Missouri Data Team Model and Student Proficiency Levels

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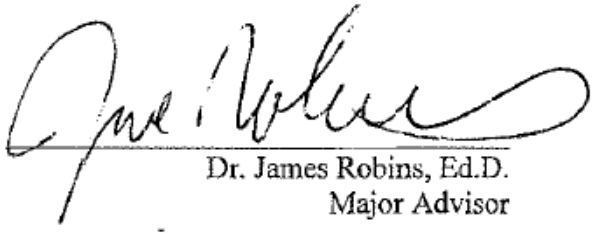

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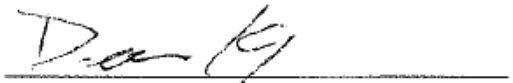

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Abstract

The use of the Missouri data team model by third, fourth, and fifth grade teachers in one public school district (School District XYZ) in Missouri was the focus of this study. Four research questions were utilized as a guide when conducting the research. Each research question examined whether a statistically significant change in proficiency levels was experienced by students in one of two subgroups: all students and students with an IEP. These subgroups were defined by No Child Left Behind (2001). Additionally, the research questions focused on either mathematics and reading proficiency levels. Proficiency levels were measured through the use of archived student assessment data on the STAR Enterprise assessments. A quasi-experimental framework was followed. Archived assessment data from 985 students in grades 3, 4, and 5 were analyzed. The archived data were from the 2015-2016 school year. The results of a multiple measures ANOVA test revealed significant differences across all three waves of data for all students in grades 3, 4, and 5. The results of a multiple measure ANOVA test revealed significant differences between the fall and winter wave and the fall and spring wave of data for students with an IEP in grades 3, 4, and 5. The study provided an introductory examination into the effectiveness of the data team model as a framework for teacher collaboration on teaching and learning.

Dedication

To Ryan, your endless love and continued support have provided me with the courage to continue through this journey despite all the bumps we experienced along the way.

To Drew, Keegan, Katie and Aaron, I hope that I have stood tall as an example for you. I hope I have provided you with a glimpse of the joys one can experience when becoming a lifelong learner. I hope to have inspired you to look towards the sky and walk the path towards the goals you most desire. Finally, I hope to have demonstrated how important it is to ask questions and dig deep for the answers to those questions along life's journey.

To Dorothy, Bernard, and Dad, even though you are no longer here, thank you for always believing in me. I know you will be watching and cheering from the other side of those pearly gates.

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I appreciate the guidance of my assistance superintendent, Dr. Mike Brown, who encouraged me to pursue my doctoral degree. Dr. Brown was also there any time I had a question or needed direction from someone outside of the university. Finally, Dr. Brown offered his guidance when selecting the focus of the study conducted in this dissertation.

I appreciate the guidance of my major advisor, Dr. James Robins, who was always my cheerleader. His questions and support, as I sought to ask just the right questions, helped me to focus my topic on what mattered most. He acted as an anchor when my ideas grew bigger than the timespan and length of this study. I would also like to thank the remaining members of my committee, Dr. Li Chen-Bouk, Dr. Dennis King, and Dr. Alicia Wilson, for investing their time to offer feedback and guidance. The successful completion of this dissertation would not have been possible without all of you.

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Chapter 1

Introduction

Data. No matter where one looked, data could be found. *Consumer Reports* routinely reported the safety rankings of automobiles. Pharmaceutical companies advertised their products, including data about success rates and risk factors. Entertainment and Sports Network (ESPN) broadcasted the latest statistics in every major league and college sport. Education followed this trend. Much school data were available for public consumption. School data were collected and statistics were available on topics such as graduation and dropout rates, teacher salaries, sources of funding, and student achievement (Snyder & Hoffman, 2002).

No Child Left Behind Act (2001) changed the public perception of educational data. This law mandated that all school districts use data in the form of testing accountability to improve student learning. The law also required that student achievement be measured against state determined goals of proficiency and be reported publicly. The public report required by the No Child Left Behind Act (2001) was called the Annual Yearly Progress (AYP). AYP was used as an indicator of student achievement and an indicator of a school district's success. Student achievement in AYP was broken into 10 subgroups: all, American Indian, Asian, Hispanic, Black, White, Limited English Proficient (LEP), Individual Education Plan (IEP), migrant, and free and reduced lunch (No Child Left Behind Act, 2001).

