "A systematic process in which educators work together, interdependently, to analyze and impact professional practice in order to improve their individual and collective results" (DuFour et al., 2002, p. 464).

School culture. "The beliefs, perceptions, relationships, attitudes, and written and unwritten rules that shape and influence every aspect of how a school functions" (The Glossary of Education Reform, 2013, para. 1).

Assumptions

Two assumptions were made in designing and conducting this study. The researcher assumed that participants provided truthful and candid information during principal interviews, teacher focus group interviews, and survey responses as their participation was voluntary and their responses were anonymous and were kept confidential by the researcher (Simon, 2011). The researcher also assumed that participants understood the stated purpose of study as this was provided to them in the informed consent letters and verbally before each interview.

Limitations and Delimitations

The limitations of this study included personnel changes such as administrative changes and teacher changes as well as other changes to personnel resulting in changes to the members of each of the data-driven teams. Personnel changes could impact the implementation of the data-driven teams as well as the impact of those teams on student learning, collaborative practice, and school culture.

The delimitation of this study was the random sampling of the data-driven teams for the focus group interviews in each of the four middle schools. The researcher chose to conduct one focus group interview per school because the intent of this qualitative data is "to gather extensive information from this sample" (Creswell, 2014, p. 219) to provide a more in-depth understanding of the data-team process at each of the middle schools. The researcher chose to not conduct focus group interviews with every data-driven team at each school as one focus group interview per school was sufficient to meet the needs of the researcher for this study.

Significance

The results of this research study add to the body of knowledge on the impact of data-driven teams on student learning, collaborative practice, and school culture. As this is the first study that focused on the impact of data-driven teams on these three variables in one setting, the results provide valuable information regarding the implementation of data-driven teams. Implementation of data-driven teams could have a potentially positive social change as these teams provide a dedicated time for teachers to collaboratively work together in response to student learning data which could impact student learning, collaborative practice, and school culture.

Summary

This research study was designed to evaluate the impact of data-driven teams on student learning, collaborative practice of teachers, and school culture in four middle schools in a North Carolina county. Learning for all students is the goal of all schools (Peterson & Deal, 2002). According to DuFour (2004) and Reeves (2005), collaborative practice centered around data used to drive instructional practices has proven effective in ensuring all learners are proficient in learning objectives as measured by state

assessments. Due to the relationships formed and collaborative practices developed while working in a data-driven team, school culture improves (Levine & Marcus, 2007). The importance of this study lies within the knowledge that can be gained through the exploration of the practices of data-driven teams in the middle schools in the North Carolina county chosen for this study. The knowledge gained can be used to not only impact the student learning, collaborative practices, and school cultures for schools in this county but also could impact student learning, collaborative practices, and school cultures in all schools.

Chapter 2: Literature Review

Introduction

The purpose of this study was to determine the impact of data-driven teams in four middle schools in a western North Carolina county on student learning, collaborative practice, and school culture. There is evidence to support the impact of data-driven teams on student learning, the impact of collaborative practices on student learning, and the impact of collaborative practices on school culture; however, further research was needed to determine if the collaborative nature of data-driven teams impact student learning, collaborative practices, and school culture.

The review of the literature is divided into six sections. The first section provides research relative to data-driven teams. The second section provides research relative to student learning. The third section provides research relative to teacher collaborative practices. The fourth section provides research relative to school culture. The fifth section provides research regarding the effects of school culture on student learning, and the last section provides research regarding the effects of collaborative practices on school culture.

Literature Search Strategy

The literature search used by the researcher was designed to identify existing research and provide an academic basis for the study. The researcher began with a broad area of study and then narrowed her focus by browsing scholarly articles related to the specific areas of interest. The researcher used a variety of approaches to search for resources significant to this study. The researcher used a systematic approach by searching all relevant materials related to data-driven teams, student learning, collaborative practice, and school culture. The researcher investigated citations from

applicable books, journal articles, and dissertations and used these resources to provide a more targeted scope of literature to be used for this research.

The researcher used the following electronic databases during her research for this study: ERIC, ProQuest, and EBSCO. These databases were retrieved through the Gardner-Webb University library website. The researchers used the following keywords during her research: data-driven teams, PLCs, student learning, student achievement, collaborative practice, teacher collaboration, school culture, and school climate. The researcher also used related terms to ensure vocabulary did not restrict the identification of possible resources. During the search process, the researcher referenced all resources; resources not used were discarded. Referencing resources used is important to assist in supporting arguments, provide credibility to research, exhibit the scope and breadth of research, and acknowledge the work of other researchers (De Montfort University, 2017).

Conceptual Framework

According to DuFour (2004) and Reeves (2005), collaborative practice centered around data used to drive instructional practices has proven effective in ensuring all learners are proficient in learning objectives as measured by state assessments. Data-driven teams work to improve student learning (Reeves, 2005). During the data-driven team process, collaborative practices should improve (DuFour et al., 2002). Due to the relationships formed and collaborative practices developed while working in a data-driven team, school culture improves (Levine & Marcus, 2007).

According to Gruenert and Whitaker (2015), the culture of the school is also an indicator of student learning. "A collaborative school culture provides the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80). However, all of these are interwoven; collaborative practices build culture, culture impacts student learning, culture

impacts collaborative practices, and collaborative practices impact student learning (Deal & Kennedy, 1982; Fullan & Hargreaves, 1996; Gruenert, 2000, 2005; Levine & Marcus, 2007). As shown in Figure 1, it is not causal or cyclical but a dynamic process in which one process is constantly impacted by and impacting the other processes. Culture improves as collaborative practices are embraced (Levine & Marcus, 2007). Student learning improves as collaborative practices become part of "the way we do things around here" (Gruenert & Whitaker, 2015, p. 6; Deal & Kennedy, 1982; Gruenert, 2005). As the cohesiveness of educators improves, student learning improves and school culture improves (Easton, 2008; Fullan & Hargreaves, 1996; Giusto, 2011; Gruenert, 2000; Hatchett, 2010; Kraft & Papay, 2014; Levine & Marcus, 2007; Watkins, 2012).

Data-Driven Teams

For the purpose of this study, a data-driven team is one devoted to "an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (DuFour et al., 2008, p. 11). Data-driven teams "are designed to ensure that all students are learning and making progress towards reaching proficiency levels" (Allison et al., 2010, p. 4) through the use of "a systematic process to look at student learning and student evidence" (Allison et al., 2010, p. 2). The goal of data-driven teams is for educators to learn together as they use student data to analyze and improve their teaching practices (Wayman, Midgley, & Stringfield, 2006).

In his research on many different school systems and with schools that are successful academically, Reeves (2005) identified several characteristics of the schools with the highest academic gains. In these schools, there was time devoted for teacher collaboration focused on examination of student work, a deliberate agreement on what

proficiency means, and the collaborative scoring of student work was part of their regular routine. Feedback to students was more frequent in these schools, and the feedback given was focused on student performance compared to explicit expectations. Teachers in these schools used action research and mid-course corrections to continually modify instructional practices to meet the needs of their students. These schools focused on cohort data from multiple sources. Students were compared to themselves rather than to other groups of students, which allowed teachers to focus on instructional strategies that met the needs of the individual students. Consistent use of common assessments with timely feedback was also seen in schools with the highest academic achievements. These assessments also impacted teacher instruction and provided a means for consistent teacher expectations (Reeves, 2005).

The Data Team process was created when The Leadership and Learning Center combined two practices from their research, professional collaboration and data-driven decision making (Allison et al., 2010). According to Bloomberg (2012), Development Associate with the Leadership and Learning Center, data teams are the best way to help educators use data to make informed instructional decisions. The data process is unique because its members not only review student data but also look at the connections between instructional strategies, leadership support, and student data (Bloomberg, 2012). Data teams focus on how educators can help students and teachers reach their learning targets (Bloomberg, 2012). The primary purpose of the Data Team Process is to improve student learning through improving teaching and leadership, to incorporate acceleration and intervention in a timely and systematic way, and to make learners and learning visible (Allison et al., 2010). Marzano (2003) revealed "one of the defining characteristics of schools producing unprecedented gains in student achievement

(particularly with students whose backgrounds are not conducive to such gains), is that they rely on data to identify probable successful interventions" (p. 158). Marzano, Barth et al. (1999), and Schmoker (2001) pointed out these schools also rely on data to ascertain how successful the interventions were after implementation. In reference to the Oak Park School District in Detroit, Schmoker (2001) stated successful school districts

> do not just collect data, they revere it. They aren't satisfied with data until data have life and meaning for every teacher, every pertinent party. They use data to create and to ensure an objective, commonly held reality. . . . The use of data allows for organized, simplified discussions that merge to create focused priorities and productive action. (p. 51)

In a multi-site case study, James (2010) found several themes that are essential to effective data-driven team implementation. These include a vision that is clearly defined by the administration to use data to improve student achievement, administrators must be active in the data-driven team process, data must be accessible to stakeholders, and the team must meet regularly to participate in the process (James, 2010). Wayman (2005) described the relationship between data use and collaboration as reciprocal in nature. Data-driven teams will be successful if the teachers are given the structures to work collaboratively and their investigation of the data contributes to meaningful collaboration (Wayman, 2005).

In a study of the implementation of the data team process in three elementary schools in a Midwestern school district, the following themes emerged: collaborative mind-set, high standards, and focus on data analysis (Sheppard, 2011). "The data team members agreed that the development of a positive attitude towards collaboration, coupled with an understanding of the benefits associated with collaboration, helps to

develop a collaborative mindset which, in turn, can lead to group success" (Sheppard, 2011, p. 3). The members also agreed that developing norms and then operating under those norms were essential as well as a consistent implementation of the data team process in order for improvement in student achievement to occur (Sheppard, 2011). In a case study of data teams in a middle school, Schultz (2009) identified several themes from interviews with data team members and observations of data team meetings. One theme that emerged is "planning is no longer done in isolation" (Schultz, 2009, p. 82). Schultz noticed throughout her research that the team planning was focused and concentrated on student academic needs. Teams were able to share ideas and experiences, teaching strategies, areas of concern, and levels of student understanding of material in order to effectively plan for instruction (Schultz, 2009).

In a case study of elementary school data team members, Jenkins (2013) found "collaboration was beneficial for teacher learning and identification of the instructional needs of students" (p. 3). This 3-month case study focused on nine teachers who met weekly during common planning for a data meeting to use data-based decision making to inform instruction (Jenkins, 2013). Participants in this study developed a sense of shared goals, and the collaborative experience

> provided ongoing professional development for teachers, fostered a sense of shared goals for the teams, provided teachers with on-the-job training in problem-solving using student data, and fostered a systematic structure for data use that resulted in strategic student grouping for instruction. (Jenkins, 2013, p. 110)

Participants shared that their participation in collaborative data teams fostered efficiently working together by dividing planning responsibilities and sharing the workload (Jenkins, 2013). Participants also shared that their focus was on all students, not just their own

students or classrooms (Jenkins, 2013). In a study of a longitudinal cohort and causal-comparative analysis between high school students whose teachers participated in the Data Teams Process and students whose teachers did not, measured by the Texas Assessment of Knowledge and Skills, Walters (2012) discovered the data teams impacted each grade level's student mathematics achievement, but the impact was not consistent across grade levels. Overall failure rates decreased and overall passing percentages increased each year (Walters, 2012).

Data-driven teams have been described as "professional learning communities on steroids" (Bloomberg, personal communication, 2012). A data-driven team focuses on "a systematic process to look at student learning and student evidence" (Allison et al., 2010, p. 2) to improve teaching practices and student learning (Wayman et al., 2006). Research suggests student learning, as evidenced by state assessments, improves when data-driven teams are implemented (Jenkins, 2013; Reeves, 2005; Sheppard, 2011; Walters, 2012).

Student Learning

"Education, that is, seeing that children learn in a safe and supportive environment, remains one of the most complex and challenging of all social endeavors" (Peterson & Deal, 2002, p. 30). Horace Mann stated, "Education then, beyond all other devices of human origin, is the great equalizer of the conditions of men, the balance-wheel of the social machinery" (Hall & Simeral, 2015, p. 7). In the United States, the purpose of education has evolved as the needs of society have changed. "Education's primary purpose has ranged from instructing youth in religious doctrine, to preparing them to live in a democracy, to assimilating immigrants into mainstream society, to preparing workers for the industrialized 20th century workplace" (Sloan, 2012, para 4). Hall and Simeral (2015) stated that the purpose of schools is "to educate the masses and

prepare individuals for successful participation in society" (p. 7) and believed the ultimate goal of schools is "yielding high levels of student learning" (p. 13). According to Sloan (2012), parents and teachers want schools to assist students in becoming lifelong learners who are able to become contributing and responsible members of their communities. Fink and Resnick (2001) concluded it is the responsibility of school principals to establish a pervasive culture of teaching and learning in their schools. DuFour (2004) believed, "the core mission of formal education is not to simply ensure that students are taught but to ensure they learn" (p. 6). DuFour also believed student learning occurs when

> working together to improve student achievement becomes the routine work of everyone in the school. Every teacher team participates in an ongoing process of identifying the current level of student achievement, establishing a goal to improve the current level, working together to achieve that goal, and providing periodic evidence of progress. (p. 10)

In a study of teacher perceptions on the effect of collaboration on student learning, Jacobs (2013) found teachers believed student learning improved due to the collaborative practices that resulted in the implementation of new teaching strategies and tools as well as an increase in teacher knowledge. Teachers in this study also observed gains in student learning especially in student abilities to use higher order thinking skills (Jacobs, 2013).

For the purpose of this study, student learning was measured by student results on the North Carolina EOG assessments.

Collaborative Practice

This section investigates collaborative practice and its impact on student learning

and school success. Collaborative practice is "a systematic process in which educators work together, interdependently, to analyze and impact professional practice in order to improve their individual and collective results" (DuFour et al., 2002, p. 464). The purpose of collaboration should be learning for all students (DuFour et al., 2004). Fullan (1993) believed that in order for schools to be successful, teachers have to work in a collaborative culture because without collaboration, it is impossible to learn and to continue to learn. Teachers working in schools where collaborative teams are encouraged are more likely to see increased student achievement; have increased confidence in themselves and their peers; find higher quality solutions to problems while working with other teachers; contribute to a supportive work environment which uses other teachers' strengths while accommodating their weaknesses; and have access to a greater pool of materials, methods, and ideas (Little, 1990).

According to Sparks (2013), a successful school is based on the quality of the teamwork that occurs among teachers. Daily collaboration where teachers "assist one another in improving lessons, deepen understanding of the content they teach, analyze student work, examine various types of data on student performance, and solve the myriad of problems they face each day" is the most important form of professional learning in which educators participate (Sparks, 2013, p. 29). Sparks suggested using the Rush-Henrietta rubric which provides the following properties: a clear purpose, accountability, a structure for the team, and trust among team members as a tool for analysis of collaborative practice within teacher teams. In order to be a successful member of a collaborative team, teachers must act professionally, recognize their own weaknesses while not judging others for theirs, be learners, be listeners, and recognize the importance of student success (Haberman, 2004). When teachers work together in teams,

they engage in conversations about their own teaching practices and student learning. These conversations result in a higher commitment to the school's mission, vision, and goals (Hord & Sommers, 2008).

According to Bella (2004), collaboration develops trust among educators, helps teachers develop a clearer focus, allows them to produce effective strategies, and is a source of professional development. Teachers who collaborate with their peers gain a new respect for their colleagues and continue to use it throughout their teaching careers (Bella, 2004). DuFour and Eaker (1998) stated the time set aside for collaboration provides opportunities for the development of deep relationships which in turn allows for deeper collaboration among the team members. The trust that is the result of these relationships allows rich professional development to occur. Team members participate in dialogue centered around reviewing, revising, and improving their teaching practices and thus impacting student learning (DuFour & Eaker, 1998). According to Reeves (2004), the most important focus of collaboration should be that teachers get to know their students and plan instruction for their students' individual needs. Collaboration provides teachers the opportunity to combine their knowledge of strategies and their expertise in teaching to meet their students' needs (Reeves, 2004). Collaborative teams have to have an explicit purpose; must receive training on curriculum, assessments, collaborative scoring, and data analysis; and must be supported by administrators in order for the teams to be effective (Reeves, 2002).

Research completed at the Annenberg Institute (2004) at Brown University showed collaboration through the PLC framework has the

> potential to enhance the professional culture within a school district in four key areas; they can: build the productive relationships that are required to collaborate,

> partner, reflect, and act to carry out a school-improvement program; engage educators at all levels in collective, consistent and context-specific learning; address inequities in teaching and learning opportunities by supporting teachers who work with students requiring the most assistance; and promote efforts to improve results in terms of school and system culture, teacher practice, and student learning. (p. 3)

In a study of 336 Miami-Dade County public schools conducted over a 2-year period, Ronfeldt, Farmer, Queen, and Grissom (2015) found that teachers who engage in high quality collaboration result in students who have higher achievement gains in reading and math. These researchers also found teachers who work in school with high quality collaboration improve at greater rates than teachers who do not work at collaborative schools (Ronfeldt et al., 2015). In contrast, in a study in 73 elementary and middle schools in a large suburban school district in Georgia, Ervin (2011) found the level of teacher collaboration was not significant in predicting student achievement; however, the level of administrator support and the amount of time teachers collaborated were significant predictors of teacher collaboration. Over 90% of participants in this study indicated they believed their work with other teachers benefited them professionally and benefited their students (Ervin, 2011).

Since 2009, all teachers and principals in the Dallas Center-Grimes Community School District in Iowa have participated in collaborative learning teams (Hansen, 2013). These teams have focused on "a process known as assessment for learning, in which formative assessment practices provide students with clear learning targets, examples and models of strong and weak work, regular descriptive feedback, and the ability to self-assess, track learning, and set goals" (Hansen, 2013, p. 18). Results from student

assessments demonstrated this participation in collaborative learning teams impacted student learning.

> On the Iowa Assessments, the number of students in grades 7-11 rated in proficient in math increased from 2010 to 2012. In 2012, more than 90% of the students in grades 9-11 rated proficient in science and social studies and more than 87% in reading. (Hansen, 2013, p. 20)

In a qualitative study focused on exploring the perceptions of what makes a collaborative learning team effective for teachers, Rawding (2013) found five factors that were conducive to effective and successful collaborative learning teams. These factors include meetings that were structured around the teachers' schedules, flexibility within the meeting so teachers in the team could receive needed support, teachers shared responsibility and learning with other team members, teachers enjoyed their positions more because they felt a sense of belonging and community, and the meetings were focused on what was actually happening in the teachers' classrooms (Rawding, 2013). In a survey of 47 elementary schools with 452 teachers and 2,536 fourth-grade students, Goddard, Goddard, and Tschannen-Moran (2007) found fourth-grade students who attended schools characterized by higher levels of teacher collaboration for school improvement have higher achievement scores in mathematics and reading. In a study of the impact of collaborative practices through the PLC model in a suburban school district in Connecticut, Zito (2011) found a significant positive relationship between educator collaboration and changes in instructional practice. His findings also suggested the most favorable learning occurs when teachers collaborate at optimal levels with a supportive administration, and this collaboration also serves as a predictor for student achievement (Zito, 2011).

Collaborative practice is "a systematic process in which educators work together, interdependently, to analyze and impact professional practice in order to improve their individual and collective results" (DuFour et al., 2002, p. 464). Research suggests collaborative practice impacts student learning and school culture (DuFour & Eaker, 1998; Ervin, 2011; Fullan, 1993; Goddard et al., 2007; Hansen, 2013; Hord & Sommers, 2008; Rawding, 2013; Reeves, 2004; Ronfeldt et al., 2015).

School Culture

School culture is defined as "the beliefs, perceptions, relationships, attitudes, and written and unwritten rules that shape and influence every aspect of how a school functions" (The Glossary of Education Reform, 2013, para. 1). Culture is "a framework that a group can use to solve problems" (Gruenert & Whitaker, 2015, p. 6). It is "essentially a social indoctrination of unwritten rules that people learn" (Gruenert & Whitaker, 2015, p. 6) as they try to become an accepted member of a group or organization. Culture has been referred to as the following:

- The social glue that holds people together
- "The way we do things around here"
- Activity behind the scenes or between the lines
- What's really going on
- The patterns of behavior that distinguish us from them
- An invisible force-field that limits actions and thoughts
- A set of behavior that seem strange to new employees
- Deeply embedded beliefs and assumptions
- The unwritten rules
- Software for the mind

- A home-court feeling
- The default mode of behavior
- Covert assimilation (that feels like accommodation)
- A collective consciousness
- Shared social reflexes
- The "box" that we try to think outside of
- Proof that organizations can learn
- A code honored by members
- A latent system of authority. (Gruenert & Whitaker, 2015, pp. 6-7)

Gruenert and Whitaker (2015) referred to culture as a "social narcotic" (p. 7), because all humans feel better when they belong to a group.

> Members of a culture will help to shape one another, and the culture in turn will evolve into a unique group of individuals who share certain characteristics and take some pride in being set apart from those outside the group. (Gruenert & Whitaker, 2015, p. 7).

Hofstede (1997) stated, "when people are moved as individuals, they will adapt to the culture of their new environment; when they are moved as groups, they will bring their own culture along" (p. 201). Deal and Kennedy (1982) defined culture as, "the way we do things around here" (p. 4). "The tendency to internalize group norms and beliefs, take on group identities, and act as we are expected to act-without the least sense that what we are doing might reasonably be questioned" (Elder & Paul, 2012, p. 22) is the organizational culture's way of defining normal (Gruenert & Whitaker, 2015).

Culture is much different than climate. "A school's climate is both a window into its culture and a learned response that the culture teaches new members" (Gruenert &

Whitaker, 2015, p. 10). Climate is often viewed as the behavior in an organization, while culture is the values and norms of the organization (Heck & Marcoulides, 1996; Hoy, 1990). Climate is what the organization does; culture is why the organization does it (Gruenert & Whitaker, 2015). Gruenert and Whitaker (2015) described the differences between climate and culture in Figure 2.