Missouri reports indicated that many subgroups in school districts across the state were not successful in meeting the AYP criteria. The Missouri Department of Elementary and Secondary Education (MO DESE) responded to the failure in meeting

AYP across all subgroups by designing the Collaborative Work Grant (CWG) to improve student achievement. Through the CWG, Missouri school districts were trained on the Missouri data team model. The Missouri data team model synthesized the research of Hattie (2012), Reeves (2004), DuFour & Eaker (1998), Ainsworth (2003), and Schmoker (1999). Even though multiple subgroups were reported in AYP reports, Missouri chose to focus the CWG on the proficiency levels of two subgroups, all and IEP. The goal of training Missouri school districts in the use of the Missouri data team model was to improve student learning and close the disparity between general education students and students with disabilities (MO DESE, 2014a). Missouri school districts that met AYP in the all subgroup, but did not meet AYP in the IEP subgroup, were strongly encouraged to participate in the CWG (MO EduSail, n.d.a). No Child Left Behind (2001) defined the subgroup of all students as every student enrolled in the school. No Child Left Behind (2001) defined the subgroup, students with an IEP, as every student who had an IEP, regardless of the area of disability.

School District XYZ was one of the Missouri school districts that met the criteria for the CWG. Data indicated reading and mathematics proficiency levels of general education student were meeting AYP, while reading and mathematics proficiency levels in the subgroup, students with an IEP, were not (MO DESE, 2013). School District XYZ agreed to be part of the CWG, which would provide teachers with training on the use of the Missouri data team model. The goal of the district participation in the CWG was to assist students in making academic gains while also diminishing the disparity between the general education student and the student with an IEP (M. Brown, personal communication, August 10, 2014).

School District XYZ was a typical educational setting filled with data reflecting student proficiency levels. Some of this data included, but was not limited to, ACT scores, state testing proficiency levels, local benchmark assessment data, and student grades. The Missouri data team model provided a collaborative framework for teachers, guiding the analysis of student data and modification of instruction based upon the analysis. The study was conducted as a preliminary examination of the effect of classrooms utilizing the Missouri data team model on reading and mathematics proficiency levels of students in grades 3-5 attending School District XYZ. Data were analyzed in the two subgroups, all students and students with an IEP, since these subgroups were the focus of the CWG (M. Brown, personal communication, August 10, 2014).

Background

In *Reflections on a Half-Century of School Reform: Why Have We Fallen Short and Where Do We Go From Here?,* Jennings (2012) discussed three major changes that happened in public education in the 1960s: mandatory schooling, changes in national segregation and discrimination, and changes in special education laws and procedures. Jennings further explained that as a result of these changes, many reform movements followed with the expectation of increasing student achievement levels. These reform movements included Site Based Management, Montessori schools, vouchers, Afro-centered Schools, and homeschooling. The systematic level of impact expected from these movements was not realized, and student growth remained stagnant (Jennings, 2012).

In the 1990s and early 2000s educational theorists began to publish additional research on school reform. This research required a shift away from the original model of education, one in which schools were akin to factories, where teachers fulfilled their duty to present the curriculum and where students were sponges, receiving their education at the same pace as everyone else, to a new model as a learning organization that centered around teaching and learning (DuFour & Eaker,1998). DuFour & Eaker (1998) described characteristics of schools that operated as learning organizations or Professional Learning Communities (PLC). PLCs had a laser-like focus on learning where teachers collaboratively sought to answer the following four essential questions. What do we want our students to learn? How will we know when they learn it? How will we respond when they don't learn it? How will we respond if they already know it (DuFour & Eakers, 1998)? Marzano (2003) described effective schools that made an impact on the achievement of students. Marzano (2003) outlined the characteristics of these effective schools as having a guaranteed and viable curriculum, setting challenging goals and providing meaningful feedback, involving parents and the community, establishing classrooms that are safe and orderly, and providing ongoing professional development for staff (Marzano, 2003). Schmoker (1999) described the benefits of data-based decision-making. In data-based decision-making, educators used student achievement data as a basis for changes in instruction (Schmoker, 1999). Finally, Hattie (2016) completed a meta-analysis of 1,137 research studies. Hattie listed the top 150 teaching practices discovered in his meta-analysis and ranked them by effect (Hattie, 2012).