“Culture...	Climate...
… is the group’s personality.	… is the group’s attitude.
… gives Mondays permission to be miserable.	...differs from Monday to Friday, February to May.
… provides for a limited way of thinking.	… creates a state of mind.
… takes years to evolve.	… is easy to change.
… is based on values and beliefs.	… is based on perceptions.
… can’t be felt, even by group members.	… can be felt when you enter the room.
… is part of us.	… surrounds us.
… is “the way we do things around here.”	… is “the way we feel around here.”
… determines whether or not improvement is possible.	… is the first thing that improves when positive change is made.
… is in your head.”	

Figure 2. Some Differences Between Climate and Culture (Gruenert & Whitaker, 2015, p. 10).

Climate and culture are the lenses through which we interact with our environment. “Culture influences our values and beliefs; climate constitutes those values and beliefs in action” (Gruenert & Whitaker, 2015, p. 22). Hofstede, Hofstede, and Minkov (2010) described culture as the operating program or software for the mind and describe climate as what is on the desktop. “Climate emphasizes the feeling and contemporary tone of the school, the feeling of the relationships, and the morale of the place” (Peterson & Deal, 2002, p. 9). However,

> culture exists in the deeper elements of a school: the unwritten rules and assumptions, the combination of rituals and traditions, the array of symbols and artifacts, the special language and phrasing the staff and students use, the

expectations for change and learning that saturate the school's world. (Peterson & Deal, 2002, p. 9)

Fullan and Hargreaves (1996) and Deal and Kennedy (1999) identified six types of school cultures: collaborative, comfortable-collaborative, contrived-collegial, balkanized, fragmented, and toxic. Of these, the collaborative school culture is one that "embraces learning for all adults and students" (Gruenert & Whitaker, 2015, p. 50). Discussions among educators in schools with a collaborative culture are centered on student achievement, critically analyzing teaching methods, changing ineffective teaching practices, and supporting teachers' individual growth (Gruenert & Whitaker, 2015).

A school's stakeholders can change its culture over a period of time by focusing on new values and beliefs and by discarding or changing elements that no longer fit within its new values (Renchler, 1992). The culture in schools with high standards for student achievement is one with well-defined goals that all stakeholders consider valuable (Renchler, 1992). A school's culture can be seen through the "shared values, heroes, rituals, ceremonies, stories, and cultural networks" (Renchler, 1992, p. 4). "School culture influences what people pay attention to (focus), how they identify with the school (commitment), how hard they work (motivation), and the degree to which they achieve their goals (productivity)" (Peterson & Deal, 2002, p. 10). Peterson and Deal (2002) stated a school's culture "sharpens the focus of daily behavior and increases attention to what is important and valued" (p. 10), "builds commitment and identification with core values" (p. 11), "amplifies motivation" (p. 11), and "enhances school effectiveness and productivity" (p. 11).

Effects of School Culture on Student Learning

Easton (2008) expressed that through the evaluation of school culture and by

addressing what needs to be changed and improved, student achievement rates can be improved. Peterson and Deal (2002) stated, "the key to successful performance is the heart and spirit infused into relationships among people, their efforts to serve all students, and a shared sense of responsibility for learning" (p. 7). Gruenert (2005), through examination of research, showed a positive correlation between collaborative school cultures and student achievement. In his study of 2,750 teachers from elementary, middle, and high schools, Gruenert (2005) discovered a collaborative school culture is positively correlated with student performance in math and language arts. Gruenert (2005) believed school leaders should identify school culture and student achievement as "complementary, reciprocal, and convergent in nature" (p. 50). Gruenert (2000) also believed that an evaluation of the type of culture that exists in a school will assist leaders in their school improvement efforts because the culture is the context in which the education of children occurs. Peterson and Deal (2002) stated, "teachers and students are more likely to succeed in a culture that fosters hard work, commitment to valued ends, an attention to problem solving, and a focus on learning for all students" (p. 11). When there are "strong professional cultures, the staff share strong norms of collegiality and improvement, value student learning over personal ease, and assume all children can learn if they – the teachers and staff – find the curriculum and instructional strategies that work" (Peterson & Deal, 2002, p. 11). The culture in these schools fosters collaborative problem solving, collaborative planning, and data-driven decision making (Peterson & Deal, 2002). In a study of 760 Kentucky middle school teachers in 28 school districts, Hatchett (2010) found a positive correlation between school culture and student achievement scores. High expectations for student academic success as well as the importance of student perceptions of feeling supported, nurtured, and valued were noted

as indicators of a positive school culture (Hatchett, 2010). In a study conducted in an Indiana middle school, Watkins (2012) found the implementation of a plan to improve school culture and the resulting improvement in school culture after 1 year resulted in an increase in student performance on math and language arts EOG assessments.

Effects of Collaborative Practices on School Culture

According to researchers, active teacher participation in collaborative practices has resulted in a positive shift in school culture (Levine & Marcus, 2007). Easton (2008) stated an expected result of collaboration should be a cultural change. Through the implementation of a collaborative process and the increase in shared information about the collaborative process, school cultures change into ones focused on learning (Easton, 2008). When teachers work in a school environment that has constructive peer collaboration, their ability to raise student achievement improves over time (Kraft & Papay, 2014). Gruenert (2000) identified a collaborative school culture as the one that is most conducive to supporting student achievement as it provides the most effectual context for teacher and student learning. Fullan and Hargreaves (1996) described schools with collaborative cultures as places characterized by "hard work, strong and common commitment, dedication, collective responsibility, and a special sense of pride in the institution" (p. 48). Fullan and Hargreaves (1996) stated that schools with collaborative school cultures raise student achievement. In a qualitative study in a high-achieving, high-poverty school, Giusto (2011) found implementing and sustaining collaborative practices, data-driven decisions, and high expectations for learning contributed to a positive school culture which positively impacted student achievement.

A school's culture determines the way things are done at the school; determines the values and assumptions of the members of the school; and provides the framework for

the beliefs, ideals, relationships, and decision-making protocols of a school (Deal & Kennedy, 1982; Elder & Paul, 2012; Gruenert & Whitaker, 2015; Heck & Marcoulides, 1996; Hoy, 1990; Peterson & Deal, 2002; Renchler, 1992). School culture affects student learning and achievement (Easton, 2008; Gruenert, 2000; Hatchett, 2010; Kraft & Papay, 2014; Watkins, 2012), and collaboration has an impact on school culture (Easton, 2008; Fullan & Hargreaves, 1996; Giusto, 2011; Kraft & Papay, 2014; Levine & Marcus, 2007).

Summary

This chapter began with a discussion of data-driven teams and moved into a review of literature and research relevant to student learning, collaborative practices, and school culture as well as the effects of collaborative practice on school culture and the effects of school culture on student learning. The purpose of this study was to further analyze the impact of data-driven teams on student learning, collaborative practice, and school culture.

As seen in the literature review, there is evidence to support the impact of data-driven teams on student learning, the impact of collaborative practices on student learning, and the impact of collaborative practices on school culture. However, further research was needed to determine if the collaborative nature of data-driven teams impacts student learning, collaborative practices, and school culture. The researcher has contributed to this body of research as there has not been one study on the impact of data-driven teams on all three of these variables in one setting. The researcher has also provided information to the district in which the study was conducted on the impact of the middle school data-driven teams on student learning, collaborative practices, and school culture. Further study is needed on the impact of data-driven teams at the

elementary and high school levels as this study focused on middle schools. The next chapter presents the methodology used in this study.

Chapter 3: Methodology

Introduction

The relationships between data-driven teams and student learning, collaborative practice, and school culture were explored through the literature review. This chapter includes a description of the methodology for the study. Additionally, this chapter discloses the methods, type of study, data collection processes, and data analysis processes so the study's replication is possible. Three research questions served as the focus of the study.

1. What is the impact of data-driven teams on student learning?
2. What is the impact of data-driven teams on collaborative practice?
3. What is the impact of data-driven teams on school culture?

Methodology

The study was a mixed-methods study in which both quantitative and qualitative data were gathered from four middle schools. A mixed-methods approach allowed for the use of both predetermined and emerging methods of research, open-ended and close-ended questions, and allowed the researcher to investigate the results of multiple measures providing a more complete understanding of the research problems (Creswell, 2014). "The combination of quantitative and qualitative methods can provide more meaningful information about school contexts to guide systemic prevention and intervention efforts, resulting in improved outcomes for students" (Roach & Kratochwill, 2004, p. 16). Johnson and Onwuegbuzie (2004) defined mixed-method research as, "the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts, or language in a single study" (p. 17). As shown in Table 1, the purpose of this study called for both qualitative and

quantitative approaches using survey measures; interviews; focus groups; a quantitative comparison of the percentage of agreement on items on NCTWCS; a quantitative analysis of the results using Gruenert and Whitaker's (2015) School Culture Survey (Appendix A); a quantitative comparison of student results on the North Carolina EOG tests in 6-8 reading, 6-8 math, and 8 science; and a quantitative comparison of student growth using EVAAS. The validity and reliability provided by using a survey results in more meaningful interpretations of data (Creswell, 2014). The use of focus groups at each of the school sites provided important information about school culture and allowed the researcher to probe participant responses to better understand their perceptions and beliefs with regard to school culture (Roach & Kratochwill, 2004). Using both qualitative and quantitative measures provides "'embedded context conditions' in which meaning is better situated and by which context affects the work. These combined methods also allow evidence of change processes and outcomes to be portrayed and verified" (Eilers & Camacho, 2007, p. 617). According to Morse (2003), when there are multiple strategies used within a single study, the results of the study provide a more complete picture of human behavior and experience.

Table 1

Research Questions and Data Collection

Research Question	Type of data to collect	Method of data collection	Information Source	Analysis Procedures	Interpretation procedures and criteria
What is the impact of data-driven teams on student learning?	Quantitative	EOG Scores	Schools	A Paired Sample *t* test with descriptive statistics for the EOG scores and the EVAAS data for Grades 6, 7, and 8 in Reading and Math at each of the four middle schools in 2012 and 2016.	A statistically significant difference between the before implementation scores and after implementation scores.
	Quantitative	EVAAS data	Schools		
	Qualitative	Semi-Structured Interview	Principals	Thematic Content Analysis	a priori coding
	Qualitative	Focus Group	School Data-driven Teams	Thematic Content Analysis	a priori coding

(continued)

Research Question	Type of data to collect	Method of data collection	Informa-tion Source	Analysis Procedures	Interpretation procedures and criteria
What is the impact of data-driven teams on collaborative practice?	Quantitative	Teacher Working Condition Survey results for the following items: Q 2.1b, Q8.1 j, Q 9.1 g from 2012 and 2016.	Schools	A Paired Sample *t* test with descriptive statistics for the results for the following items: Q 2.1b, Q8.1 j, Q 9.1 g for each of the schools from 2012 and 2016.	A statistically significant difference between the before implementation scores and after implementation scores.
	Quantitative	School Culture Survey (Gruenert & Whitaker, 2015) results for each school	Schools	Measures of Central Tendency for the items in the Teacher Collaboration Category (Items 3, 8, 15, 23, 29, 33).	A mean score higher than 4.0 with a standard deviation of .60 or lower would indicate that the participants would agree that "teachers engage in constructive dialogue that furthers the educational vision of the school" (Gruenert & Whitaker, 2015, p. 84).
	Qualitative	Semi-Structured Interview	Principals	Thematic Content Analysis	a priori coding
	Qualitative	Focus Group	School Data-driven Teams	Thematic Content Analysis	a priori coding

(continued)

Research Question	Type of data to collect	Method of data collection	Informa-tion Source	Analysis Procedures	Interpretation procedures and criteria
What is the impact of data-driven teams on school culture?	Quantitative	Teacher Working Condition Survey results for the following items: (categorized by their relationship to the categories on Gruenert & Whitaker's (2015) School Culture Survey) Collaborative Leadership: Q 2.1 b, Q 2.1 c, Q 6.1 a, Q 6.1 b, Q 6.1 c, Q 6.5, Q 7.1 a, Q 7.1 j Teacher Collaboration: Q 6.1 c, Q 9.1 g Professional Judgement: Q 8.1 j Unity of Purpose: Q 10.6 Learning Partnership: Q 4.1 f, Q 4.1 d from 2012 and 2016.	Schools	A Paired Sample *t* test with descriptive statistics for the results for the following items: (categorized by their relationship to the categories on Gruenert and Whitaker's (2015) School Culture Survey) Collaborative Leadership: Q 2.1 b, Q 2.1 c, Q 6.1 a, Q 6.1 b, Q 6.1 c, Q 6.5, Q 7.1 a, Q 7.1 j Teacher Collaboration: Q 6.1 c, Q 9.1 g Professional Judgement: Q 8.1 j Unity of Purpose: Q 10.6 Learning Partnership: Q 4.1 f, Q 4.1 d from 2012 and 2016.	A statistically significant difference between the before implementation scores and after implementation scores.

(continued)

Research Question	Type of data to collect	Method of data collection	Informa-tion Source	Analysis Procedures	Interpretation procedures and criteria
	Quantitative	The School Culture Survey (Gruenert & Whitaker, 2015) results for each school	Schools	Measures of Central Tendency	A mean score higher than 4.0 with a standard deviation of .60 or lower for each of the following categories of the survey: Collaborative Leadership, Teacher Collaboration, Professional Development, Unity of Purpose, Collegial Support, Learning Partnership; as well as the overall score would indicate that the participants would agree that the culture of their school is "the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80).
	Qualitative	Semi-Structured Interview	Principals	Thematic Content Analysis	a priori coding
	Qualitative	Focus Group	School Data-driven Teams	Thematic Content Analysis	a priori coding

The researcher used the convergent parallel mixed-methods approach and collected

> both quantitative and qualitative data, analyze(d) them separately, and then compare(d) the results to see if the findings confirm or disconfirm each other. The key assumption of this approach is that both qualitative and quantitative data provide different types of information-often detailed views of participants qualitatively and scores on instruments quantitatively-and together they yield results which should be the same. (Creswell, 2014, p. 219)

In order to compare the pre-implementation data to the post-implementation data, the researcher gathered data for each school in 2012, the year before data-driven teams were implemented, and 2016, the most recent data available since data-driven team implementation.

The researcher began her research by quantitatively measuring the perceptions of the teachers at each of the four middle schools using Gruenert and Whitaker's (2015) School Culture Survey (Appendix A). This survey is designed "to inventory the behaviors typical of a collaborative school culture" (Gruenert & Whitaker, 2015, p. 80). Gruenert and Whitaker defined a collaborative school culture as more than one in which teachers work collaboratively, although this is a part of this culture. A collaborative school culture is one with the following characteristics: "teachers share strong educational values, work together to pursue professional development opportunities, and are committed to improving their work. They are aggressively curious about teaching and learning" (Gruenert & Whitaker, 2015, p. 50). Teacher "discussions focus on student achievement, and they spend time observing others to critically analyze teaching methods" (Gruenert & Whitaker, 2015, pp. 50-51). The administration in a school with a collaborative school culture is "adamant about challenging ineffective teaching practices while at the same time encouraging teachers' individual development" (Gruenert & Whitaker, 2015, p. 51). To summarize, a collaborative culture "is shorthand for all the good things that schools should be doing. Help, support, trust, openness, collective reflection, and collective efficacy are at the heart of a collaborative culture" (Gruenert & Whitaker, 2015, p. 51). Gruenert and Whitaker have vetted the survey and established its strong reliability through statistical analysis. During their analysis, they found that the survey items could be divided into the following six categories which are also described

in Table 2: "Collaborative Leadership, Teacher Collaboration, Professional Development, Unity of Purpose, Collegial Support, and Learning Partnership" (Gruenert & Whitaker, 2015, pp. 84-85).

Table 2

School Culture Survey Categories (Gruenert & Whitaker, 2015, pp. 84-85)

Category	Description	Target Behaviors	SCS items
Collaborative Leadership	Measure the degree to which the school leaders establish, maintain, and support collaborative relationships with and among school staff	Leaders value teachers' ideas, seek input from teachers, engage teachers in decision making, trust teachers' professional judgement, support and reward risk taking and innovative ideas designed to improve student achievement, and reinforce the sharing of ideas and effective practices among all staff	2, 7, 11, 14, 18, 20, 22, 26, 28, 32, 34
Teacher Collaboration	Measure the degree to which teachers engage in constructive dialogue that furthers the educational vision of the school	Teachers across the school plan together, observe and discuss teaching practices, evaluate programs, and develop an awareness of the practices and programs of other teachers	3, 8, 15, 23, 29, 33
Professional Development	Measure the degree to which teachers value continuous personal development and school-wide improvement	Teachers seek ideas from seminars, colleagues, organizations, and other professional sources to maintain current knowledge related to instructional practices	1, 9, 16, 24, 30
Unity of Purpose	Measure the degree to which teachers work together toward a common mission for the school	Teachers understand, support, and perform in accordance with the school's mission	5, 12, 19, 27, 31
Collegial Support	Measure the degree to which teachers work together effectively	Teachers trust each other, value each other's ideas, and assist each other as they work to further the school's goals	4, 10, 17, 25
Learning Partnership	Measure the degree to which teachers, parents, and students work together for the common good of students	Parents and teachers share common expectations and communicate frequently about student performance, parents trust teachers, and students generally accept responsibility for their schooling	6, 13, 21, 35

After an introductory phone call regarding the survey was made to the middle school principals by the researcher, the survey was sent via email to each middle school principal using Google Forms. An introductory letter (Appendix B) was included with

information about the researcher and the purpose of the survey. Each middle school principal forwarded the email to his/her staff with his/her request to participate in the survey. A reminder email was sent to each principal to forward to his/her staff after 1 week and again each week until the desired response rate was achieved or 4 weeks had passed. Gruenert and Whitaker (2015) also determined with a "good response rate–50 percent or better" (p. 90), the results can usually be trusted. The goal of the researcher was to have a 70% return rate from each middle school.

While respondents were completing this survey, the researcher interviewed the principals in a semi-structured interview format using the Principal Interview Guide (Appendix C). Through these interviews, the researcher determined the level of implementation of data-driven teams at each middle school as well as the grade level and subject areas of the data-driven teams at each of the four middle schools. The principals also answered questions related to the impact of the data-driven teams on student learning, collaborative practice, and the culture of their schools. Using the data-driven teams identified by the principals in the interview process, the researcher randomly chose one data-driven team from each school. The data-driven teams identified by the principal were placed in a pool of candidates by school, and the researcher randomly chose one team from the pool for each school. The researcher then used informal focus group discussions with these randomly chosen data-driven teams from each of the four middle schools. The researcher used the Focus Group Interview Guide (Appendix D) to guide focus group discussions. The participants discussed questions regarding their data-driven team and its impact on student learning, collaborative practice, and school culture.

While the focus groups were being conducted, the researcher quantitatively measured the perceptions of teachers at the four middle schools by using NCTWCS data

from 2012 and 2016. NCTWCS is an anonymous statewide survey of licensed school-based educators to assess teaching conditions at the school, district, and state level. First administered in 2002 as part of the Governor's Teacher Working Conditions Initiative, it is conducted biennially (NCTWCS, n.d.). "The results of this survey are one component of the on-going process for collaborative school and district improvement plans" (NCTWCS, n.d.). The researcher used the following items from the survey: Q 2.1 b "Teachers have time available to collaborate with colleagues;" Q 2.1 c "Teachers are allowed to focus on educating students with minimal interruptions;" Q 6.1 a "Teachers are recognized as educational experts;" Q 6.1 b "Teachers are trusted to make sound professional decisions about instruction;" Q 6.1 c "Teachers are relied upon to make decisions about educational issues;" Q 6.5 "Teachers have an appropriate level of influence on decision making in this school;" Q 7.1 a "There is an atmosphere of trust and mutual respect in this school;" Q 7.1 j "The faculty are recognized for accomplishments;" Q 6.1 e "The faculty has an effective process for making group decisions to solve problems;" Q 9.1 g "Teachers collaborate to achieve consistency on how student work is assessed;" Q 8.1 j "Professional development provides opportunities for teachers to work with colleagues to refine teaching practices;" Q 10.6 "Overall, my school is a good place to work and learn;" Q 4.1 f "Parents/guardians support teachers, contributing to the success of their students;" Q 4.1 d "Teachers provide parents/guardians with useful information about student learning" (NCTWCS, n.d.). The researcher also collected the following quantitative data for each of the middle schools: EOG data for Grades 6-8 in reading and math from 2012 and 2016; EVAAS growth data for Grades 6-8 in reading, math, and overall growth from 2012 and 2016.

As shown in Table 1, the following data were used to answer each of the research

questions.

1. What is the impact of data-driven teams on student learning?
    a. EOG results (before implementation to after implementation)
        i. 6-8 Reading
        ii. 6-8 Math
    b. EVAAS Student Growth (before implementation to after implementation)
        i. 6-8 Reading
        ii. 6-8 Math
        iii. School Overall Growth Rating
    c. Principal Interviews
    d. Focus Group Interviews
2. What is the impact of data-driven teams on collaborative practice?
    a. TWC Survey items (before implementation to after implementation):
        i. Q 2.1 b "Teachers have time available to collaborate with colleagues" (NCTWCS, n.d.).
        ii. Q 8.1 j "Professional development provides ongoing opportunities for teachers to work with colleagues to refine teaching practices" (NCTWCS, n.d.).
        iii. Q 9.1 g "Teachers collaborate to achieve consistency on how student work is assessed" (NCTWCS, n.d.).
    b. School Culture Survey (Gruenert & Whitaker, 2015)
        i. Teacher Collaboration Category (Items 3, 8, 15, 23, 29, 33)
    c. Principal Interviews
    d. Focus Group Interviews

3. What is the impact of data-driven teams on school culture?
    a. TWC Survey items (before implementation to after implementation): These items are categorized by their relationship to the categories on Gruenert and Whitaker's (2015) School Culture Survey.
        i. Collaborative Leadership
            1. Q 2.1 b "Teachers have time available to collaborate with colleagues" (NCTWCS, n.d.).
            2. Q 2.1 c "Teachers are allowed to focus on educating students with minimal interruptions" (NCTWCS, n.d.).
            3. Q 6.1 a "Teachers are recognized as educational experts" (NCTWCS, n.d.).
            4. Q 6.1 b "Teachers are trusted to make sound professional decisions about instruction."
            5. Q 6.1 c "Teachers are relied upon to make decisions about educational issues" (NCTWCS, n.d.).
            6. Q 6.5 "Teachers have an appropriate level of influence on decision making in this school" (NCTWCS, n.d.).
            7. Q 7.1 a "There is an atmosphere of trust and mutual respect in this school" (NCTWCS, n.d.).
            8. Q 7.1 j "The faculty are recognized for accomplishments" (NCTWCS, n.d.).
        ii. Teacher Collaboration
            1. Q 6.1 e "The faculty has an effective process for making group decisions to solve problems" (NCTWCS, n.d.).

2. Q 9.1 g “Teachers collaborate to achieve consistency on how student work is assessed” (NCTWCS, n.d.).

iii. Professional Judgement

1. Q 8.1 j “Professional development provides opportunities for teachers to work with colleagues to refine teaching practices” (NCTWCS, n.d.).

iv. Unity of Purpose

1. Q 10.6 “Overall, my school is a good place to work and learn” (NCTWCS, n.d.).

v. Learning Partnership

1. Q 4.1 f “Parents/guardians support teachers, contributing to the success of their students” (NCTWCS, n.d.).
2. Q 4.1 d “Teachers provide parents/guardians with useful information about student learning” (NCTWCS, n.d.).

b. School Culture Survey (Gruenert & Whitaker, 2015)

i. All survey items

c. Principal Interviews

d. Focus Group Interviews

Participants

The four middle schools researched are in a school district located in the mountains of western North Carolina. The district contains 23 total schools including 13 elementary schools, four middle schools, five high schools, and one high school educational center. There are 13,364 students enrolled in the public school system, of which 3,057 are enrolled in the four middle schools. The four middle schools employ

approximately 230 teachers with approximately 70 teachers in language arts and math. This school district has a history of high performance when compared to other districts in the state; however, with the increased emphasis on assessments, 21st century skills, and being globally competitive, the district has made efforts to continue its efforts to sustain high academic achievement while providing quality staff development. Since 2005, the school system has devoted much of its professional development to developing a common language among educators including adopting the use of specific graphic organizers for all grade levels, developing common benchmark and formative assessments, developing a framework for learning, fostering collaboration among teachers, and using data to make instructional decisions. Specifically, the district provided the following trainings which focused on the use of data-driven teams: Data Teams Training with the Leadership and Learning Center (2011) and PLCs training with Rick and Rebecca DuFour (2013 and 2014). As the researcher is employed as an elementary principal in this district, she has professional relationships with some of the principals and teachers involved in this study; however, these relationships are not supervisory in nature. The researcher has no biases or other ethical issues that affected the outcome of this study.

The principal at each middle school was interviewed by the researcher at a time agreed upon by the principal and the researcher. The researcher recorded these interviews with a recording device as well as manually took notes during the interviews. The researcher used the Principal Interview Guide (Appendix C) to guide the interview. In addition, focus groups at each middle school contained a randomly chosen data-driven team from the school. The researcher conducted focus group interviews in each of the middle schools at a time that was agreed upon by the teachers and the researcher. The

researcher was the only non-school member of the focus groups. The researcher recorded the focus group interviews with a recording device as well as manually took notes during the interview. The researcher used the Focus Group Interview Guide (Appendix D) to guide the discussions.

In accordance with the guidelines of Gardner-Webb University regarding the protection of human participants, a request for review was submitted to the Institutional Review Board for approval to interview approximately 36 participants for this study. After receiving IRB approval, participant recruitment and data collection began.

Data Organization and Analysis

A paired sample *t* test was used to determine if there were any significant changes in the data from before implementation of data-driven teams to post-implementation of data-driven teams. A paired sample *t* test was used with each of the following data sets: Teacher Working Conditions Survey Results (2012 and 2016); EOG scores for 6-8 reading and 6-8 math (2012 and 2016); and EVAAS growth indicators for 6-8 reading and 6-8 math (2012 and 2016). The results of these paired sample *t* tests are displayed in a table and are presented in narrative format. A paired sample *t* test is used to compare two population means when "observations in one sample can be paired with observations in the other sample" (Shier, 2004, Introduction, para. 1). According to Laerd Statistics (2013), a paired sample *t* test can be used when the researcher pairs samples "on similar characteristics so they are no longer considered to be independent" (p. 4). For the purpose of this study, the research paired samples by EOG topic and grade, by EVAAS topic and grade, and by school for the TWC survey. The purpose of the paired sample *t* test is "to determine whether there is statistical evidence that the mean difference between paired observations on a particular outcome is significantly different than zero"

(SPSS Tutorials, n.d., Paired Samples *t* Test, para. 1). Measures of central tendency were used to determine the results of the School Culture Survey (Gruenert & Whitaker, 2015) and results are displayed in a table and are presented in narrative format. These data are also compared using a double box plot. The box plots summarize the degree of variability within each of the data sets and demonstrate the distributional shape of each of the data sets using a picture (Huck, 2012). A priori coding was used to organize the themes in the principal and focus group interviews with the aim to align the findings to the research questions in order to draw conclusions and report findings. A priori codes were derived from the conceptual framework, the research questions, and the researcher's prior knowledge and subject expertise (Center for Evaluation and Research, n.d.). The researcher used the following provisional codes and subcodes:

a. student learning:
    i. student achievement,
    ii. student scores,
    iii. student performance;
b. collaborative practice:
    i. work together,
    ii. plan together,
    iii. teamwork,
    iv. trust each other,
    v. listen,
    vi. relationships,
    vii. teaching practices,
    viii. meet student needs,

ix. share responsibility;

c. school culture:

i. feeling valued,

ii. feeling trusted,

iii. teachers as leaders,

iv. parental involvement and support

v. positive work environment

vi. positive learning environment

As the data were "collected, coded, and analyzed" (Hedlund-de Witt, 2013, p. 13), the researcher reworked, modified, or expanded the predetermined codes to include codes that emerged as well (Hedlund-de Witt, 2013). These results are presented in narrative format.

Threats to Validity

In an effort to address the threats to external validity, all middle school teachers in the chosen district had an opportunity to complete the School Culture Survey (Gruenert & Whitaker, 2015), and all middle school teachers were possible choices in the random sampling used for the teacher focus group interviews; therefore, every middle school teacher was in the possible pool of candidates used for this study. The sample that chose to participate in the survey and the sample that was randomly chosen for the teacher focus group interviews were representative of the entire sample.

The researcher was the only interviewer for the principal interviews and the focus group interviews. This addressed the only threat to internal validity in the study.

Issues of Trustworthiness

Shenton (2004) provided several suggestions to ensure trustworthiness in

qualitative research to address credibility, transferability, dependability, and confirmability. The researcher employed several of his suggestions in this study to ensure trustworthiness in the collection of qualitative data.

To ensure credibility, the researcher used random sampling for the data-driven teams chosen for the focus group interviews. The researcher also used triangulation of data sources as this "compensates for their individual limitations and exploits their respective benefits" (Shenton, 2004, p. 65). The researcher used four middle schools' data from EOG scores, EVAAS, TWC survey results, School Culture Survey (Gruenert & Whitaker, 2015), principal interviews, and focus group interviews to achieve triangulation for each of the research questions. In addition, participation in the study was voluntary and participants in the interviews and focus group interviews were encouraged to be honest and were assured that all responses would be kept confidential. To address transferability, the researcher has fully disclosed all information regarding the setting of the study, the number of participants involved, the data collection methods used, the number and length of data collection sessions, and the time period over which the data were collected (Shenton, 2004). Due to the qualitative nature of this study, transferability is limited, but another researcher could conduct a similar study. To address dependability, the researcher has disclosed all information regarding the research design and its implementation. To address confirmability, the researcher has taken the necessary steps to "ensure as far as possible that the work's finding are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher" (Shenton, 2004, p. 72). The researcher approached each interview session with an open mind and followed the protocols developed for the principal interviews and the focus group interview sessions. These sessions were held at a place and time the

participants chose to ensure their comfort and a positive interview experience. In addition, although the researcher is an administrator in the district chosen for the study, none of the possible participants in the study are under the direct supervision of the researcher.

Summary

This chapter presented the methodology used by the researcher for this study. A mixed-methods study was used to determine the effects of data-driven teams on student learning, collaborative practice, and school culture. The researcher gathered and examined quantitative data and qualitative data to assist the researcher in answering the research questions.

Chapter 4: Results

Introduction

The purpose of this study was to determine the impact of data-driven teams in four middle schools in a western North Carolina county on student learning, collaborative practice, and school culture. The research questions were

1. What is the impact of data-driven teams on student learning?
2. What is the impact of data-driven teams on collaborative practice?
3. What is the impact of data-driven teams on school culture?

This chapter presents an overview of the setting and demographics, details the data collection processes and data analysis procedures, and reports the results of the study.

Setting

The county in which the study took place is in western North Carolina. The population of the county is 108,448 and is made up of 84% Caucasian and 10% Hispanic/Latino. The median household income is $47,371, and the unemployment rate is 6.2%. According to the United States Census Bureau (2014), 13.5% of the county's population lives in poverty. There are 13,364 students enrolled in the public school system, of which 3,057 are enrolled in the four middle schools. The ethnic distribution in the school system is as follows: Caucasian 71.33%, Hispanic 18.76%, African-American 3.69%, Multiracial 3.72%, Asian 1.25%, Hawaiian Pacific .26%, and American Indian .24%. Of the students enrolled in this system, 54.9% are eligible to receive free or reduced meals.

At the time of this study, one of the schools in the study was under the leadership of an interim principal after the retirement of the former principal at the beginning of the

second semester. This change in administration may affect the interpretation of the study results. According to a report by School Leaders Network, it takes a new principal an average of 5 years to establish a vision for the school, to improve instructional practices, and to implement policies and practices that have a positive impact on the school's academic performance (Van Cleef, 2015). In addition, personnel changes at the school and the years the members of the data-driven team worked together may affect the interpretation of the study results. For example, in the focus group at School B, four of the six members have been teaching math at the school for less than 1 year, one of the members has been teaching math at the school for less than 2 years, and one member has over 5 years of experience teaching math at the school. In addition, at School C, three members of the five-member team have been at the school for less than 1 year, one member has been at the school for less than 2 years, and one member has been at the school for over 15 years. The limited amount of time that these teams have worked together could impact the interpretation of the study results. In addition, in a different school, one of the members was chosen to be a part of the Project Empower program. This teacher received a cart of Chromebooks to use with her classes, while the other member(s) of her team did not. This focus on an online learning platform for these students could impact the interpretation of the study results as well.

Demographics

Four middle schools in a North Carolina county were used for this study. There were four participants in the principal interviews, one from each middle school in the study. The mean number of years in education was 23 years, the mean numbers of years in administration was 14.5 years, and the mean number of years at the current school was 5.3 years. Administrator D was the principal at a middle school in the district for 7 years

then moved to a different middle school in the district for 5 years before retiring 2.5 years ago and has recently returned to his previous middle school as the interim principal.

There were four focus group interviews, one conducted at each middle school, and 17 teachers participated in the focus groups. For School A, the mean number of years of education was 10.75, the mean number of years at the current school was 6.75, and the mean number of years in the current grade/subject was 4.75. For School B, the mean number of years of education was 13, the mean number of years at the current school was 5.5, and the mean number of years in the current grade/subject was 2.2. For School C, the mean number of years of education was 10, the mean number of years at the current school was 7, and the mean number of years in the current grade/subject was 7. For School D, the mean number of years of education was 11, the mean number of years at the current school was 4.4, and the mean number of years in the current grade/subject was 1.8. While all focus groups had on average at least 10 years in education, only Schools A and C had over 3 years in the current grade level and subject area. According to Douglas Reeves's research, the schools with the most improved academic results had consistent data teams in place for 3 years (Bloomberg, 2012). Thus, the relatively young age of the data-driven teams researched could impact this study's results.

Data Collection

Research for this study began with principal interviews. The principal from each of the four middle schools participated in an interview with the researcher. The interviews were conducted at each of the principal's schools on a day and time of his/her choosing. The researcher used the Rev.com app to record the interview and transcribed the interview before deleting the recording. The transcriptions were kept on a password-

protected computer and were only accessible to the researcher. The interviews ranged from 12-24 minutes in length.

Following the principal interviews, the researcher distributed the School Culture Survey electronically via email to each of the four middle school principals. The principals then forwarded the email to his/her staff for completion. Three weekly reminder emails were distributed before the survey was closed. These data were collected using a Google Form, and the responses were collected on a Google Sheet. These data were kept on a password-protected computer and were only accessible to the researcher. There were 154 respondents to the survey from the four middle schools. School A had 40 respondents which represents 64.5% of certified staff. School B had 35 respondents, which represents 55.6% of certified staff. School C had 45 respondents, which represents 100% of certified staff. School D had 34 respondents, which represents 54.8% of certified staff.

While teachers were participating in the survey, the researcher used the information on active data-driven teams provided during the principal interviews to randomly select a data-driven team from each school for a focus group interview. The researcher used the "Random Name Picker" found on miniwebtool.com to randomly choose a data-driven team from each school. Each of the data-driven team names were entered into the random name generator and then the generator selected the team for the focus group interview. Once the data-driven team was chosen, the researcher contacted the principal of each school via email for the email addresses of the teachers in each data-driven team. The researcher then sent an email to each member of the data-driven team to schedule a focus group interview at each of the four middle schools. The participants in each of the focus groups selected a day and time which was convenient for their teams.

The researcher used the Rev.com app to record the interview and transcribed the interview before deleting the recording. The transcriptions were kept on a password-protected computer and were only accessible to the researcher. The interviews ranged from 34-51 minutes in length. There were 17 participants in the focus group interviews from the four middle schools. School A had four participants. School B had six participants. School C had two participants. School D had five participants. The data-driven teams randomly chosen to participate were in the following grade levels and subject areas: 6th math, 7th math, 7th language arts, and 8th language arts.

The researcher also collected data for each school for the 2012-2013 school year and the 2015-2016 school year from the North Carolina School Report Card website. The researcher collected the following data for each school: 6th, 7th and 8th grade reading EOG proficiency; 6th, 7th and 8th grade math EOG proficiency; overall reading proficiency; overall math proficiency; and overall EOG proficiency. This data collection varied from the plan presented in Chapter 3. According to Dr. Tammy Howard, Director of Accountability Services for the North Carolina Department of Public Instruction, "there is not a way to compare scores from 2012-2013 and beyond to scores prior to that year. There is not a bridge or concordance table for test scores across editions of the test" (Howard, personal communication, 2017). She suggested, "only using 2012-2013 and beyond" and

> being mindful of the new Level 3 that was reported initially in 2013-2014. That Level 3 is not comparable to the Level 3 in 2012-2013; however, the Level 3 in 2012-2013 is the same as Level 4 in 2013-2014, and likewise, the Level 4 in 2012-2013 is the same as Level 5 in 2013-2014. (Howard, personal communication, 2017)

Thus, the researcher collected data from 2012-2013 for students who performed at Levels 3 and 4 and then collected data from 2015-2016 for students who performed at Levels 4 and 5. These data were stored in spreadsheet form on a password-protected computer and were only accessible to the researcher.

The researcher also collected data from the North Carolina Teacher Working Conditions website for 2012 and 2016. The researcher collected the survey results for each school for each of the following survey items:

- Q 2.1 b "Teachers have time available to collaborate with colleagues" (NCTWCS, n.d.).
- Q 2.1 c "Teachers are allowed to focus on educating students with minimal interruptions" (NCTWCS, n.d.).
- Q 6.1 a "Teachers are recognized as educational experts" (NCTWCS, n.d.).
- Q 6.1 b "Teachers are trusted to make sound professional decisions about instruction" (NCTWCS, n.d.).
- Q 6.1 c "Teachers are relied upon to make decisions about educational issues" (NCTWCS, n.d.).
- Q 6.5 "Teachers have an appropriate level of influence on decision making in this school" (NCTWCS, n.d.).
- Q 7.1 a "There is an atmosphere of trust and mutual respect in this school" (NCTWCS, n.d.).
- Q 7.1 j "The faculty are recognized for accomplishments" (NCTWCS, n.d.).
- Q 6.1 e "The faculty has an effective process for making group decisions to solve problems" (NCTWCS, n.d.).
- Q 9.1 g "Teachers collaborate to achieve consistency on how student work is

assessed" (NCTWCS, n.d.).

- Q 8.1 j "Professional development provides opportunities for teachers to work with colleagues to refine teaching practices" (NCTWCS, n.d.).
- Q 10.6 "Overall, my school is a good place to work and learn" (NCTWCS, n.d.).
- Q 4.1 f "Parents/guardians support teachers, contributing to the success of their students" (NCTWCS, n.d.).
- Q 4.1 d "Teachers provide parents/guardians with useful information about student learning" (NCTWCS, n.d.).

These data were stored in spreadsheet form on a password-protected computer and were only accessible to the researcher.

Lastly, the researcher collected data from the NC EVAAS website. In order to have access to these data, the researcher met with the chosen county's Director of Middle Grades who provided these data to the researcher. The EVAAS data collected included the growth composite for 2013-2014 and 2015-2016 in 6th, 7th, and 8th reading; 6th, 7th and 8th math; overall reading; overall math; and overall EOG. This data collection varied from the plan presented in Chapter 3 as EVAAS data are not archived each year and are only available for the 3 previous years, thus the researcher only had access to EVAAS data from the 2013-2014, 2014-2015, and 2015-2016 school years. These data were stored in spreadsheet form on a password-protected computer and were only accessible to the researcher.

There were no unusual circumstances encountered during data collection.

Data Analysis

As shown in Table 1, the following data were used to answer each of the research

questions.

1. What is the impact of data-driven teams on student learning?
    b. EOG results (before implementation to after implementation)
        i. 6-8 Reading
        ii. 6-8 Math
    e. EVAAS Student Growth (before implementation to after implementation)
        i. 6-8 Reading
        ii. 6-8 Math
        iii. School Overall Growth Rating
    f. Principal Interviews
    g. Focus Group Interviews
2. What is the impact of data-driven teams on collaborative practice?
    a. TWC Survey items (before implementation to after implementation):
        i. Q 2.1 b "Teachers have time available to collaborate with colleagues" (NCTWCS, n.d.).
        ii. Q 8.1 j "Professional development provides ongoing opportunities for teachers to work with colleagues to refine teaching practices" (NCTWCS, n.d.).
        iii. Q 9.1 g "Teachers collaborate to achieve consistency on how student work is assessed" (NCTWCS, n.d.).
    b. School Culture Survey (Gruenert & Whitaker, 2015)
        i. Teacher Collaboration Category (Items 3, 8, 15, 23, 29, 33)
    c. Principal Interviews
    d. Focus Group Interviews

3. What is the impact of data-driven teams on school culture?
    a. TWC Survey items (before implementation to after implementation): These items are categorized by their relationship to the categories on Gruenert and Whitaker's (2015) School Culture Survey.
        i. Collaborative Leadership
            1. Q 2.1 b "Teachers have time available to collaborate with colleagues" (NCTWCS, n.d.).
            2. Q 2.1 c "Teachers are allowed to focus on educating students with minimal interruptions" (NCTWCS, n.d.).
            3. Q 6.1 a "Teachers are recognized as educational experts" (NCTWCS, n.d.).
            4. Q 6.1 b "Teachers are trusted to make sound professional decisions about instruction."
            5. Q 6.1 c "Teachers are relied upon to make decisions about educational issues" (NCTWCS, n.d.).
            6. Q 6.5 "Teachers have an appropriate level of influence on decision making in this school" (NCTWCS, n.d.).
            7. Q 7.1 a "There is an atmosphere of trust and mutual respect in this school" (NCTWCS, n.d.).
            8. Q 7.1 j "The faculty are recognized for accomplishments" (NCTWCS, n.d.).
        ii. Teacher Collaboration
            1. Q 6.1 e "The faculty has an effective process for making group decisions to solve problems" (NCTWCS, n.d.).

2. Q 9.1 g “Teachers collaborate to achieve consistency on how student work is assessed” (NCTWCS, n.d.).

iii. Professional Judgement

1. Q 8.1 j “Professional development provides opportunities for teachers to work with colleagues to refine teaching practices” (NCTWCS, n.d.).

iv. Unity of Purpose

1. Q 10.6 “Overall, my school is a good place to work and learn” (NCTWCS, n.d.).

v. Learning Partnership

1. Q 4.1 f “Parents/guardians support teachers, contributing to the success of their students” (NCTWCS, n.d.).
2. Q 4.1 d “Teachers provide parents/guardians with useful information about student learning” (NCTWCS, n.d.).

b. School Culture Survey (Gruenert & Whitaker, 2015)

i. All survey items

c. Principal Interviews

d. Focus Group Interviews

A priori coding was used to organize the themes in the principal and focus group interviews with the aim to align the findings to the research questions in order to draw conclusions and report findings. A priori codes were derived from the conceptual framework, the research questions, and the researcher’s prior knowledge and subject expertise (Center for Evaluation and Research, n.d.). The researcher used the following provisional codes and subcodes:

a. student learning:

i. student achievement,

ii. student scores,

iii. student performance;

b. collaborative practice:

i. work together,

ii. plan together,

iii. Teamwork,

iv. trust each other,

v. Listen,

vi. Relationships,

vii. teaching practices,

viii. meet student needs,

ix. share responsibility;

c. School culture

i. feeling valued,

ii. feeling trusted,

iii. teachers as leaders,

iv. parental involvement and support

v. positive work environment

vi. positive learning environment

As the data were "collected, coded, and analyzed" (Hedlund-de Witt, 2013, p. 13), the researcher used inductive reasoning to modify and expand the predetermined codes to include emerging codes as well (Hedlund-de Witt, 2013). The codes that emerged are

described fully in the analysis below.