Reeves (2004) provided a framework for teacher collaboration which was labeled as data teams. This framework attempted to create a systemic approach to improve teaching and learning. As part of the framework, current student data were analyzed by teacher teams to determine strengths and weaknesses of student performance in the identified skill or standard. The analysis was followed by an alignment of best teaching practices to identified weaknesses, targeting instruction to the needs of the learner. Professional development for teachers was embedded within the entire framework, allowing teachers to improve their craft, thus improving student learning. Student data was systematically collected and monitored to determine student progress towards identified goals, and teaching strategies were adapted to meet the needs of the students at specified points in the framework. Reeves (2004) purported that when the data team process was followed with fidelity, all students would make gains. An additional benefit of the data team process, according to Reeves, was the early identification of students who might benefit from special education services. By identifying students earlier in their academic struggles, help could be provided, preventing the current academic failure, often beyond repair, that students have been required to experience before being assessed for special education services (Reeves, 2004).

The No Child Left Behind Act (2001) added a sense of urgency to the public education system and its lack of growth. This act mandated school districts to publicly report the percentage of students meeting AYP goals. The legislation defined the goal for student achievement as all students in the United States would become proficient in reading and mathematics by the year 2020 as measured by state achievement tests. The No Child Left Behind Act (2001) further stated that state-level achievement tests were to

be administered in grades 3-12. Schools not making AYP risked losing continued federal funding.

After the No Child Left Behind Act (2001) was enacted, a new era of data-based decision-making began. Educators and other educational leaders were expected to use student assessment data to inform and guide teaching. Data analysis could be used to "identify and correct gaps in the curriculum" (Goldring & Berends, 2008, p. 13). Once these gaps were identified, educational leaders could set and prioritize student learning goals. These goals were tightly aligned to the curriculum. As instruction took place, educators would monitor student progress and adapt instruction accordingly. When inadequate progress was made with individual students or small groups of students, educational leaders could implement remedial instruction as an intervention to help these identified students succeed. The various components of the data based decision making progress moved the school district toward continued improvement and "built a sense of learning through community" (Goldring & Berends, 2008, p. 7).

The Missouri Department of Elementary and Secondary Education (2014b) stated that Missouri sub-groups, as defined by No Child Left Behind (2001), were reaching the achievement level of proficiency at a rate of approximately one out of every three students. Missouri students who were only part of the all student subgroup, as defined by No Child Left Behind (2001), were reaching proficiency at a rate of approximately two out of every three students. Missouri's national testing ranked anywhere from 18 to 33 in student proficiency (MO DESE, 2014b). Additionally, the overall proficiency levels of students in Missouri school districts, as measured by state-level end-of-year testing, was

starting to become stagnant, illustrating a lack of continuous improvement towards federally mandated goals (Williams & Henry, 2013).

Data Teams, also known to Missouri educators as Teacher Collaboration Teams, were created as a state initiative to address the lack of continuous improvement and were intended to assist districts to realize the student growth mandated by the No Child Left Behind Act (2001) in the state of Missouri (MO DESE, Office of Special Education, 2013). Missouri Data Teams synthesized the PLC Model (DuFour & Eaker, 1998), research on visible learning (Hattie, 2012), research on best practices for effective schools (Marzano, 2013), and research on data-based decision-making (Schmoker, 1999) to provide a framework that guided teacher teams through a collaborative conversation centered around teaching and learning (MO DESE, Office of Special Education, 2013). Missouri modeled its own framework after the framework for data teams published by Reeves (2004) and the work on identifying power standards (Ainsworth, 2003) and the use of common formative assessments (CFAs) for continuous improvement published by Ainsworth (Ainsworth & Viegut, 2006) according to the Missouri Department of Elementary and Secondary Education (MO DESE, Office of Special Education, 2013).