Data and Findings for Research Question 1

The results of the paired sample *t* tests for each of the four middle school's EOG scores in 6-8 reading and 6-8 math are presented below. Paired sample *t* tests were used to determine whether there were statistically significant mean differences between the EOG scores for the four middle schools studied from 2012 to 2016.

For School A, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 3). The difference scores for the EOG scores for School A from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test ($p = .936$; see Figure 4). EOG scores for School A were higher in 2016 ($M = 65.483$, $SD = 6.143$) than in 2012 ($M = 56.900$, $SD = 4.423$); a statistically significant mean increase of 8.58 ($SE = 1.43$), $t(5) = 5.999$, $p = .002$, $d = 2.449$ was observed in EOG scores from 2013 to 2016 in School A (see Figure 5).

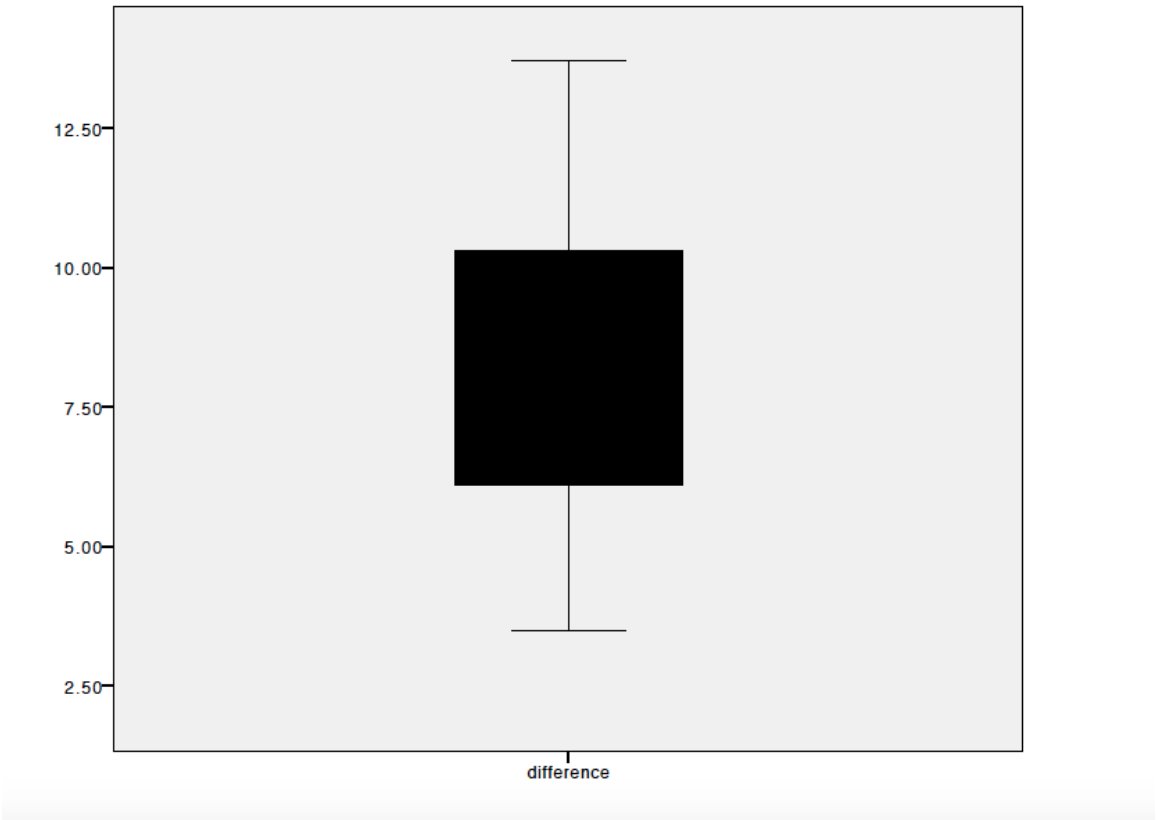

Figure 3. School A Paired Sample *t*-test Box Plot for EOG Scores from 2012 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.203	6	.200*	.977	6	.936

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

a. Lilliefors Significance Correction

Figure 4. School A Paired Sample *t*-test Tests of Normality for EOG Scores from 2012 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EOG scores for School A in 2016	65.4833	6	6.14277	2.50778
	EOG scores for School A in 2012	56.9000	6	4.42312	1.80573

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	EOG scores for School A in 2016 & EOG scores for School A in 2012	6	.828	.042

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence ... Lower
Pair 1	EOG scores for School A in 2016 - EOG scores for School A in 2012	8.58333	3.50452	1.43071	4.90556

Paired Samples Test

		Paired ... 95% Confidence Interval of the ... Upper	t	df	Sig. (2-tailed)
Pair 1	EOG scores for School A in 2016 - EOG scores for School A in 2012	12.26110	5.999	5	.002

Figure 5. School A Paired Sample *t*-test Results for EOG Scores from 2012 to 2016.

For School B, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 6). The difference scores for the EOG scores for School B from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .309; see Figure 7). EOG scores for School B were higher in 2016 (M = 46.700, SD = 6.173) than in 2012 (M = 40.067, SD = 6.199); a statistically significant mean increase of 6.63 (SE = 1.47), $t(5) = 4.514$, p = .006, d = 1.843 was observed in EOG scores from 2012 to 2016 in School B (see Figure 8).

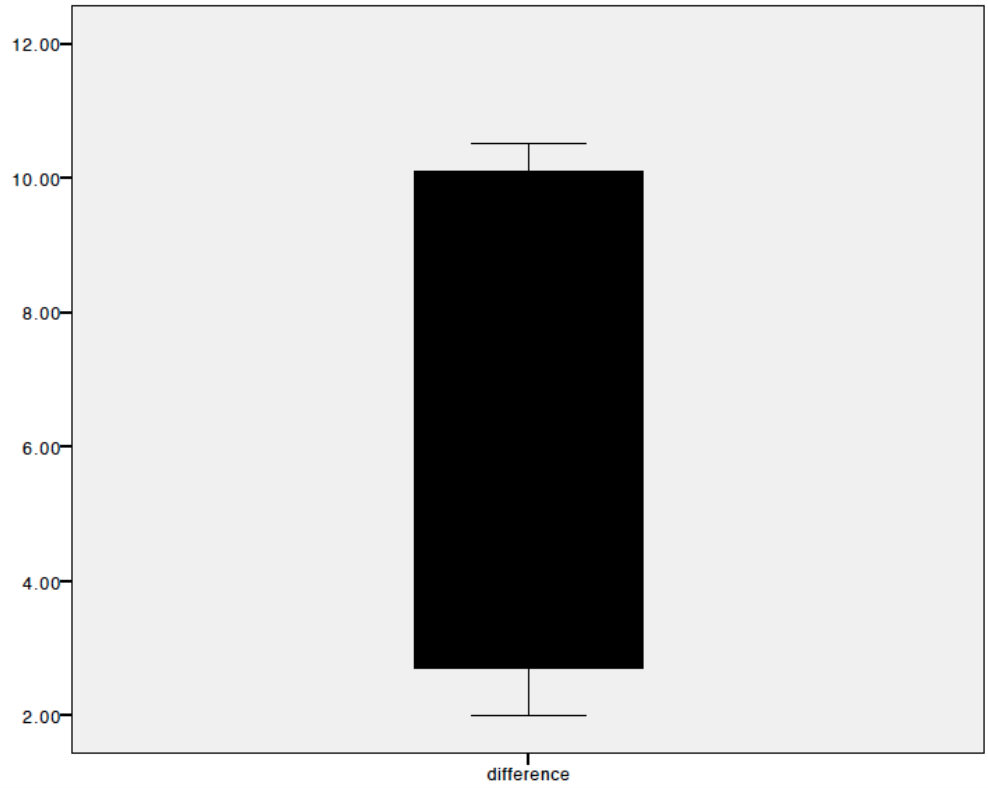

Figure 6. School B Paired Sample *t*-test Box Plot for EOG Scores from 2012 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.207	6	.200*	.888	6	.309

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

a. Lilliefors Significance Correction

Figure 7. School B Paired Sample *t*-test Tests of Normality for EOG Scores from 2012 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EOG_B2016	46.7000	6	6.17284	2.52005
	EOG_B2012	40.0667	6	6.19860	2.53057

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	EOG_B2016 & EOG_B2012	6	.831	.041

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence ... Lower
Pair 1	EOG_B2016 - EOG_B2012	6.63333	3.59981	1.46962	2.85556

Paired Samples Test

		Paired ... 95% Confidence Interval of the ... Upper	t	df	Sig. (2-tailed)
Pair 1	EOG_B2016 - EOG_B2012	10.41111	4.514	5	.006

Figure 8. School B Paired Sample *t*-test Results for EOG Scores from 2012 to 2016.

For School C, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 9). The difference scores for the EOG scores for School C from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .655; see Figure 10). EOG scores for School C were higher in 2016 (M = 56.533, SD = 5.253) than in 2012 (M = 53.000, SD = 6.513); a statistically significant mean increase of 3.533 (SE = 2.26), $t(5) = 1.564$, p = .179, d = .6384 was observed in EOG scores from 2012 to 2016 in School C (see Figure 11).

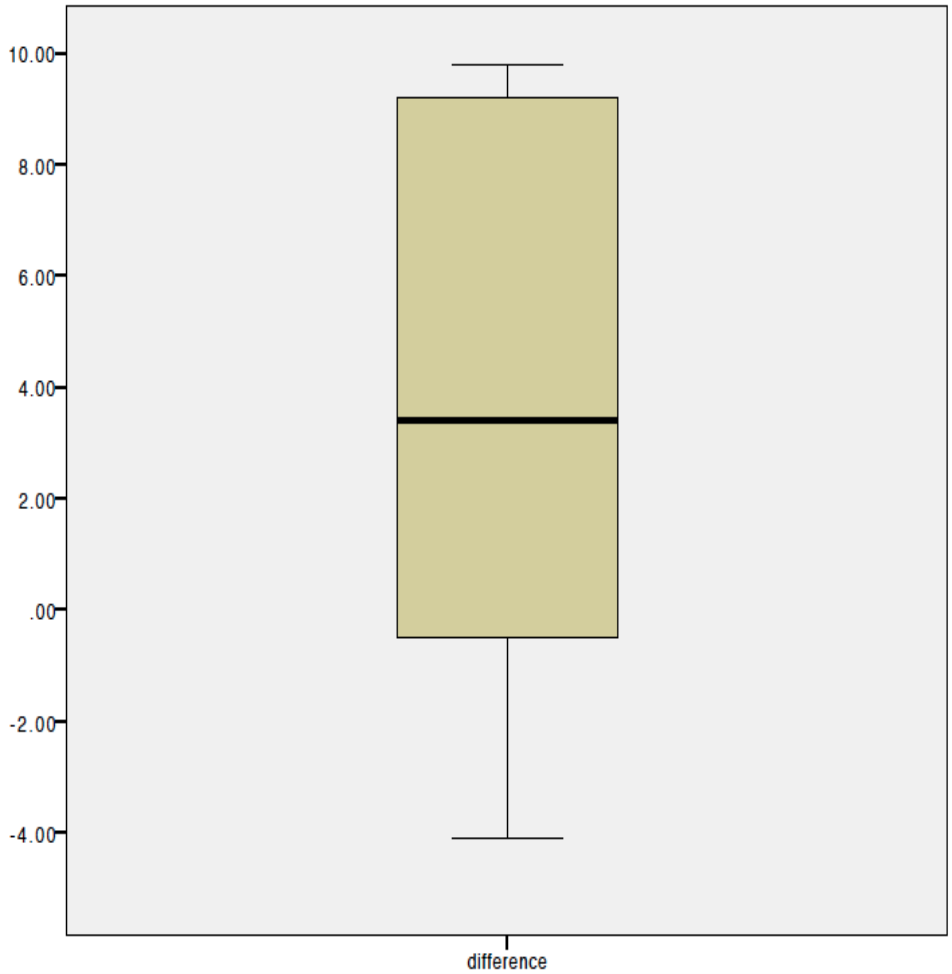

Figure 9. School C Paired Sample *t*-test Box Plot for EOG Scores from 2012 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.180	6	.200*	.939	6	.655

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

a. Lilliefors Significance Correction

Figure 10. School C Paired Sample *t*-test Tests of Normality for EOG Scores from 2012 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	2016 EOG School C	56.5333	6	5.25268	2.14440
	2012 EOG School C	53.0000	6	6.51276	2.65882

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	2016 EOG School C & 2012 EOG School C	6	.575	.232

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence ... Lower
Pair 1	2016 EOG School C - 2012 EOG School C	3.53333	5.53486	2.25960	-2.27515

Paired Samples Test

		Paired ... 95% Confidence Interval of the ...			
		Upper	t	df	Sig. (2-tailed)
Pair 1	2016 EOG School C - 2012 EOG School C	9.34181	1.564	5	.179

Figure 11. School C Paired Sample *t*-test Results for EOG Scores from 2012 to 2016.

For School D, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 12). The difference scores for the EOG scores for School D from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .124; see Figure 13). EOG scores for School D were higher in 2016 (M = 51.65, SD = 6.65695) than in 2012 (M = 47.4333, SD = 1.84463); a statistically significant mean increase of 4.21667 (SE = 2.36), $t(5) = 1.787$, p = .134, d = .7297 was observed in EOG scores from 2012 to 2016 in School D (see Figure 14).

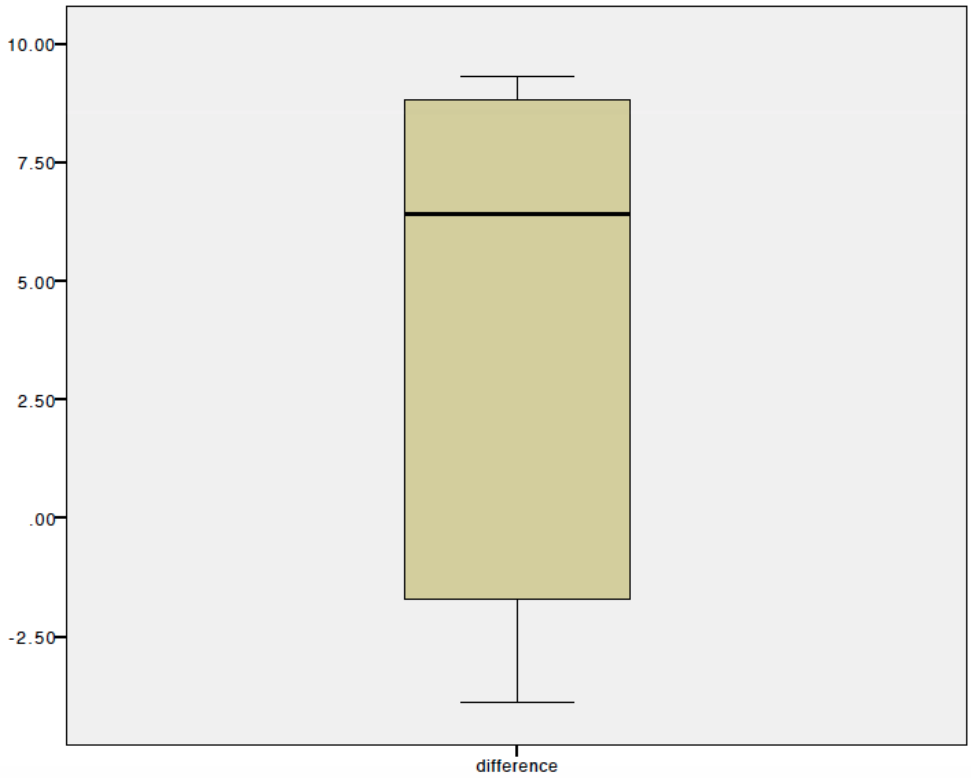

Figure 12. School D Paired Sample *t*-test Box Plot for EOG Scores from 2012 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.276	6	.171	.837	6	.124

a. Lilliefors Significance Correction

Figure 13. School D Paired Sample *t*-test Tests of Normality for EOG Scores from 2012 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	EOG_D2016	51.6500	6	6.65695	2.71769
	EOG_D2012	47.4333	6	1.84463	.75307

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	EOG_D2016 & EOG_D2012	6	.583	.224

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence ... Lower
Pair 1	EOG_D2016 - EOG_D2012	4.21667	5.77838	2.35901	-1.84737

Paired Samples Test

		Paired ... 95% Confidence Interval of the ...			
		Upper	t	df	Sig. (2-tailed)
Pair 1	EOG_D2016 - EOG_D2012	10.28070	1.787	5	.134

Figure 14. School D Paired Sample *t*-test Results for EOG Scores from 2012 to 2016.

The results of the paired sample *t* tests for each of the four middle school's

EVAAS growth scores in 6-8 reading and 6-8 math are presented below. Paired sample *t* tests were used to determine whether there were statistically significant mean differences between the EVAAS scores for the four middle schools studied from 2014 to 2016.

For School A, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 15). The difference scores for the EVAAS scores for School A from 2014 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .912; see Figure 16). EVAAS scores for School A were lower in 2016 (M = -.4000, SD = .72388) than in 2014 (M = .2500, SD = 1.68137); a statistically significant mean decrease of -.6500 (SE = .50316), $t(5) = -1.292$, p = .253, d = -.5274 was observed in EVAAS scores from 2014 to 2016 in School A (see Figure 17).

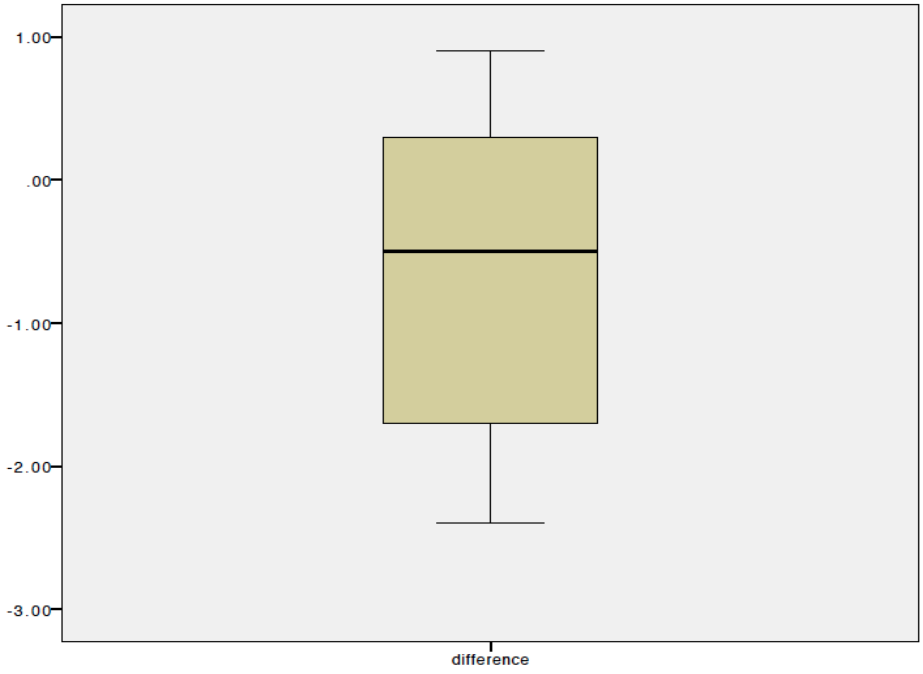

Figure 15. School A Paired Sample *t*-test Box Plot for EVAAS Scores from 2014 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.150	6	.200*	.973	6	.912

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

a. Lilliefors Significance Correction

Figure 16. School A Paired Sample *t*-test Tests of Normality for EVAAS Scores from 2014 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School A EVAAS 2016	-.4000	6	.72388	.29552
	School A EVAAS 2014	.2500	6	1.68137	.68642

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School A EVAAS 2016 & School A EVAAS 2014	6	.753	.084

Paired Samples Test

		Paired Differences			
		Mean	Std. Deviation	Std. Error Mean	95% Confidence ... Lower
Pair 1	School A EVAAS 2016 - School A EVAAS 2014	-.65000	1.23248	.50316	-1.94341

Paired Samples Test

		Paired ... 95% Confidence Interval of the...			
		Upper	t	df	Sig. (2-tailed)
Pair 1	School A EVAAS 2016 - School A EVAAS 2014	.64341	-1.292	5	.253

Figure 17. School A Paired Sample *t*-test Results for EVAAS Scores from 2014 to 2016.

For School B, there were no outliers in the data, as assessed by inspection of a

box plot (see Figure 18). The difference scores for the EVAAS scores for School B from 2014 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .611; see Figure 19). EVAAS scores for School B were lower in 2016 (M = -.7333, SD = 1.53058) than in 2014 (M = -1.4000, SD = 1.81218); a statistically significant mean increase of .66667 (SE = .92616), *t*(5) = .720, p = .504, d = .2939 was observed in EVAAS scores from 2014 to 2016 in School B (see Figure 20).

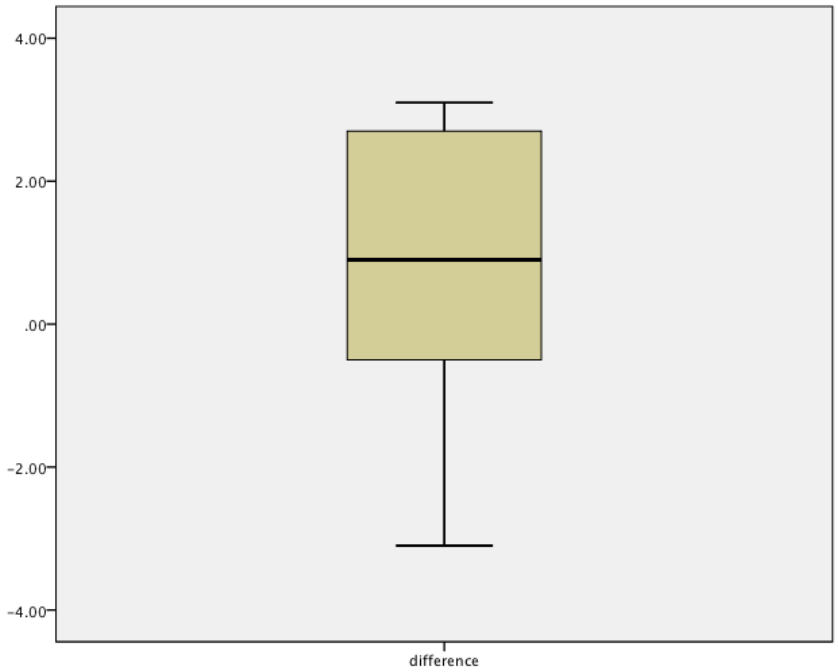

Figure 18. School B Paired Sample *t*-test Box Plot for EVAAS Scores from 2014 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.190	6	.200*	.934	6	.611

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

a. Lilliefors Significance Correction

Figure 19. School B Paired Sample *t*-test Tests of Normality for EVAAS Scores from 2014 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School B EVAAS 2016	-.7333	6	1.53058	.62486
	School B EVAAS 2012	-1.4000	6	1.81218	.73982

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School B EVAAS 2016 & School B EVAAS 2012	6	.087	.871

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	School B EVAAS 2016 - School B EVAAS 2012	.66667	2.26863	.92616	-1.71411	3.04744	.720	5	.504

Figure 20. School B Paired Sample *t*-test Results for EVAAS Scores from 2014 to 2016.

For School C, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 21). The difference scores for the EVAAS scores for School C from 2014 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .376; see Figure 22). EVAAS scores for School C were lower in 2016 (M = .1500, SD = 3.15769) than in 2014 (M = 1.7, SD = 1.50466); a statistically significant mean decrease of -1.55 (SE = .87436), $t(5) = -1.773$, p = .136, d = -.7237 was observed in EVAAS scores from 2014 to 2016 in School C (see Figure 23).

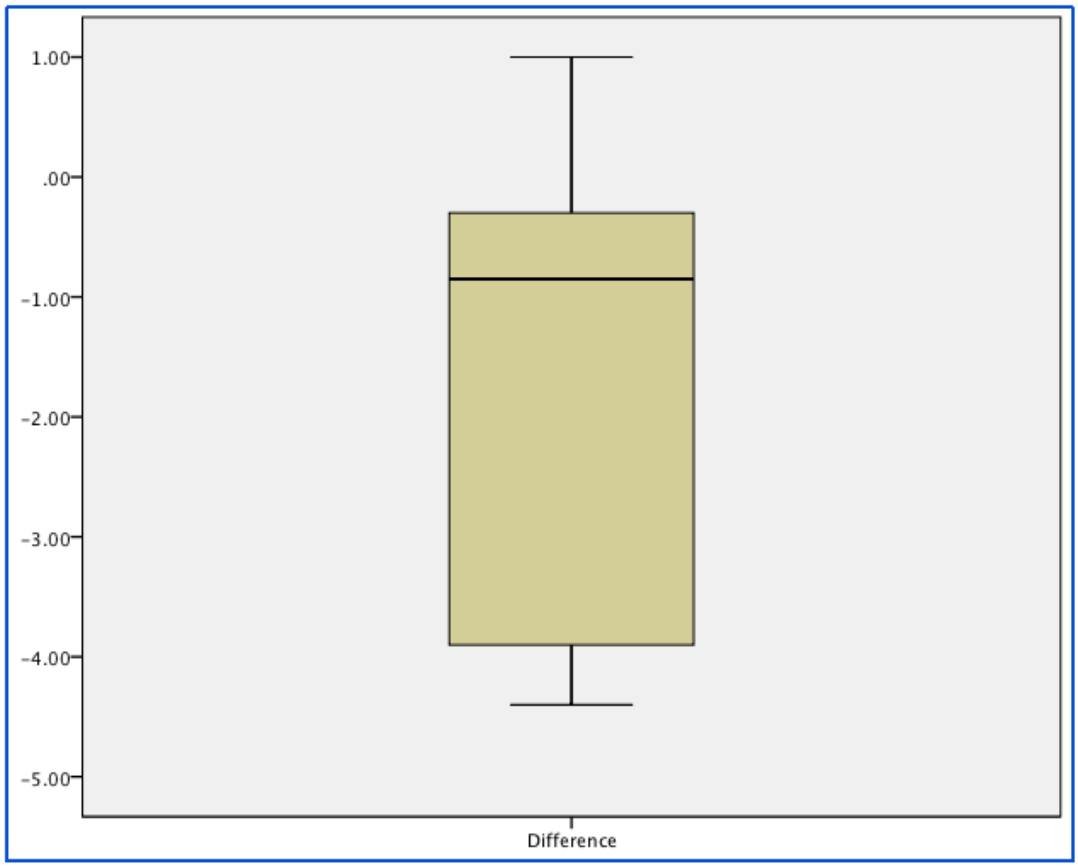

Figure 21. School C Paired Sample *t*-test Box Plot for EVAAS Scores from 2014 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Difference	.232	6	.200*	.900	6	.376

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

a. Lilliefors Significance Correction

Figure 22. School C Paired Sample *t*-test Tests of Normality for EVAAS Scores from 2014 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School C EVAAS 2016	.1500	6	3.15769	1.28912
	School C EVAAS 2014	1.7000	6	1.50466	.61427

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School C EVAAS 2016 & School C EVAAS 2014	6	.805	.053

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School C EVAAS 2016 - School C EVAAS 2014	-1.55000	2.14173	.87436	-3.79761	.69761	-1.773	5	.136

Figure 23. School C Paired Sample *t*-test Results for EVAAS Scores from 2014 to 2016.

For School D, there was an outlier in the data, as assessed by inspection of a box plot; however, inspection of its value did not reveal it to be extreme and it was kept in the analysis (see Figure 24). The difference scores for the EVAAS scores for School D from 2014 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .211; see Figure 25). EVAAS scores for School D were lower in 2016 (M = .2333, SD = 2.45085) than in 2014 (M = .9500, SD = 2.43125); a statistically significant mean decrease of -.71667 (SE = .1.40200), $t(5) = -5.11$, p = .631, d = -.2087 was observed in EVAAS scores from 2014 to 2016 in School D (see Figure 26).

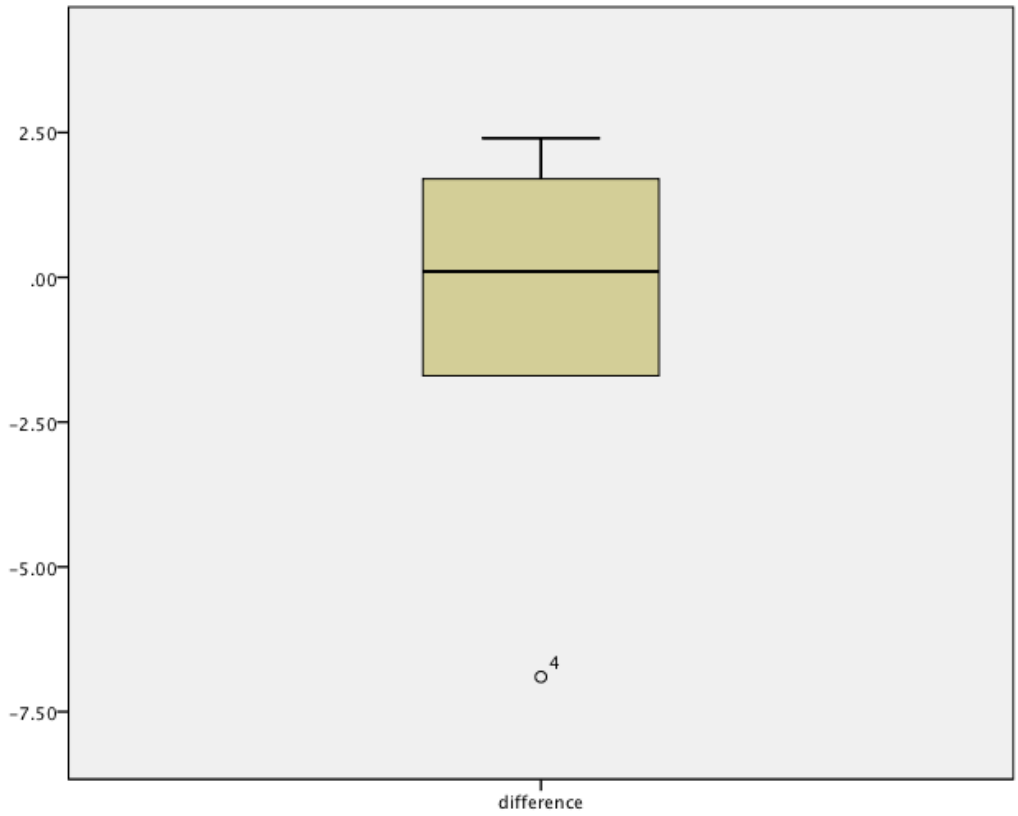

Figure 24. School D Paired Sample *t*-test Box Plot for EVAAS Scores from 2014 to 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
difference	.221	6	.200*	.866	6	.211

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

a. Lilliefors Significance Correction

Figure 25. School D Paired Sample *t*-test Tests of Normality for EVAAS Scores from 2014 to 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School D EVAAS 2016	.2333	6	2.45085	1.00056
	School D EVAAS 2014	.9500	6	2.43125	.99256

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School D EVAAS 2016 & School D EVAAS 2014	6	.010	.984

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School D EVAAS 2016 - School D EVAAS 2014	-.71667	3.43419	1.40200	-4.32063	2.88730	-.511	5	.631

Figure 26. School D Paired Sample *t*-test Results for EVAAS Scores from 2014 to 2016.

During principal interviews, for the topic of student learning, the themes of increased student learning and focus on data were evident in all four principal responses. The following was taken from an interview session with the principal from School B to get more input on the impact of data-driven teams on student learning.

Interviewer: "How do you think your data-driven teams' meetings have impacted student learning?"

School B Principal:

> It's increased student learning because they're planning together. They're developing the best strategies that work for our students because the best strategies that work at other schools might not be the best strategies that work here. They're using their professional experience from those common assessments to increase student learning.

During teacher focus group interviews, for the topic of student learning, the themes of being stronger together, focusing on improving student performance as a team,

and adjusting teaching based on data emerged. The following was taken from two different focus group interviews, one with School A and one with School B, to get more insight on how data-driven teams have impacted student learning. The following are their answers when asked how data-driven teams have impacted student learning.

Focus Group, School A

Teacher 2:

I also think we've discovered this year we're stronger, the three of us, than we are separately. I think we have discovered that we all three bring really different strengths to the table and so instead of trying to go in and do it on our own, it's how can I use you to make my stuff stronger. I think that impacts student learning because they are getting stronger, they're doing better work, because they're getting our strengths.

Teacher 1: "Three different brains collaborate to create an assignment for the kids that in the end produces much better results than if I just did it by myself."

Teacher 3: "The lessons end up being more well rounded and"

Teacher 2: "hits more of our kids."

Teacher 3: "Exactly. Exactly. More kids can understand because we're coming at it from such different angles and trying to incorporate all those different personalities and teaching styles."

Focus Group, School B

Teacher 1: "I think the coherence across the grade level has helped the most."

Teacher 2: "It's nice, in a sense that if we're all giving essentially the same instruction, with our own little tweaks to fit our personalities, it helps to ensure our data is more accurate."

When principal interviews and teacher focus group interviews for each school were examined together, the following common themes emerged for the topic of student learning. For School A, the theme of examining student data to change instructional practice emerged. The principal and data-driven teams from School A discussed the use of student data to "make instructional adjustments" (School A Principal) to meet the needs of students. For School B, the theme of improving student performance as a team emerged. The principal and data-driven team from School B were focused on working together and using the strengths of the team to meet the students' academic needs. For School C, the theme of focus on student data emerged. Both the principal and data-driven team for School C described their use of data. The data-driven team members use data to pull small groups to target specific standards. For School D, the theme of using student data to focus instruction emerged. The principal and the data-driven team discussed ways student data were used to focus instruction on needed standards and objectives.

An interesting discrepancy emerged during the interviews at School C. The principal from School C spoke of a dedicated day and time each week for the data-driven team to meet; however, the data-driven team discussed how "it was just too much for everybody" and they "kind of just talk in the hallways." They also discussed how their collaboration was "more organic" than a dedicated meeting day each week. While research indicates the importance of a dedicated day and time for the data-driven team to meet, this particular team did not participate in weekly meetings. This did not seem to impact this school's results, as their students showed a statistically significant mean increase of 3.533 on EOG scores from 2012 to 2016. The researcher did not interview other teams at School C to determine if they met weekly.

According to the quantitative and qualitative data examined, data-driven teams impacted student learning in all four middle schools researched, and there were statistically significant mean increases in EOG scores from 2012 to 2016; however, only one school showed a statistically significant mean increase in EVAAS scores from 2014 to 2016. In addition, in each of the four schools, the themes of focusing on data and improving student performance were evident during principal interviews and teacher focus group interviews.

Data and Findings for Research Question 2

The results of the paired sample *t* tests for each of the four middle school's Teacher Working Condition Survey results for Collaborative Practice survey items are presented below. Paired sample *t* tests were used to determine whether there were statistically significant mean differences between Teacher Working Conditions Survey: Collaborative Practice Items for the four middle schools studied from 2012 to 2016.

For School A, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 27). The difference scores for the Teacher Working Conditions Survey: Collaborative Practice Items scores for School A from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test ($p = .389$; see Figure 28). Teacher Working Conditions Survey: Collaborative Practice Items scores for School A were lower in 2016 ($M = 84.4$, $SD = 6.64304$) than in 2012 ($M = 85.5333$, $SD = 13.76311$); a statistically significant mean decrease of .86667 ($SE = 8.84954$), $t(2) = .098$, $p = .931$, $d = .0565$ was observed in Teacher Working Conditions Survey: Collaborative Practice Items scores from 2012 to 2016 in School A (see Figure 29).

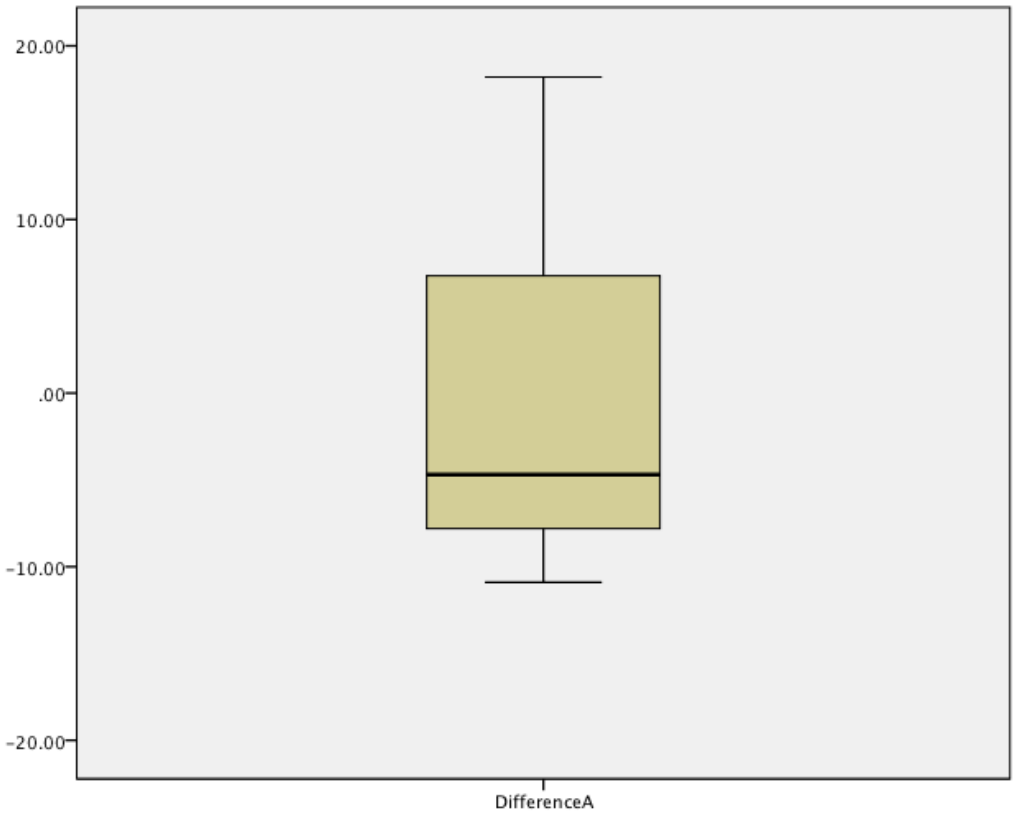

Figure 27. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: Collaborative Practice Items Scores for School A from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceA	.308	3	.	.901	3	.389

a. Lilliefors Significance Correction

Figure 28. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School A from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School A TWC Collaborative Practice 2016	84.4000	3	6.64304	3.83536
	School A TWC Collaborative Practice 2012	83.5333	3	13.76311	7.94614

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School A TWC Collaborative Practice 2016 & School A TWC Collaborative Practice 2012	3	-.008	.995

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School A TWC Collaborative Practice 2016 - School A TWC Collaborative Practice 2012	.86667	15.32786	8.84954	-37.20985	38.94319	.098	2	.931

Figure 29. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School A from 2012 and 2016.

For School B, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 30). The difference scores for the Teacher Working Conditions Survey: Collaborative Practice Items scores for School B from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .230; see Figure 31). Teacher Working Conditions Survey: Collaborative Practice Items scores for School B were higher in 2016 (M = 90.4333, SD = 4.38786) than in 2012 (M = 86.1, SD = 6.21932); a statistically significant mean increase of 4.3333 (SE = 1.44376), $t(2) = 3.001$, p = .095, d = 1.7329 was observed in Teacher Working Conditions Survey: Collaborative Practice Items scores from 2012 to 2016 in School B (see Figure 32).

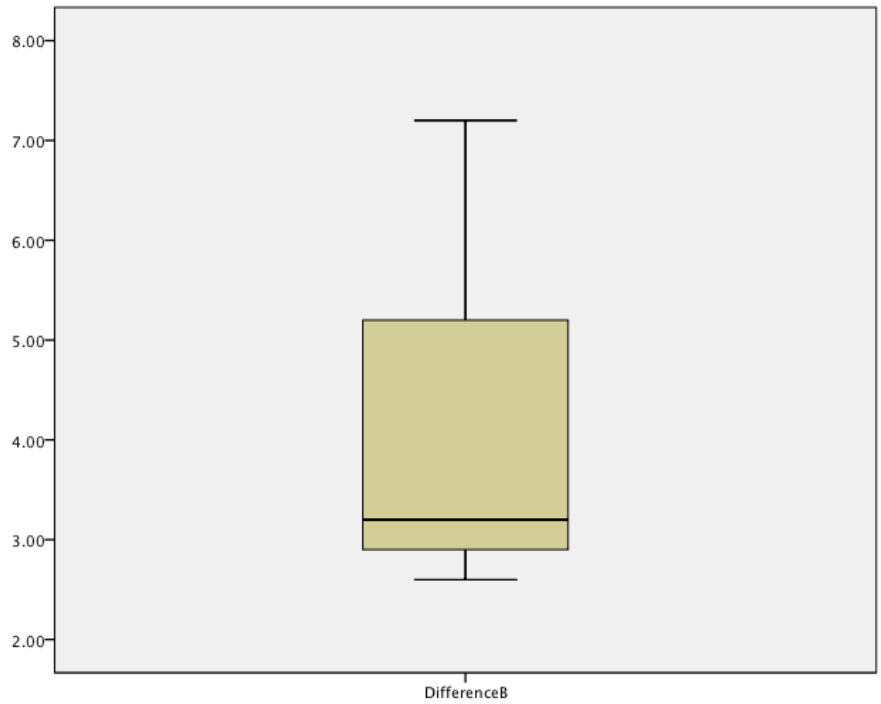

Figure 30. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: Collaborative Practice Items Scores for School B from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceB	.341	3	.	.846	3	.230

a. Lilliefors Significance Correction

Figure 31. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School B from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School B TWC Collaborative Practice 2016	90.4333	3	4.38786	2.53333
	School B TWC Collaborative Practice 2012	86.1000	3	6.21932	3.59073

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School B TWC Collaborative Practice 2016 & School B TWC Collaborative Practice 2012	3	.947	.208

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School B TWC Collaborative Practice 2016 - School B TWC Collaborative Practice 2012	4.33333	2.50067	1.44376	-1.87867	10.54533	3.001	2	.095

Figure 32. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School B from 2012 and 2016.

For School C, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 33). The difference scores for the Teacher Working Conditions Survey: Collaborative Practice Items scores for School C from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .172; see Figure 34). Teacher Working Conditions Survey: Collaborative Practice Items scores for School C were lower in 2016 (M = 90.1333, SD = 4.86861) than in 2012 (M = 93.6667, SD = 4.08085); a statistically significant mean decrease of -3.53333 (SE = 3.84895), $t(2) = -.918$, p = .456, d = -0.53 was observed in Teacher Working Conditions Survey: Collaborative Practice Items scores from 2012 to 2016 in School C (see Figure 35).