Reeves' (2004) model blended the professional collaboration found in a PLC with data-based decision-making. Reeves's systemic framework could be applied to all levels in the education system, starting at the classroom level and proceeding all the way up to the district administrative level. The framework was made up of five steps and often included a sixth step. Step one was collecting and charting data. Step two was analyzing the data to prioritize need. Step three was to set, review, and revise specific, measurable, agreed upon, realistic and time-based (SMART) goals. Step four was to select research-

based common strategies that correlated with the prioritized needs identified in step two. Step five was to determine the indicators that measured success. The sixth step, which was often used in correlation with the other five steps, was to monitor and evaluate the results of the first five steps (Scott, n.d.).

Ainsworth and Viegut (2006) published work on common formative assessment. Ainsworth and Viegut identified formative assessments as measures for learning. They measured students' current learning and allowed teachers to adjust teaching to meet the needs of the student. Formative assessments were given routinely throughout a unit of study. By making assessments common, they would be used by a team or grade level. These assessments may have been commercially, district, or teacher made (Ainsworth & Viegut, 2006).

Prior to creating common formative assessments, Ainsworth and Viegut (2006) identified steps for teachers and administrators to follow in order to identify and "unwrap" power standards. First, standards were prioritized based on "endurance, leverage, and ability to prepare students for readiness at the next level of learning" (Ainsworth, 2003, p. 13). Standards were also evaluated based upon the state end-of-year test. Next, the power standards were "unwrapped" using a four-step process. The steps were as follows:

> (1) identifying the key concepts and skills embedded in the wording of the standards; (2) creating a graphic organizer to represent the "unwrapped" concepts and skills; (3) determining the Big Ideas inherent in the "unwrapped" standards; and (4) writing Essential Questions to guide and focus classroom instruction and assessment. (Ainsworth & Viegut, 2006, chapter 4, section 1, para. 2)

Ainsworth and Viegut (2006) synthesized the work of Reeves and Schmoker on data teams and continuous improvement, combining and refining the synthesis to create his own data team framework. The first step was to show the data graphically using a chart. The second step was to evaluate student data to determine strengths and opportunities for improvement. The third step was to set a specific and measurable goal. The fourth step was to align teaching strategies to the areas for improvement. The final step was to identify the indicators of success. These meetings were to be held after the pre-assessment and the post-assessment (Ainsworth & Viegut, 2006).

Missouri Department of Elementary and Secondary Education (2014a) implemented a five-year Collaborative Work Grant (CWG) with the intent of closing the gap between two subgroups: all students and students with an IEP. Teacher teams across the state would be trained to follow the Missouri data team model. The success of data team models in many school districts across the nation was cited in support of the investment of time and resources in the CWG (MO DESE, 2014a, 2014b). Specific school districts in Missouri were strongly encouraged to participate in the CWG. These were school districts whose subgroup, students with an IEP, had proficiency levels in reading and mathematics that fell short of AYP target scores while the subgroup, all students, met the AYP target scores. Districts that chose to participate were required to make a three-year commitment to the training and implementation of the data team process (MO DESE, 2014a, 2014b).

School District XYZ was one of the schools that chose to participate in the CWG. Data provided by the school district (Platte County R-III, 2017) demonstrated that in the years 2010-2012, 58% to 65% of all students scored in the two top levels on Missouri's

state assessment – the Missouri Assessment Program (MAP) – in mathematics and English Language Arts. Only 17%-23% of students with an IEP scored in the top two levels. School District XYZ met AYP requirements for the general education student population, but not in the sub-group of students with an IEP (see Tables A1, A2, A3, and A4 in Appendix A).

Missouri utilized the Regional Professional Development Centers (RPDC) through a common learning package to train teacher teams in districts participating in the CWG on the use of the Missouri data team model (MO DESE, 2014a) (see Figure C1 in Appendix C and Figure D1 in Appendix D). Teachers in School District XYZ collaboratively followed the Missouri data team framework provided in the training. Student assessments were aligned to selected power standards. Teacher teams analyzed student performance on the assessments and altered teaching practices to meet student need as determined by the data analysis (MO DESE, 2014b).