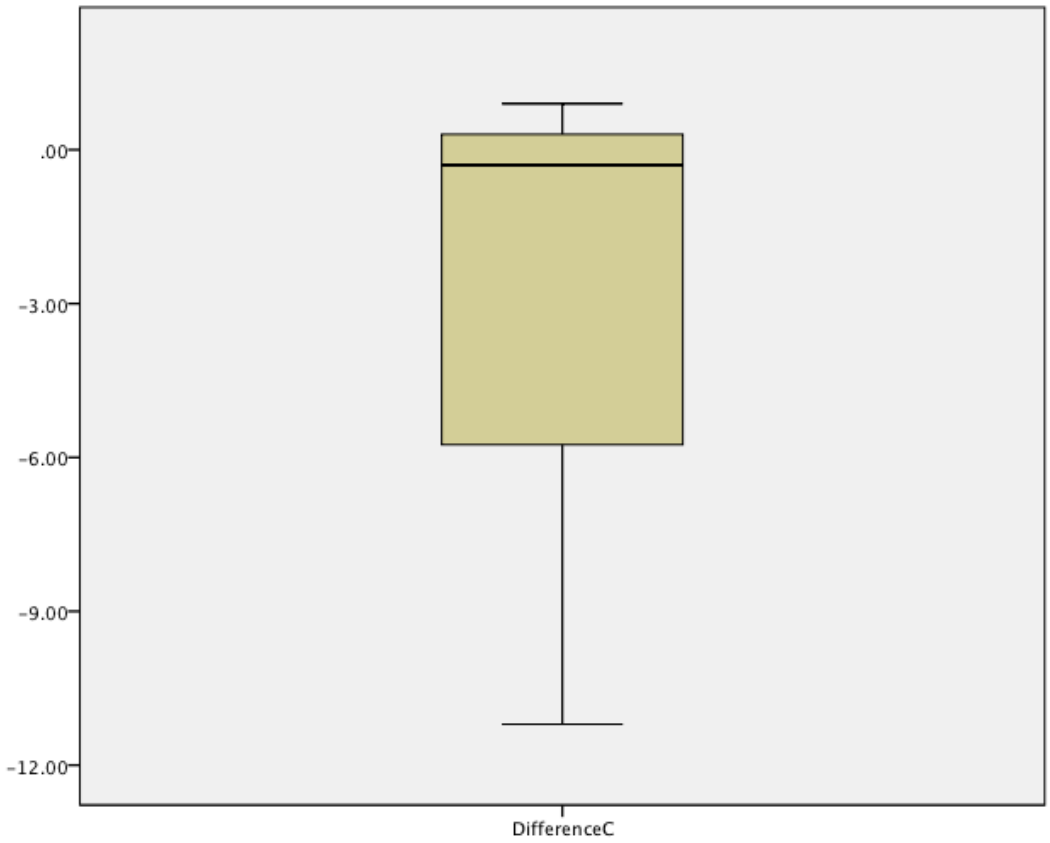

Figure 33. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: Collaborative Practice Items Scores for School C from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceC	.353	3	.	.824	3	.172

a. Lilliefors Significance Correction

Figure 34. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School C from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School C TWC Collaborative Practice 2016	90.1333	3	4.86861	2.81089
	School C TWC Collaborative Practice 2012	93.6667	3	4.08085	2.35608

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School C TWC Collaborative Practice 2016 & School C TWC Collaborative Practice 2012	3	-.103	.934

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School C TWC Collaborative Practice 2016 - School C TWC Collaborative Practice 2012	-3.53333	6.66658	3.84895	-20.09404	13.02738	-.918	2	.456

Figure 35. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School C from 2012 and 2016.

For School D, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 36). The difference scores for the Teacher Working Conditions Survey: Collaborative Practice Items scores for School D from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .122; see figure 37). Teacher Working Conditions Survey: Collaborative Practice Items scores for School D were higher in 2016 (M = 91.9667, SD = 4.99633) than in 2012 (M = 91.2667, SD = 5.97857); a statistically significant mean increase of .70000 (SE = 6.31295), $t(2) = .111$, p = .922, d = .064 was observed in Teacher Working Conditions Survey: Collaborative Practice Items scores from 2012 to 2016 in School D (see figure 38).

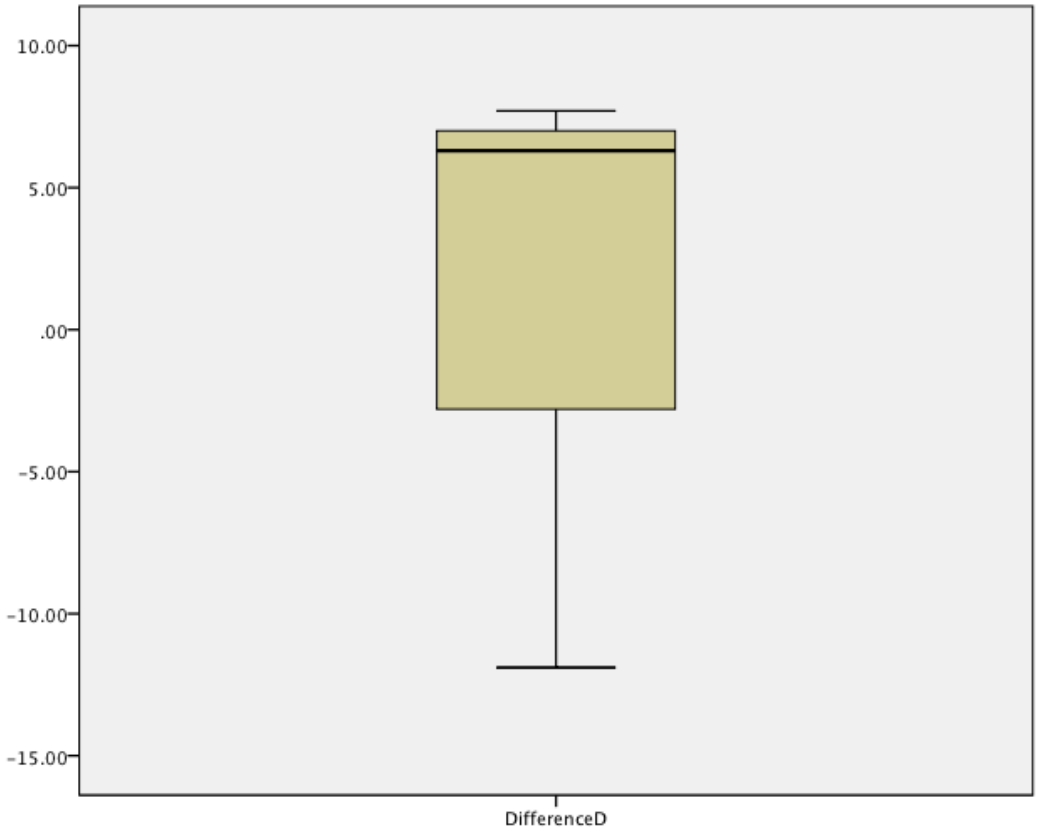

Figure 36. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: Collaborative Practice Items Scores for School D from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceD	.362	3	.	.803	3	.122

a. Lilliefors Significance Correction

Figure 37. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School D from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School D TWC Collaborative Practice 2016	91.9667	3	4.99633	2.88463
	School D TWC Collaborative Practice 2012	91.2667	3	5.97857	3.45173

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School D TWC Collaborative Practice 2016 & School D TWC Collaborative Practice 2012	3	-.985	.110

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	School D TWC Collaborative Practice 2016 - School D TWC Collaborative Practice 2012	.70000	10.93435	6.31295	-26.46243	27.86243	.111	2	.922

Figure 38. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: Collaborative Practice Items Scores for School D from 2012 and 2016.

The results for the School Culture Survey (Gruenert & Whitaker, 2015) items in the Teacher Collaboration Category (Items 3, 8, 15, 23, 29, 33) are described in Table 3.

Table 3

School Culture Survey (Gruenert & Whitaker, 2015) Teacher Collaboration Category (Items 3, 8, 15, 23, 29, 33)

	The School Culture Survey Teacher Collaboration Items							
School	Item 3 Mean Std. Dev.	Item 8 Mean Std. Dev.	Item 15 Mean Std. Dev.	Item 23 Mean Std. Dev.	Item 29 Mean Std. Dev.	Item 33 Mean Std. Dev.	Overall Mean	Overall Standard Deviation
A	3.75	3.55	2.30	3.58	3.88	3.38	3.93	0.96
	0.98	0.85	0.85	0.81	0.61	0.77		
B	3.80	3.89	2.46	3.80	3.77	3.17	3.48	1.00
	1.02	0.72	0.89	0.80	0.88	0.89		
C	4.05	4.05	3.11	4.05	4.20	3.57	3.84	0.96
	0.96	0.96	1.02	0.86	0.55	0.93		
D	3.50	3.94	2.41	3.53	3.65	3.03	3.34	0.98
	1.16	0.81	0.74	0.83	0.73	0.80		

According to Gruenert and Whitaker (2015), a mean score higher than 4.0 with a standard deviation of .60 or lower would indicate that the participants would agree that the culture of their school is "the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80). Only School C met this criteria for one item, "Teachers work together to develop and evaluate programs and projects" (Gruenert & Whitaker, 2015, p. 83). None of the middle schools met the criteria for the overall score on the teacher collaboration items.

During principal interviews, for the topic of collaborative practice, the theme of culture of collaboration was evident. All four principals mentioned collaboration resulting in a common language, common assessments, common rubrics, common strategies, and consistency in classroom practices. The principal from School A added the following insight when asked about how data-driven teams have impacted

collaborative practice:

> It has really jump started a lot of people. It's really taken people who have plateaued and given them a refresh. Quite a few young teachers who are in year two or three . . . I'm sorry. Three or four now, and I believe have been a part of it since coming here, and so there's a really honestly a culture of collaboration . . . they are constantly pushing one another...it's kind of productive tension even then, because they're being accountable to one another, they're being accountable to themselves.

During teacher focus group interviews, for the topic of collaborative practice, the theme of being "all in it together" emerged. The following was taken from two different focus group interviews, one with School B and one with School D, to get more insight on how data-driven teams have impacted collaborative practice. The following are the teacher responses to how data-driven teams have impacted collaborative practice.

Focus Group, School B

Teacher 1: "equally contributing, and all have taken turns steering and rowing . . . had to pull together and realize, all right, we're all in this together. Let's help each other, and do what we can do."

Focus Group, School D

Teacher 4: "it is a lot of give and take. There are no egos here. Nobody feels like they have to be the star. We're all in it together, which is very refreshing."

When principal interviews and teacher focus group interviews for each school were examined together, the following common themes emerged for the topic of collaborative practice. For School A, the themes of support and accountability emerged. The principal and the data-driven team members were able to describe the strengths of

each team member and the value they brought to the team as well as the supportive atmosphere of the meetings. The principal and the data-driven team members also described an atmosphere of "productive tension" and of "being accountable to one another." For School B, the theme of consistency emerged. The principal and data-driven team members described how the collaboration in the team led to consistency in expectations, assessments, and instructional methods. For School C and School D, the theme of collaborative atmosphere emerged. The principals from School C and School D and the data-driven teams from School C and School D described their teams as cohesive and cooperative and described the collaborative processes used during their team meetings.

According to the quantitative data examined, data-driven teams impacted collaborative practice in two of the four middle schools researched as evidenced by statistically significant mean increases in the Teacher Working Conditions: Collaborative Practice Items from 2012 and 2016; however, the qualitative data analyzed indicate that teachers and principals in all four middle schools attribute the collaborative practice in their schools to the implementation of data-driven teams. In two of the four schools, the theme of a collaborative atmosphere that is cohesive and cooperative was evident during principal interviews and teacher focus group interviews. In the other two schools, the themes of support; accountability; and consistency in expectations, assessments, and instructional methods were evident during principal interviews and teacher focus group interviews.

Data and Findings for Research Question 3

The results of the paired sample *t* tests for each of the four middle school's Teacher Working Condition Survey results for School Culture Survey items are presented

below. Paired sample *t* tests were used to determine whether there were statistically significant mean differences between Teacher Working Conditions Survey: School Culture Items for the four middle schools studied from 2012 to 2016.

For School A, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 39). The difference scores for the Teacher Working Conditions Survey: School Culture Items scores for School A from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .462; see Figure 40). Teacher Working Conditions Survey: School Culture Items scores for School A were higher in 2016 (M = 87.9714, SD = 7.26355) than in 2012 (M = 73.9357, SD = 16.24446); a statistically significant mean increase of 14.03571 (SE = 3.87807), $t(13) = 3.619$, p = .003, d = .9673 was observed in Teacher Working Conditions Survey: School Culture Items scores from 2012 to 2016 in School A (see Figure 41).

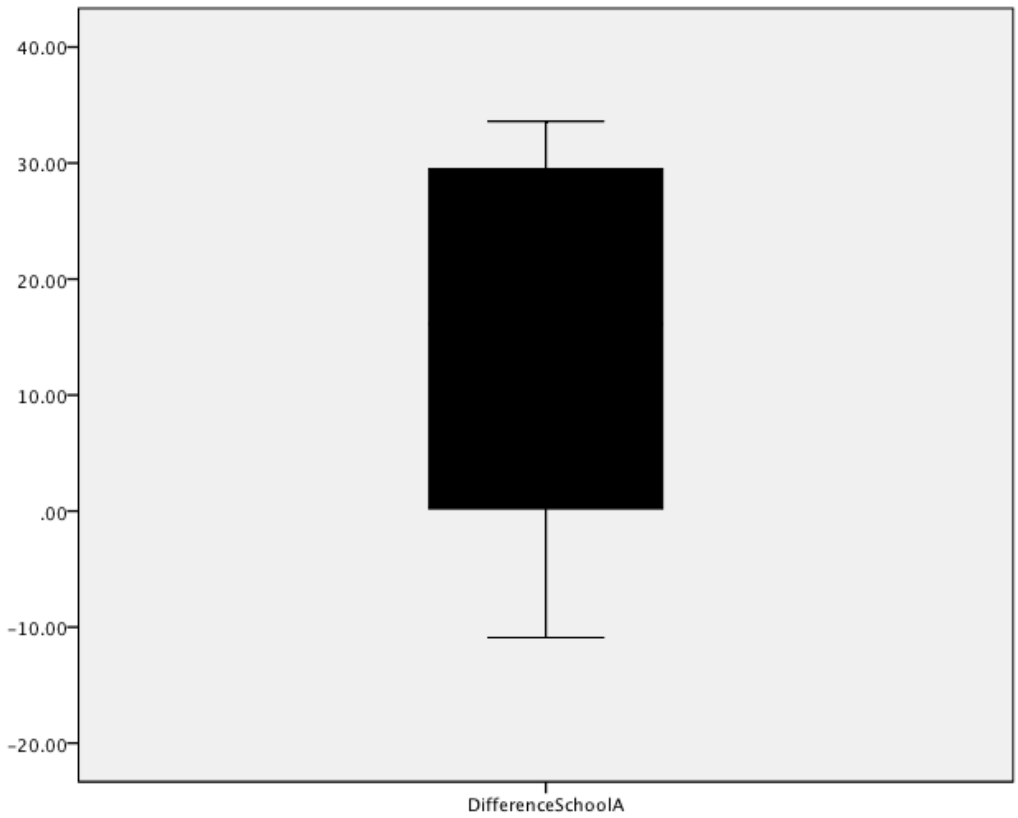

Figure 39. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: School Culture Items Scores for School A from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceSchoolA	.142	14	.200*	.943	14	.462

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

a. Lilliefors Significance Correction

Figure 40. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: School Culture Items Scores for School A from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School A TWC School Culture 2016	87.9714	14	7.26355	1.94126
	School A TWC School Culture 2012	73.9357	14	16.24446	4.34151

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School A TWC School Culture 2016 & School A TWC School Culture 2012	14	.450	.107

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School A TWC School Culture 2016 - School A TWC School Culture 2012	14.03571	14.51040	3.87807	5.65766	22.41377	3.619	13	.003

Figure 41. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: School Culture Items Scores for School A from 2012 and 2016.

For School B, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 42). The difference scores for the Teacher Working Conditions Survey: School Culture Items scores for School B from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .039; see Figure 43). Teacher Working Conditions Survey: School Culture Items scores for School B were higher in 2016 (M = 88.05, SD = 8.73937) than in 2012 (M = 73.6786, SD = 14.10980); a statistically significant mean increase of 14.37143 (SE = 3.34106), $t(13) = 4.301$, p = .001, d = 1.1496 was observed in Teacher Working Conditions Survey: School Culture Items scores from 2012 to 2016 in School B (see Figure 44).

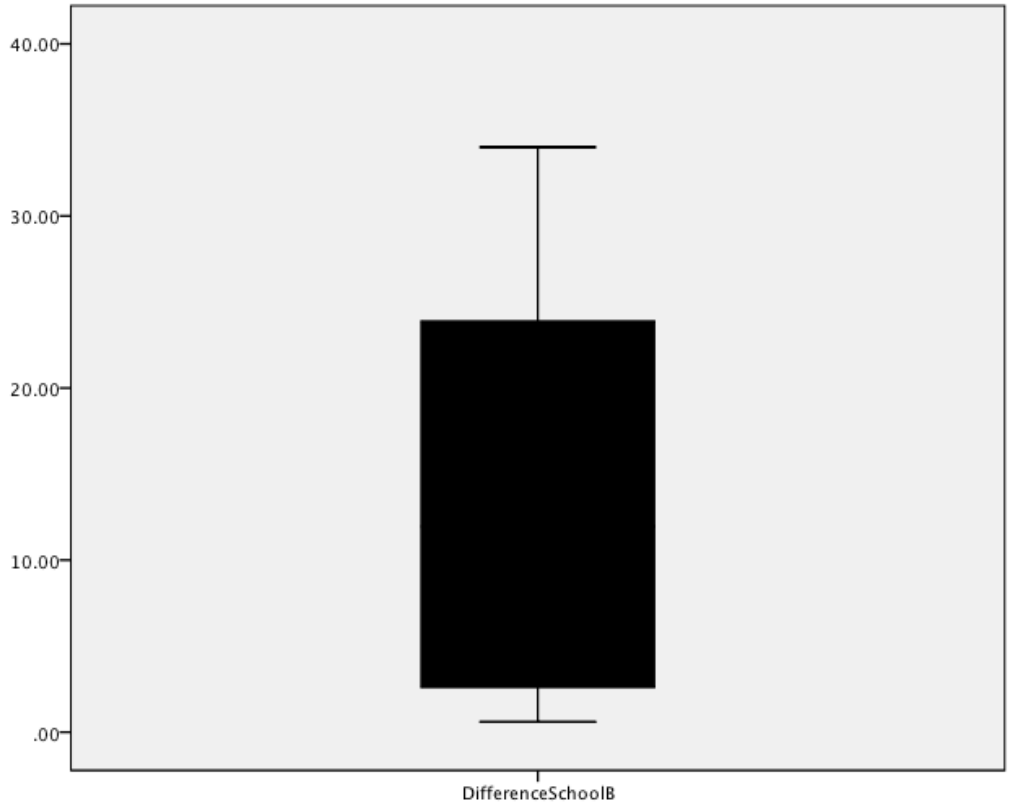

Figure 42. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: School Culture Items Scores for School B from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceSchoolB	.171	14	.200*	.868	14	.039

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

a. Lilliefors Significance Correction

Figure 43. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: School Culture Items Scores for School B from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School B TWC School Culture 2016	88.0500	14	8.73937	2.33569
	School B TWC School Culture 2012	73.6786	14	14.10980	3.77100

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School B TWC School Culture 2016 & School B TWC School Culture 2012	14	.483	.080

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School B TWC School Culture 2016 - School B TWC School Culture 2012	14.37143	12.50110	3.34106	7.15351	21.58935	4.301	13	.001

Figure 44. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: School Culture Items Scores for School B from 2012 and 2016.

For School C, there were two outliers in the data, as assessed by inspection of a box plot; however, inspection of their values did not reveal them to be extreme and they were kept in the analysis (see Figure 45). The difference scores for the Teacher Working Conditions Survey: School Culture Items scores for School C from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .165; see Figure 46). Teacher Working Conditions Survey: School Culture Items scores for School C were lower in 2016 (M = 94.5214, SD = 3.98114) than in 2012 (M = 96.6929, SD = 3.61907); a statistically significant mean decrease of .82857 (SE = 1.33735), $t(13) = .620$, p = .546, d = .16559 was observed in Teacher Working Conditions Survey: School Culture Items scores from 2012 to 2016 in School C (see Figure 47).

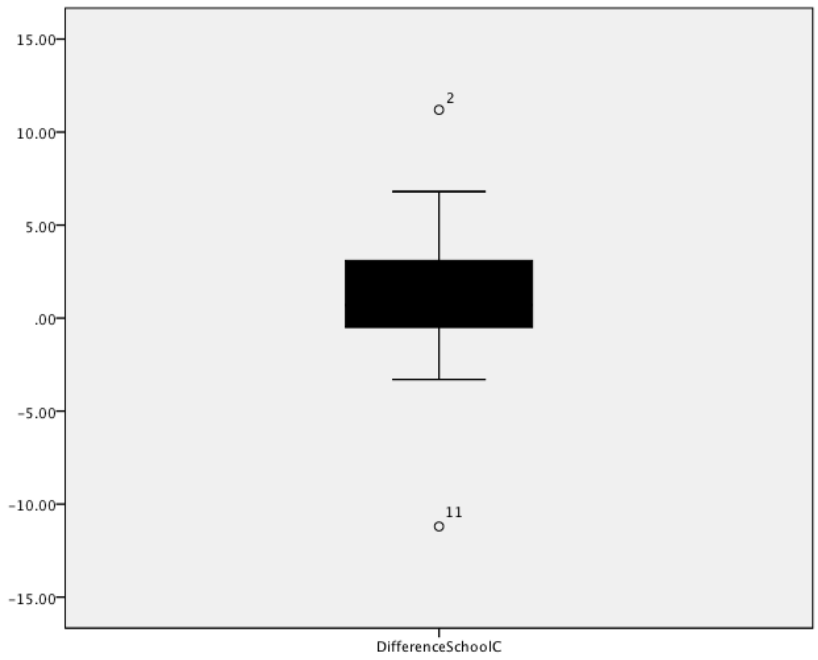

Figure 45. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: School Culture Items Scores for School C from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceSchoolC	.185	14	.200*	.911	14	.165

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

a. Lilliefors Significance Correction

Figure 46. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: School Culture Items Scores for School C from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School C TWC School Culture 2016	94.5214	14	3.98114	1.06401
	School C TWC School Culture 2012	93.6929	14	3.61907	.96724

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School C TWC School Culture 2016 & School C TWC School Culture 2012	14	.136	.644

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School C TWC School Culture 2016 - School C TWC School Culture 2012	.82857	5.00391	1.33735	-2.06060	3.71774	.620	13	.546

Figure 47. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: School Culture Items Scores for School C from 2012 and 2016.

For School D, there were no outliers in the data, as assessed by inspection of a box plot (see Figure 48). The difference scores for the Teacher Working Conditions Survey: School Culture Items scores for School D from 2012 and 2016 were normally distributed, as assessed by Shapiro-Wilk's test (p = .426; see Figure 49). Teacher Working Conditions Survey: School Culture Items scores for School D were lower in 2016 (M = 80.2929, SD = 13.72042) than in 2012 (M = 86.1643, SD = 6.89867); a statistically significant mean decrease of -5.87143 (SE = 3.26812), $t(13) = -1.797$, p = .096, d = -4802 was observed in Teacher Working Conditions Survey: School Culture Items scores from 2012 to 2016 in School D (see Figure 50).

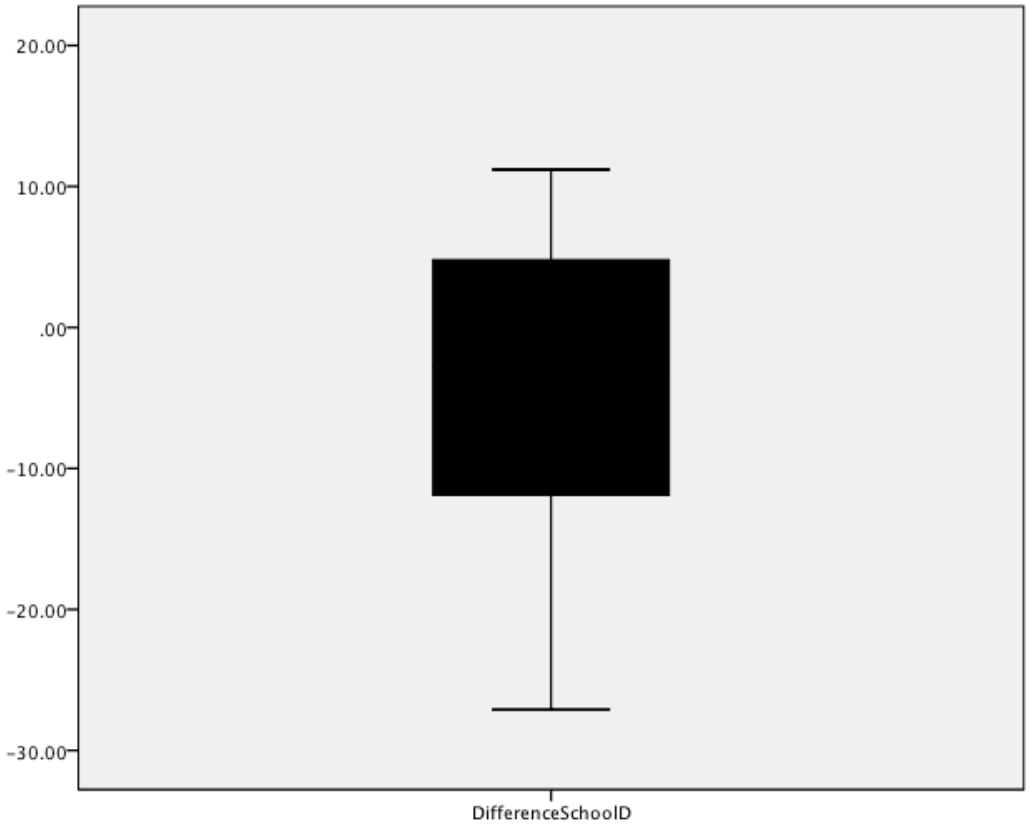

Figure 48. Paired Sample *t*-test Box Plot for Teacher Working Conditions Survey: School Culture Items Scores for School D from 2012 and 2016.

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DifferenceSchoolD	.167	14	.200*	.941	14	.426

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

a. Lilliefors Significance Correction

Figure 49. Paired Sample *t*-test Tests of Normality for the Teacher Working Conditions Survey: School Culture Items Scores for School D from 2012 and 2016.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	School D TWC School Culture 2016	80.2929	14	13.72042	3.66694
	School D TWC School Culture 2012	86.1643	14	6.89867	1.84375

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	School D TWC School Culture 2016 & School D TWC School Culture 2012	14	.456	.101

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	School D TWC School Culture 2016 - School D TWC School Culture 2012	-5.87143	12.22818	3.26812	-12.93177	1.18891	-1.797	13	.096

Figure 50. Paired Sample *t*-test Results for the Teacher Working Conditions Survey: School Culture Items Scores for School D from 2012 and 2016.

The results for the School Culture Survey (Gruenert & Whitaker, 2015) are described in Table 4.

Table 4

School Culture Survey (Gruenert & Whitaker, 2015)

School	Teacher Collabor -ation Mean Std. Dev.	Collabor -ative Leader-ship Mean Std. Dev.	Profes-sional Develop ment Mean Std. Dev.	Unity of Purpose Mean Std. Dev.	Collegial Support Mean Std. Dev.	Learning Partner-ships Mean Std. Dev.	Overall Mean	Overall Standard Deviation
A	3.40	3.93	3.82	3.96	3.99	3.57	3.80	0.79
	0.96	0.70	0.79	0.67	0.69	0.77		
B	3.48	3.83	3.92	3.93	4.09	3.92	3.77	0.87
	1.00	0.84	0.79	0.77	0.59	0.94		
C	3.84	4.45	4.26	4.54	4.42	4.12	4.29	0.77
	0.96	0.71	0.72	0.60	0.66	0.63		
D	3.34	3.82	3.88	3.86	4.18	3.04	3.70	0.87
	0.98	0.76	0.83	0.68	0.53	0.97		

According to Gruenert and Whitaker (2015), a mean score higher than 4.0 with a standard deviation of .60 or lower would indicate that the participants would agree that the culture of their school is "the ideal setting for student learning" (Gruenert & Whitaker, 2015, p. 80). School B met this criteria for the collegial support category. School C met this criteria for the unity of purpose category. School D met this criteria for the collegial support category. None of the middle schools met the criteria for the overall survey score.

During principal interviews, for the topic of school culture, the theme that emerged was student focused. The principal from School A described this culture as one "motivated by what's best for kids" and one with a "focus on making school a personal experience for kids." The principal from School B described this culture as one where the staff "cares about these kids" and "wants to do what's best for them." In addition to the theme of student focused, all four principals mentioned the data-team structure had resulted in a focus on an atmosphere of trust and high expectations. Each mentioned that the culture of his/her school was one where teachers cared about students and there was an atmosphere of trust between teachers and students. During teacher focus group interviews, for the topic of school culture, the theme of trust emerged. The teachers feel trusted to be educational experts, trusted to push each other to be better than they are, trusted by students, and trusted to put students first. When principal interviews and teacher focus group interviews for each school were examined together, the following common themes emerged for the topic of school culture. For School A, the theme of high expectations for students and staff emerged. The principal for School A described this as a "culture of shared accountability" with "high expectations for students." The data-driven team members for School A described the culture of high expectations as one

in which they "feel constantly pushed in a great way to be better." For School B, the theme of supportive environment emerged. A data-driven team member from School B described this environment as a "caring environment" for teachers and students and one in which meeting the emotional needs of the students is a priority. The principal from School B described how "providing support" for teachers and students is a priority. For School C, the theme of trust emerged. School C's principal's number one goal is to create "trusting relationship so (teachers) feel supported." A data-driven team member from School C stated, "the principal actually trusts me as a teacher who knows what I'm doing" and "it's being trusted to be a professional as a teacher and I think it empowers you to do more and do your best." This team member went on to speak of the "relationship and trust" staff members and students share which enable them to focus on academics. For School D, the theme of caring atmosphere emerged. The principal from School D emphasized that although there is a job to do, "we've got to do it in a caring, compassionate way." A member of the data-driven team described the atmosphere as one where students feel welcome in every classroom and students feel valued. This data-driven team member attributed this to the family atmosphere among the staff.

According to the quantitative data examined, data-driven teams impacted school culture in two of the four middle schools researched as evidenced by statistically significant mean increases in the Teacher Working Conditions: School Culture Items from 2012 and 2016; however, the qualitative data analyzed indicate that teachers and principals in all four middle schools attribute the school culture in their schools to the implementation of data-driven teams. In three of the four schools, the themes of a supportive, caring, and trusting environments were evident during principal interviews and teacher focus group interviews. In the other school, the theme of high expectations

for students and staff was evident during principal interviews and teacher focus group interviews.

Additional Data and Findings

Throughout all principal and teacher focus group interviews, when asked what the areas to improve would be for the team, a common theme of consistency in student work and grading emerged. All teams felt that consistency in instruction had mostly been achieved; however, all believed that their next steps should focus on consistency in expectations for student work, consistency in the type and quality of student work, and consistency in grading student work. The following was taken from an interview session with the principal from School A.

Interviewer: "How do they achieve consistency on how the student work is assessed?"

School A Principal:

> I don't feel as good about that area. We have actually in the last couple weeks, we've been asking them to bring student work in an attempt to come up with exemplar assessments so there is a uniform assessment. I'm not totally convinced that a student in teacher A's class is getting consistent assessment with a student in Teacher B's class.

Common Trends

When all interview data were examined holistically, the following three common trends emerged.

Theme 1: Focus on data to improve student learning. All principals agreed that the purpose of the data-driven team meetings was to use data to improve student learning. The following are excerpts from three principal interviews and their responses

when asked about the purpose of data-driven team meetings.

School A Principal: "They plan together, they create and review common formative assessments, . . . then they make instructional adjustments based on the data they have."

School B Principal:

> To talk about students. Talk about strategies. Talk about common assessments. Look at the data. Teachers have discussions on what went well, what didn't go well, what strategies worked, what strategies didn't work, what can they do to increase student learning. . . . They use the data from common assessments to go back in and inform their instruction.

School C Principal:

> The purpose of those meetings is to obviously drive instruction for the betterment of the students. For example, they analyze data from the benchmarks we take, then they might divide students into different groups . . . to engage with them a little better and learn more about the students. For example, one grade level, divide the groups up on Fridays . . . so they can deliver better instruction whether it is differentiated for AIG/high level students or maybe your lower level students. And they base that off their test and their data that they collect throughout the week.

Teachers at each of the schools agreed that the purpose of the data-driven team meetings was to use data to improve student learning. During the teacher focus group interview at School D, the following responses were given to the question regarding the purpose of the data-driven team meetings.

Teacher 3: "The majority of it is like pacing...where we've been, where we're

going, common form of assessments, summative assessments and data analysis. And how we are going to use the data in class to reteach kids."

All four schools' data-driven team members agreed that the work they completed during their data-driven team meetings was centered around student data and how to change instruction to improve student learning. Several processes were described regarding how they changed instruction to meet the needs of learners including re-teaching, focused interventions in small groups, and student error analysis. There were no dissenting opinions expressed during the principal interviews or focus group interviews.

Theme 2: Culture of collaboration. All principals and teachers agreed that after the implementation of data-driven teams, collaboration became an integral part of the school. Teacher mentalities changed and became focused on being "all in it together." Principals and teachers mentioned collegial support and accountability were defining attributes of their schools. The following excerpts from a principal interview and several focus group interviews provide additional information about the impact of data-driven teams on school culture.

School D Principal:

> I think teachers realize now that this job is too hard to do it by themselves when they can collaborate with a group of teachers. The key to that is are they working together and do they have mutual professional relationships. I think from what I'm seeing is that we have that relationship in terms of the respect that needs to be there. I'm seeing that professionalism. I'm seeing the process where they are taking each other's ideas and expanding that and listening to each other.

School B, Teacher 4:

I think that constant communication, that it is not Thursday at 9:30, that it's Monday through Friday during their planning, and at lunch, and after school, and before school, and in the parking lot. I mean, I think that when you have that structure set up, and when it's a caring environment, that just is going to lead to bigger and better things with what is done in the classroom.

School D, Teacher 2:

We talk about (school name) Family a lot. . . . We don't like leave each other behind. I don't think anybody puts each other down, I think everyone is working to the best of their ability. And I think we all recognize that too.

School A, Teacher 2: "We all push each other a lot. I think that most of our push to become better comes from our colleagues."

School A, Teacher 1: "Yes, in a very positive way."

School A, Teacher 2:

I think there's this constant push, I feel constantly pushed in a great way to be better than I am. How can I make my class better? How can I improve my instruction? I feel that from my colleagues, I feel it from my team. There's that push to be the very best that you can be for those kids.

School A, Teacher 1:

We are constantly looking for ways to update, improve, make it new again. Not just for our kids, but also for ourselves to keep that sense of novelty and engagement alive. . . . We are constantly improving and reflecting. There's very much an ingrained sense of growth.

All data-driven team members agreed that the implementation of data-driven team meetings had resulted in increased collaboration among their data-driven teams and also

among their cross-subject teams and vertical teams. There were no dissenting opinions expressed during the principal interviews or focus group interviews.

Theme 3: Student-focused. All principals and teachers repeatedly referenced to always doing what was best for students. This was not only in reference to academics but also to ensuring students felt safe, valued, and respected. The following are responses when the interviewees were asked to describe the atmosphere of their schools.

School A Principal:

> We've had a real focus in the time I've been here, had a real focus on making school a personal experience for the kids, . . . and to remain fair while also individualizing. . . . I would say kids are happy here. They're well taken care of. It's kind of the way everyone has done things here. High expectations for kids, but care and love with all of it.

School B Principal:

> I think the atmosphere here is our teachers want to do the best they can do. Our atmosphere is we care about these kids. We love these kids. We want to do what's best for them. . . . (Teachers) want to see these kids do well. It's more important to me that people in the community say, "those people at (school name) care about my kid," than anything else. Because if the kids know that we care about them and the parents know we care about them, they're gonna do what they need to do in the classroom.

School D, Teacher 3:

> Students definitely feel welcome in every classroom. I know my kids tell me all the time, "we have the best teachers." When we show them value, they show it back. That's something that has been a focus here too, as a school, showing the

> students that we value them . . . our priority is the kids. And so, as a school, we have a unified vision that we're here for the kids. . . . But here every single person is here for the kids and is doing this out of the goodness of their heart and I think that is recognized here at the school. We have a very, very strong faculty.

School C, Teacher 1: "I think our kids feel really safe and secure here. . . . It's like a little second home. It's a good environment to learn in, just because they are comfortable here."

School C, Teacher 2:

> I would say the number one thing that we think about would be the relationship with the kids. If you don't have relationships, you don't have anything. Once you have that relationship and trust, then I would say, academics, academics, academics. I personally feel like we're on a mission. I really feel like when we send that kid out, we have done our best and we've put good out into the world. Every time you come through that door, you're going to feel safe, cared for, treated with goodness and respect and I think that comes from the top . . . the teachers are mirroring what they see and then the kids mirror what you give them. If you're respectful and you treat them with dignity, then that's what you get back.

All principals and data-driven team members referenced wanting students to feel safe and valued at their school. They also wanted their students to feel as though teachers were supportive and focused on student needs. Several agreed that students would not be focused academically until this basic need was met. There were no dissenting opinions expressed during the principal interviews or focus group interviews.

Results and Summary of Findings

The purpose of this study was to determine the impact of data-driven teams on student learning, collaborative practice, and school culture. Based on the findings from EOG results, EVAAS student growth data, TWC survey data, School Culture Survey (Gruenert & Whitaker, 2015), principal interviews, and focus group interviews, data-driven teams had an impact on student learning, collaborative practice, and school culture. Three major findings emerged from the analysis of data.

The first major finding is the impact of data-driven teams on student learning. All four middle schools showed a statistically significant mean increase in EOG scores from 2012-2016. For School A, there was a statistically significant mean increase of 8.58. For School B, there was a statistically significant mean increase of 6.63. For School C, there was a statistically significant mean increase of 3.533. For School D, there was a statistically significant mean increase of 4.21667.

The second major finding is the impact of data-driven teams on collaborative practice. In two of the four middle schools, School B and School D, there was a statistically significant mean increase in the Teacher Working Conditions Survey: Collaborative Practice Items from 2012 to 2016.

The third major finding is the impact of data-driven teams on school culture. In two of the four middle schools, School A and School B, there was a statistically significant mean increase in the Teacher Working Conditions Survey: School Culture Items from 2012 to 2016. According to the School Culture Survey (Gruenert & Whitaker, 2015), three of the middle schools met the statistically significant criteria. Two schools met the criteria for the collegial support category, and one school met the criteria for the unity of purpose category. None of the schools met the statistically

significant criteria for all categories or for the overall score for the School Culture Survey (Gruenert & Whitaker, 2015).

According to the results of this study, of the three areas researched, data-driven teams have the greatest impact on student learning. This is also supported by the themes that emerged from the principal interviews and the focus group interviews. While School B showed statistically significant mean increases in the Teacher Working Conditions Survey: Collaborative Practice Items and School Culture Items from 2012 to 2016, it was the only school to show statistically significant positive results in all three areas: student learning, collaborative practice, and school culture.

There are other conditions that may have contributed to the statistically significant increases in student learning. Some of these conditions may include the differences in implementation of data-driven teams at each of the four middle schools, administrative changes during the implementation of data-driven teams and the resulting changes in expectations for implementation, teacher changes in the data-driven teams and the resulting changes in the personality dynamics in the data-driven teams, and the implementation of other school-specific and county-wide initiatives which may have taken precedence over the implementation of data-driven teams. All of these conditions could have impacted student learning in addition to the implementation of data-driven teams.

Evidence of Trustworthiness

Shenton (2004) provided several suggestions to ensure trustworthiness in qualitative research to address credibility, transferability, dependability, and confirmability. The researcher employed several of his suggestions in this study to ensure trustworthiness in the collection of qualitative data.

To ensure credibility, the researcher used random sampling for the data-driven teams chosen for the focus group interviews. The researcher also used triangulation of data sources which "compensates for their individual limitations and exploits their respective benefits" (Shenton, 2004, p. 65). The researcher used four middle schools' data from EOG scores, EVAAS, TWC survey results, the School Culture Survey (Gruenert & Whitaker, 2015), principal interviews, and focus group interviews to achieve triangulation for each of the research questions. In addition, participation in the study was voluntary, and participants in the principal interviews and focus group interviews were encouraged to be honest and were assured that all responses would be kept confidential. To address transferability, the researcher has fully disclosed all information regarding the setting of the study, the number of participants involved, the data collection methods used, the number and length of data collection sessions, and the time period over which the data were collected (Shenton, 2004). Due to the qualitative nature of this study, transferability is limited; but another researcher could conduct a similar study. To address dependability, the researcher has disclosed all information regarding the research design and its implementation. To address confirmability, the researcher has taken the necessary steps to "ensure as far as possible that the work's finding are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher" (Shenton, 2004, p. 72). The researcher approached each interview session with an open mind and followed the protocols developed for the principal interviews and the focus group interview sessions. These sessions were held at a place and time the participants chose to ensure their comfort and a positive interview experience. Although the researcher is an administrator in the district chosen for the study, no respondents were under the direct supervision of the researcher.

Summary

Data collected through analysis of EOG results, EVAAS scores, TWC survey results, and the School Culture Survey (Gruenert & Whitaker, 2015) as well as principal interviews and teacher focus group interviews were used to answer the research questions. Of the constructs measured, the results indicate that data-driven teams have the greatest impact on student learning. Data analysis and interview excerpts were presented and summarized in this chapter. This chapter concludes with a summary of the findings based on the data in this research. Chapter 5 provides an interpretation of the findings of this research, limitations of the study, recommendations for future study, and implications of the research.

Chapter 5: Discussion

Introduction

This study was used to determine the impact of data-driven teams on student learning, collaborative practice, and school culture in four middle schools in a western North Carolina county. According to DuFour et al. (2008), student learning can only happen when teachers work interdependently and assume responsibility for all students' learning. In order for students to be globally competitive, schools have to embed collaborative tools and concepts into the entire curriculum and educational process (Friedman, 2007). In addition, schools must develop policies, procedures, and processes that address the curriculum standards and the students' learning needs as well as recognize the essential role teachers play in the education of children (Thornton, 2006). This collaborative process must focus on using student data as an indicator of student needs as well as being inclusive of a decision-making process (DuFour, 2004). DuFour (2004) also believed student learning occurs when

> working together to improve student achievement becomes the routine work of everyone in the school. Every teacher team participates in an ongoing process of identifying the current level of student achievement, establishing a goal to improve the current level, working together to achieve that goal, and providing periodic evidence of progress. (p. 10).