Three years into the CWG commitment, students in School District XYZ took a new MAP assessment aligned to the newly adopted Missouri Learning Standards. The results of the test revealed that students in grade 3 were over 65% proficient, while the results of grades 4-5 were closer to 55% (Platte County R-III, 2017). These results did not match the expectations of leaders within School District XYZ. Seeking a cause for this difference, leaders of School District XYZ identified two key differences between grades 3 and grades 4-5. The first difference was identified after all teachers took a self-assessment measuring the perceived level of proficiency in the data team model. Grade 3 teachers perceived themselves as having participated in highly proficient data teams, while grades 4-5 survey results revealed a lower level of self-perception in the

proficiency of the data team process (Wilson, 2014). The district identified the second key difference between grades 3 and grades 4-5 teachers as one of instructional resources and strategies. Grade 3 teachers agreed upon and used similar curricular resources and instructional strategies while grades 4-5 teachers varied significantly in their curricular resources and instructional strategies (M. Brown, personal communication, August 10, 2014). School District XYZ (2014) then implemented a consistent Tier 1 model of instruction across the K-5 grade levels. In this Tier 1 model of instruction, teachers used identified curriculum resources and followed a consistent scope and sequence.

School District XYZ believed that teachers had been adequately trained to follow the data team model and expected teachers to implement the Missouri data team model with fidelity (M. Brown, personal communication, August 10, 2014). By implementing the Missouri data team model, it was believed that both non-subgroup and subgroup student populations would make significant academic achievement (M. Brown, personal communication, August 10, 2014). Additionally, it was believed that the disparity between subgroup and non-subgroup academic proficiency levels would begin to be mitigated (M. Brown, personal communication, August 10, 2014). Measuring the success of the Missouri data team model became important as allocations were made of both district time and resources for the Missouri data team model implementation. Unfortunately, Missouri's state level testing was in a state of flux and could not be compared from one year to the next (M. Brown, personal communication, August 10, 2014). A decision was made to use the district's Tier 1 assessment in mathematics and reading as a preliminary measure of student success. STAR Enterprise assessments were chosen because they were nationally normed and consistent from one year to the next.

Additionally, strong evidence supported the fidelity of the scale scores presented by STAR Enterprise assessments (M. Brown, personal communication, August 10, 2014).

The Every Student Succeeds Act (2015) reauthorized the Elementary and Secondary Education Act (1965). The legislation added an expectation "that all students in America be taught to high academic standards that will prepare them to succeed in college and careers" (U.S. Department of Education, 2015, para. 8). Students continued to participate in statewide assessments that were aligned to the high academic standards. Results of assessments were available to educators, families, students, and community members. Funding was no longer tied to student proficiency levels as measured through these assessments. Local control over evidence-based innovations was granted. Future investments which provided access to high-quality preschool education were sustained. Finally, the Every Student Succeeds Act (2015) "maintain[ed] an expectation that there [would] be accountability and action to effect positive change in our lowest-performing schools, where groups of students [were] not making progress, and where graduation rates [were] low over extended periods of time" (U.S. Department of Education, 2015, para. 8).

Statement of the Problem

School District XYZ believed that the implementation of a consistent Tier 1 model of instruction and the consistent use of the Missouri data team model would improve student achievement (M. Brown, personal communication, August 10, 2014). School District XYZ was able to mandate the use of consistent curriculum resources and a scope and sequence for grades 3-5 in mathematics and reading. School District XYZ had not examined the effect of the data team process on student achievement. A study of

student achievement in mathematics and reading, both in the subgroup and non-subgroup population, was examined to explore the difference between student achievement before and after the full implementation of the data team model.

Purpose of the Study

The purpose of this study was to determine the change in academic achievement in mathematics and reading as measured by STAR Enterprise assessments. Additionally, the change of academic achievement in reading and mathematics in the subgroup, students with an IEP, as measured by STAR Enterprise assessments, was studied. These measurements would be taken at the beginning, middle, and end of the year to determine if a statistically significant change occurred while students were in classrooms that participated in the Missouri Collaborative Work Grant and implemented the Missouri data team model initiative.

Significance of the Study

This study is significant because it may add to a growing body of research on the data team school improvement model. This study is one of the first to explore the impact of the data team process on the academic growth of both the general education population and the students with an IEP population. As one of the initial districts to implement the data team model, the study may also provide an avenue to explore when looking for ways to improve student achievement.

Delimitations

The following delimitations were set for this study:

- School year data from 2015-2016 were used.
- Only grades 3-5 data were used.

- Tier 1 assessment data of STAR Enterprise reading and STAR Enterprise mathematics assessments collected by the district were used.
- The only subgroups examined were all students and students with an IEP

Assumptions

The following assumptions were made when this study was conducted:

- The STAR assessments are valid.
- Teachers followed the data team framework with fidelity.
- Teachers in grades 3-5 followed the district-provided scope and sequence.
- Teachers used the curriculum resources provided according to the scope and sequence.
- Students put forth their best effort when taking all of the assessments used in this study.

Research Questions

RQ1. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

RQ2. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

RQ3. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

RQ4. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

Definition of Terms

Data team. The data team is comprised of group of professionals, such as teachers and principals, who collaborate on student data using the Data Team Process (MO DESE, 2014a & 2014b).

Data team process. A six-step process is used by a collaborative data team to collect and analyze data. This analysis is then used to inform instruction (MO DESE, 2014b).

Tier 1 Instruction. Tier 1 instruction is given to all students. It is evidence-based and scientifically researched. Typically, the term *tier 1 instruction* is used interchangeably with core reading and mathematics instruction when the curriculum is aligned with state standards (RTI Action Network, 2017).

SMART goal. SMART is an acronym. The S represents specific. The M represents measurable. The A represents agreed upon. The R represents realistic. The T represents time-based. SMART goals are set throughout the data-team process and are used as a measure of success (Conzemius & O'Neil, 2001).

Common formative assessment. Common formative assessments are assessments that are created to be given as a pre- and post- assessment. The assessments are used to compare student growth. These assessments are designed by a collaborative team and are administered periodically. Common formative assessments blend question types and mimic the format of district and state assessments (Ainsworth, 2003).

Standardized assessment. A standardized assessment is "a test that requires all test takers to answer the same set of questions, or a selection of questions from a common bank of questions in the same way and is scored in a standard manner" (Glossary of Educational Reform, 2015, para. 1).

Data-based decision-making. Data-based decision-making is a collaborative process to solve educational problems through which teams follow a step-by-step framework to analyze, reflect, and revise student data with a goal of improving teaching and learning (MO EduSail, n.d.a, para 1).

Student with disability. The Individuals with Disabilities in Education Act (2004) defines a child with a disability as a child with "mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and who, by reason thereof, needs special education and related services."

Individualized education plan. The Individualized Educational Plan (IEP) is "a written statement for each child with a disability" that outlines the student's achievement level, goals, and plans to meet those goals in the educational setting. The IEP also includes the special services the students receives to meet the written plan. The IEP is a legal document that is created by a team of educators and parents. (Definition of Individualized Education Plan, 2001).

Next generation assessment. Assessments that are designed to assess a student's achievement level, regardless of ethnic or economic background, against the Common Core State Standards. These assessments are computer-based and interactive. Next

generation assessments are purported to assess "higher-order skills such as critical thinking, problem-solving, and analyzing sources to write arguments and informational essays" (Partnership for Assessment of Readiness for College and Career Readiness, 2017, section 2 paragraph 2.)

Power standards. A power standard is a standard that has been prioritized above other standards for its endurance in life, necessity for future grade level success, and alignment to state tests (Ainsworth, 2003).

Progress monitoring. Progress monitoring is a systematic process in which student learning is tracked through data on student performance. The data is collected from formative assessments that measure the level of student understanding against established levels of learning. The use of the data helps the educator align future lessons to the needs of the student (Fisher & Frey, 2015).