Wayman (2005) described the relationship between data use and collaboration as reciprocal in nature. Data-driven teams will be successful if the teachers are given the structures to work collaboratively and their investigation of the data contributes to meaningful collaboration (Wayman, 2005). According to researchers, active teacher participation in collaborative practices has resulted in a positive shift in school culture

(Levine & Marcus, 2007). Fullan and Hargreaves (1996) described schools with collaborative cultures as places characterized by "hard work, strong and common commitment, dedication, collective responsibility, and a special sense of pride in the institution" (p. 48). Fullan and Hargreaves (1996) stated that schools with collaborative school cultures raise student achievement. In a qualitative study in a high-achieving, high-poverty school, Giusto (2011) found implementing and sustaining collaborative practices, data-driven decisions, and high expectations for learning contributed to a positive school culture which positively impacted student achievement.

The purpose of this study was to determine the impact of data-driven teams in four middle schools in a western North Carolina county on student learning, collaborative practice, and school culture. The research questions were

1. What is the impact of data-driven teams on student learning?
2. What is the impact of data-driven teams on collaborative practice?
3. What is the impact of data-driven teams on school culture?

The research questions were answered using both qualitative and quantitative approaches. The researcher used principal interviews, teacher focus group interviews, a quantitative comparison of the percentage of agreement on items on NCTWCS, a quantitative analysis of the results using Gruenert and Whitaker's (2015) School Culture Survey (Appendix A), a quantitative comparison of student results on the North Carolina EOG tests in 6-8 reading and 6-8 math, and a quantitative comparison of student growth using EVAAS. The same methods of data collection were used for the four schools involved in the study.

This study determined that data-driven teams have a positive impact on student learning. In the four middle schools involved in this study, there were statistically

significant mean increases ranging from 3.533 to 8.58 in EOG scores from 2012 to 2016. This study also determined that data-driven teams have a positive impact on collaborative practice. In two of the four middle schools, there were statistically significant mean increases of .7 and 4.3333 in the Teacher Working Conditions Survey: Collaborative Practice Items from 2012 to 2016. This study also determined that data-driven teams have a positive impact on school culture. In two of the four middle schools, there were statistically significant mean increases of 14.03571 and 14.37143 in the Teacher Working Conditions Survey: School Culture Items from 2012 to 2016. Only one school showed statistically significant positive results in all three areas: student learning, collaborative practice, and school culture.

Interpretation of the Findings

The data gathered from this study were used to determine the impact of data-driven teams on student learning, collaborative practice, and school culture. An important consideration is the degree of implementation, amount of support, and the level of administrative involvement in the data-driven teams in each of the schools studied.

In a multi-site case study, James (2010) found several themes that are essential to effective data-driven team implementation. These include a vision that is clearly defined by the administration to use data to improve student achievement, administrators must be active in the data-driven team process, data must be accessible to stakeholders, and the team must meet regularly to participate in the process (James, 2010). School B not only showed a statistically significant mean increase in EOG scores but also showed a statistically significant mean increase in the collaborative practice and school culture questions on the TWC survey as well as scored as statistically significant in the collegial support category on Gruenert and Whitaker's (2015) School Culture Survey. According

to principal interviews and teacher focus group interviews, this school's administration designated a day and time for data-driven team meetings, attended data-driven team meetings regularly, and had assigned an instructional coach and curriculum coach to attend the data-driven team meetings and support the data-driven team. School D also showed a statistically significant mean increase in EOG scores, showed statistically significant mean increase in the collaborative practice items on the TWC survey, and scored as statistically significant in the collegial support category on Gruenert and Whitaker's School Culture Survey. Again, the administration at this school designated a day and time for data-driven team meetings and had assigned an instructional coach to attend the data-driven team meetings and support the data-driven team. School A also showed a statistically significant mean increase in EOG scores and showed a statistically significant mean increase in the school culture questions on the TWC survey. A noted difference in the principal interview and teacher focus group interviews for this school was while there was a designated meeting time, the administration is not actively involved in the data-driven team meetings. This could account for the statistically significant mean decrease in the collaborative practice questions on the TWC survey. School C also showed a statistically significant mean increase in EOG scores and scored as statistically significant in the unity of purpose category on Gruenert and Whitaker's School Culture Survey. During the principal interview, it was indicated that there was a designated day and time for the data-driven team to meet; however, the administration did not participate in these meetings. During the teacher focus group interview, it was discovered that the team did not meet weekly and did not collaborate on lessons or student data. These findings reinforce the research of Reeves (2002) and Zito (2011) who discovered that collaborative teams have to be supported by administrators in order

for the teams to be effective, and the most favorable learning occurs when teachers collaborate at optimal levels with a supportive administration. These findings also reinforce the work of Seashore Louis et al. (2010) who found the most effective schools had principals who created structures and opportunities for teachers to collaborate and who focused the school on goals and expectations for student achievement.

Gruenert (2005), through examination of research, showed a positive correlation between collaborative school cultures and student achievement. Gruenert (2005) also believed school leaders should identify school culture and student achievement as "complementary, reciprocal, and convergent in nature" (p. 50). Interestingly, each of the four schools showed statistically significant mean increases in EOG scores and showed statistically significant results in either the school culture items on the TWC survey or one of the categories on Gruenert and Whitaker's (2015) School Culture Survey. In addition, two of the schools showed statistically significant mean increases in the collaborative practice items on the TWC survey and one school showed statistically significant results for the unity of purpose items on Gruenert and Whitaker's School Culture Survey. In addition, during principal interviews and teacher focus group interviews, participants discussed the culture of collaboration that has developed at their schools since the implementation of data-driven teams as well as the student-focused culture and the use of student data to improve learning.

As discussed earlier, culture improves as collaborative practices are embraced (Levine & Marcus, 2007). Student learning improves as collaborative practices become part of "the way we do things around here" (Gruenert & Whitaker, 2015, p. 6; Deal & Kennedy, 1982, p. 4). As the cohesiveness of educators improves, student learning improves, and school culture improves (Easton, 2008; Fullan & Hargreaves, 1996;

Giusto, 2011; Gruenert, 2000; Hatchett, 2010; Kraft & Papay, 2014; Levine & Marcus, 2007; Watkins, 2012). Since the implementation of data-driven teams, student learning has increased, and collaborative practice and school culture has improved.

Limitations of the Study

As with any research design, inherent limitations must be addressed. The limitations of this study include personnel changes such as administrative changes and teacher changes as well as other changes to personnel resulting in changes to the members of each of the data-driven teams. There were administrative changes at each of the middle schools since the implementation of data-driven teams. These administrative changes could have resulted in focuses on school-wide initiatives instead of the data-driven team process. In addition, Seashore Louis et al. (2010) stated it takes approximately five years for a principal new to a school, regardless of previous years of experience, to positively impact student learning, implement policies and practices, and improve the teaching staff. There were also teacher changes to the data-driven teams including the addition of new teachers to the teams and the removal of teachers from teams. According to Douglas Reeves's research, the schools with the most improved academic results had consistent data teams in place for 3 years (Bloomberg, 2012). The personnel changes within the teams involved in this study resulted in data-driven teams without consistent membership and established practices. Personnel changes could impact the implementation of the data-driven teams as well as the impact of those teams on student learning, collaborative practice, and school culture.

Another limitation of this study is the length of time studied. The researcher focused on the beginning of implementation of data-driven teams in the chosen district, 2012, to the current data available, 2015. The researcher believes that in order to see the

long-term effects of data-driven teams on student learning, collaborative practices, and school culture, a longer length of time between implementation and data collection should occur. Had time or resources not been limited, the researcher would have liked to expand her research to include data after at least 5 years of data-driven team implementation.

Recommendations

As this is the first study that examined the impact of data-driven teams on student learning, collaborative practice, and school culture within one setting, future research is needed to examine the impact of data-driven teams on student learning, collaborative practice, and school culture. If possible, this research should be conducted in schools or counties in which limited personnel changes have occurred and should include a longer time period between implementation of data-driven teams and data collected to measure their impact. In addition, studies that include more than four schools as well as include more than four principal interviews and four focus group interviews would also be helpful to see the impact of data-driven teams on a larger scale. Additional studies should also be conducted at the elementary and high school levels to determine the impact of data-driven teams on student learning, collaborative practice, and school culture at these school levels, as this study focused only on the impact of data-driven teams at the middle school level.

Implications

Based on this research, the implementation of data-driven teams results in increased student learning as well as some positive improvement in collaborative practice and school culture. These findings support the need for the implementation of data-driven teams in order to maximize the potential impact for positive social change that

could be experienced through increased student learning, increased collaborative practice, and a more positive school culture.

The findings of this study also indicate that administrator support and presence is vital to the impact of data-driven teams. Administrators should not only attend the data-driven team meetings but should also provide any necessary support to the teams in order to ensure their success. This support could be a regular time set aside to meet, an instructional coach to attend the meetings and provide coaching during meetings and implementation of decisions during class time, a curriculum coach to assist the team with curriculum questions and instructional decisions, and validation and celebration of the team's work and successes. For example, School B not only showed a statistically significant mean increase in EOG scores but also showed a statistically significant mean increase in the collaborative practice and school culture questions on the TWC survey as well as scored as statistically significant in the collegial support category on Gruenert and Whitaker's (2015) School Culture Survey. According to principal interviews and teacher focus group interviews, this school's administration designated a day and time for data-driven team meetings, attended data-driven team meetings regularly, and assigned an instructional coach and curriculum coach to attend the data-driven team meetings and support the data-driven team. Even though there had been a change in administration since the implementation of data-driven teams, the implementation of data-driven teams were consistently a priority and the supports and structures remained consistent despite the change in administration.

The findings of this study also indicate the value of implementation of data-driven teams. Each middle school showed statistically significant increases in student learning as measured by the EOG tests since the implementation of the data-driven teams. Based

on these data, it is in the best interest of students to implement data-driven teams in middle schools and perhaps other levels of school as well.

Conclusion

Previous research provided evidence to support the impact of data-driven teams on student learning, the impact of collaborative practices on student learning, and the impact of collaborative practices on school culture; however, this study was needed to determine if the collaborative nature of data-driven teams impacted student learning, collaborative practices, and school culture. This study contributes to this body of research as there had not been a previous study on the impact of data-driven teams on all three of these variables in one setting.

This study provides evidence that data-driven teams impact student learning, collaborative practice, and school culture and had the greatest impact on student learning in the four middle schools studied. This study also provides data to support the dynamic process which occurs in schools regarding school culture, collaborative practices, and student learning and the impact of data-driven teams on each of these processes.

It is important to note that the presence and support of administration in the data-driven teams is imperative to their success. Without a dedicated time provided by administration and the presence of an administrator in the meeting as well as additional supports such as an instructional coach or curriculum coach, the impact of the data-driven team on collaborative practice and school culture is lessened. In addition, administration changes in the school and personnel changes in the data-driven team can lessen its impact as well.

As previous research has shown and this research supports, teachers working in schools where collaborative teams are encouraged are more likely to see increased

student achievement; have increased confidence in themselves and their peers; find higher quality solutions to problems while working with other teachers; contribute to a supportive work environment which uses other teachers' strengths while accommodating their weaknesses; and have access to a greater pool of materials, methods, and ideas (Little, 1990). It is the recommendation of this researcher to implement data-driven teams in middle schools. Implementation of data-driven teams had the greatest impact on student learning and had some positive impact on collaborative practice and school culture in the middle schools in this western North Carolina county.

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Appendix A

Gruenert and Whitaker's (2015) School Culture Survey

The School Culture Survey

Pre-Survey Questionnaire

1. Name of School
   (Participants chose their school from a drop-down menu)

2. Grade Level
   a. 6
   b. 7
   c. 8
   d. Multi-grade levels
3. Subject Area
   a. Math
   b. Language Arts
   c. Social Studies
   d. Science
   e. PE/Health
   f. Arts (Visual, Performance, etc.)
   g. Exceptional Children
   h. English as a Second Language
   i. CTE
   j. Other
4. Gender
   a. Male
   b. Female
5. Years of Teaching Experience
6. Years at Current School

Directions: Please indicate the degree to which each statement describes the conditions in your school using the following scale:

1= Strongly Disagree 2=Disagree 3=Undecided 4=Agree 5=Strongly Agree	1	2	3	4	5
1. Teachers utilize professional networks to obtain information and resources for classroom instruction.					
2. Leader's value teachers' ideas.					
3. Teachers have opportunities for dialogue and planning across grades and subjects.					
4. Teachers trust each other.					

5. Teachers support the mission of the school.					
6. Teachers and parents have common expectations for student performance.					
7. Leaders in the school trust the professional judgement of teachers.					
8. Teachers spend considerable time planning together.					
9. Teachers regularly seek ideas from seminars, colleagues, and conferences.					
10. Teachers are willing to help out whenever there is a problem.					
11. Leaders take time to praise teachers who perform well.					
12. The school mission provides a clear sense of direction for teachers.					
13. Parents trust teachers' professional judgements.					
14. Teachers are involved in the decision-making process.					
15. Teachers take time to observe each other testing.					
16. Professional development is valued by the faculty.					
17. Teachers' ideas are valued by other teachers.					
18. Leaders in the school facilitate teachers working together.					
19. Teachers understand the mission of the school.					
20. Teachers are kept informed on current issues in the school.					
21. Teachers and parents communicate frequently about student performance.					
22. Teacher involvement in policy or decision making is taken seriously.					
23. Teachers are generally aware of what other teachers are teaching.					
24. Teachers maintain a current knowledge base about the learning process.					
25. Teachers work cooperatively in groups.					
26. Teachers are rewarded for experimenting with new ideas and					

techniques.					
27. The school mission statement reflects the values of the community.					
28. Leaders support risk taking and innovation in teaching.					
29. Teachers work together to develop and evaluate programs and projects.					
30. The faculty values school improvement.					
31. Teaching performance reflects the mission of the school.					
32. Administrators protect instruction and planning time.					
33. Disagreements over instructional practice are voiced openly and discussed.					
34. Teachers are encouraged to share ideas.					
35. Students generally accept responsibility for their schooling, for example by being mentally engaged in class and completing homework assignments.					

(Gruenert & Whitaker, 2015, pp. 81-83)

Appendix B

School Culture Survey Informed Consent Letter

"The School Culture Survey"
February 4, 2017

Dear Middle School Teacher:

I am a doctoral student under the direction of Dr. Wendy Frye in the Educational Leadership department of Gardner-Webb University. I am conducting a research study to determine the impact of data-driven teams on student learning, collaborative practice, and school culture.

I am requesting your participation, which will involve completing an online survey. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. If at any time you discontinue the survey, your results will be discarded. The results of the research study may be published, but your name will not be used. The survey is anonymous. Any identifiable characteristics will be kept confidential by the researcher.

There are no risks to the study. The potential benefits of the study include the knowledge that can be gained through the exploration of the practices of data-driven teams in the middle schools in this county. This knowledge can be used to not only impact the student learning, collaborative practices, and school cultures for the schools in this county, but also could impact student learning, collaborative practices, and school cultures in all schools. The results of this study will be shared with the school district for strategic planning purposes.

If you have any questions concerning the research study, please call me at XXXXXXX or e-mail me at XXXXXXXXXXX.

This research has been approved Gardner-Webb University's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Jeff Rogers, the Institutional Administrator, Gardner-Webb Institutional Review Board at 704-406-4724 or at jrogers3@gardner-webb.edu. Additional contact information is available at www. gardner-webb.edu/academic-programs-and-resources/institutional-review-board/about/index.

Completion of the survey will be considered your consent to participate. Thank you.

Sincerely,

Marcie Wilson XXXXXXXXXXXXXXX

Dr. Wendy Frye wfrye@gardner-webb.edu

Appendix C

Principal Interview Guide

Principal Interview Guide
February 4, 2017

Dear Middle School Principal:

I am a doctoral student under the direction of Dr. Wendy Frye in the Educational Leadership department of Gardner-Webb University. I am conducting a research study to determine the impact of data-driven teams on student learning, collaborative practice, and school culture.

I am requesting your participation, which will involve participating in an semi-structured interview. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. If at any time you discontinue the interview, your results will be discarded. The results of the research study may be published, but your name will not be used. Any identifiable characteristics will be kept confidential by the researcher. The interview recording will be transcribed immediately upon completion of the interview and will be destroyed after transcription is completed.

There are no risks to the study. The potential benefits of the study include the knowledge that can be gained through the exploration of the practices of data-driven teams in the middle schools in this county. This knowledge can be used to not only impact the student learning, collaborative practices, and school cultures for the schools in this county, but also could impact student learning, collaborative practices, and school cultures in all schools. The results of this study will be shared with the school district for strategic planning purposes.

If you have any questions concerning the research study, please call me at XXXXX or e-mail me at XXXXXXXX.

This research has been approved Gardner-Webb University's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Jeff Rogers, the Institutional Administrator, Gardner-Webb Institutional Review Board at 704-406-4724 or at jrogers3@gardner-webb.edu. Additional contact information is available at www. gardner-webb.edu/academic-programs-and-resources/institutional-review-board/about/index.

Completion of the interview will be considered your consent to participate. Thank you.

Sincerely,

Marcie Wilson XXXXXXXXXXXXXXXX

Dr. Wendy Frye wfrye@gardner-webb.edu

Principal Interview Guide

1. Open session with brief introduction to topic and purpose of interview in a generalized manner.
2. Establish ground rules based on respect for the interviewer and interviewee.
3. Collect the following data from the interviewee:
    a. Gender
    b. Years teaching
    c. Years in administration
    d. Years at current school
4. Provide paper and pencil to the interviewee and encourage him/her to write his/her ideas before verbally responding.
5. Discussion starters/questions:
    a. In what grade levels and subject areas do you have active data-driven teams?
    b. Describe how often your data-driven teams meet and the purpose of your meetings.
        i. Use of students' results on classroom assessments
        ii. Changes in instructional practices
    c. Describe how your administrative team/instructional coach supports your data-driven teams.
    d. Describe how your data-driven teams' meetings have impacted student learning and achievement.
    e. Describe how your data-driven teams' meetings have impacted collaborative practice.
        i. Describe how your teachers collaborate with other teachers.
        ii. How do teachers work together to refine teaching practices?
        iii. How do teachers work together to achieve consistency on how student work is assessed?
    f. Describe how your data-driven teams' meetings have impacted your school's culture.
        i. How are teachers recognized as and/or trusted to be educational experts?
        ii. What types of decisions are teachers responsible for in your school?
        iii. How would you describe the atmosphere of your school?
        iv. Describe your school as a place to work.
        v. Describe your school as a place to learn.
        vi. How are parents/guardians involved in your school?
    g. Describe the strengths of your data-driven teams.
    h. Describe your data-driven teams' areas for improvement.

5. Close the session with an opportunity for participant to share any other relevant information and/or ask any questions.

Appendix D

Focus Group Interview Guide

Focus Group Interview Guide
February 4, 2017

Dear Middle School Teacher:

I am a doctoral student under the direction of Dr. Wendy Frye in the Educational Leadership department of Gardner-Webb University. I am conducting a research study to determine the impact of data-driven teams on student learning, collaborative practice, and school culture.

I am requesting your participation, which will involve participating in a focus group interview. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. If at any time you discontinue the interview, your results will be discarded. The results of the research study may be published, but your name will not be used. Any identifiable characteristics will be kept confidential by the researcher. The focus group recording will be transcribed immediately upon completion of the focus group and will be destroyed after transcription is completed.

There are no risks to the study. The potential benefits of the study include the knowledge that can be gained through the exploration of the practices of data-driven teams in the middle schools in this county. This knowledge can be used to not only impact the student learning, collaborative practices, and school cultures for the schools in this county, but also could impact student learning, collaborative practices, and school cultures in all schools. The results of this study will be shared with the school district for strategic planning purposes.

If you have any questions concerning the research study, please call me at XXXXXXXXX or e-mail me at XXXXXXXXXXXX.

This research has been approved Gardner-Webb University's Institutional Review Board. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact Dr. Jeff Rogers, the Institutional Administrator, Gardner-Webb Institutional Review Board at 704-406-4724 or at jrogers3@gardner-webb.edu. Additional contact information is available at www. gardner-webb.edu/academic-programs-and-resources/institutional-review-board/about/index.

Completion of the interview will be considered your consent to participate. Thank you.

Sincerely,

Marcie Wilson XXXXXXXXXXXXXX

Dr. Wendy Frye wfrye@gardner-webb.edu

Focus Group Interview Guide

1. Open session with brief introduction to topic and purpose of focus group in a generalized manner.
2. Establish ground rules based on respect for all members of the group.
3. Collect the following data from each member of the group
    a. Gender
    b. Years teaching
    c. Years at current school
    d. Years in Current Grade Level/Subject area
4. Provide paper and pencil to all members and encourage them to write their ideas before verbally responding.
5. Discussion starters/questions:
    a. Describe how often your data-driven teams meet and the purpose of your meetings.
        i. Use of students' results on classroom assessments
        ii. Discussion of instructional practices
    b. Describe how your administrative team/instructional coach supports your data-driven team.
    c. Describe how your data-driven team meetings have impacted student learning and achievement.
    d. Describe how your data-driven team meetings have impacted collaborative practice.
        i. Describe how you collaborate with other teachers.
        ii. How do you work together to refine your teaching practices?
        iii. How do you work together to achieve consistency on how student work is assessed?
    e. Describe how your data-driven team meetings have impacted your school's culture.
        i. How are you recognized as and/or trusted to be an educational expert?
        ii. What types of decisions are you responsible for in your school?
        iii. How would you describe the atmosphere of your school?
        iv. Describe your school as a place to work.
        v. Describe your school as a place to learn.
        vi. How are parents/guardians involved in your school?
    f. Describe the strengths of your data-driven team.
    g. Describe your data-driven team's areas for improvement.
6. Close the session with an opportunity for participants to share any other relevant information and/or ask any questions.