Organization of the Study

This study is organized into five chapters. Chapter 1 is an introduction and overview of the study. Chapter 2 reviews the historic literature available in regards to the data team model in Missouri. Chapter 3 identifies the participants of the study and the research design and states the four research questions, the hypothesis for each, and the statistical analysis that was run on the data to determine statistical significant. Chapter 4 reports the results of the analysis. Chapter 5 identifies implications of the study and future considerations in relationship to this study.

Chapter 2

Review of the Literature

Modern day school reform grew out of the teachings and philosophy of John Dewey. Dewey believed that a free public education should be provided for all children from kindergarten through 12th grade. Dewey believed in equity of education for all children, unlike the reality of late 1800s, when children of privilege were the primary recipients of education. Dewey contended that without an education, children in less fortunate homes would repeat the same patterns of poverty as their parents. Dewey emphasized that schools should train all students to be productive, cooperative members of society, regardless of their background (Warde, 1960).

During the first half of the 20th century, several major social events influenced American education and highlighted the need for reform. Many soldiers returned home from The Great War, which later became known as World War I, with no career, no home, no education, and no way to support themselves. As a result, many were unemployed and homeless (Ford, 2008). Following The Great War, the country plunged into the Great Depression, "the deepest and longest-lasting economic downturn in the history of the Western industrialized world" (A & E Television Network, 2017, para 1). The United States began to emerge from the Great Depression when it entered World War II. Fearing a repeat of the economic problems in the aftermath of World War I, the Servicemen's Readjustment Act (1944) provided an education for veterans of World War II (U.S. Department of Veteran Affairs, 2013).

The Union of Soviet Socialist Republics launched its first artificial satellite, Sputnik I, in 1957. Sputnik's "beeping signal from space galvanized the United States to

enact reforms in science and engineering education so that the nation could regain the technological ground it appeared to have lost to its Soviet rival" (Powell, 2007, para. 2). The reforms were left to scientists instead of educators. Many science practices, including hands-on laboratory experiments, introduced by these scientists, continued to be used in modern-day classrooms (Garber, 2007).

Political events in the mid-1900s were the catalyst for additional school reform. Two such examples were the civil rights movement and women's suffrage. These political events migrated into the education field. One such example occurred in the court case of *Brown vs. Board of Education of Topeka* (1954). The Supreme Court declared that segregation in education was illegal. The initial result of the ruling was the busing of students in and out of predominantly African American urban schools. Soon after, other types of segregation were also ruled illegal, including native language, disability, and economic status (Pankake & Littleton, 2012).

As a result of this lawsuit and others that followed, Congress began passing laws that dramatically changed the education frontier. One of those acts was the Elementary and Secondary Education Act (1965). This act declared that an equal education for all resulted in a better life and less poverty. Funding for Title 1 programs enabled school districts to meet the needs of the economically disabled and comply with the criterion of the Elementary and Secondary Education Act (1965). The Elementary and Secondary Education Act (1965) was amended two years later and provided funding for English Language Learners (Social Welfare History Project, 2016). Congress amended the Elementary and Secondary Education Act two more times by 1980. Each reauthorization

assisted educationally disadvantaged students with low socioeconomic status (McDonnell, 2005).

The Education for All Handicapped Children Act (1975) was the culmination of several pieces of educational legislation and key landmark court cases. The Education for All Handicapped Children (1975) was amended to the Individuals with Disabilities Education Act of 1977. Commonly referred to as PL 92-142, the Individuals with Disability Education Act supported "states and localities in protecting the rights of, meeting the individual needs of, and improving the results for … infants, toddlers, children, and youth with disabilities and their families" (U.S. Office of Special Education Programs, n.d, p. 2). A free, appropriate public education was guaranteed to every child no matter the disability or location within the United States.

President Reagan's National Commission on Excellence in Education (1983) delivered a report entitled *A Nation at Risk: The Imperative for Educational Reform.* The report stated that education was "presently being eroded by a rising tide of mediocrity that threaten[ed] our very future as a Nation and a people" (para. 2) The contents of the report also sought "to generate reform of [the] educational system in fundamental ways and to renew the Nation's commitment to schools" (National Commission on Excellence in Education, 1983, para. 4). The contents of the report sparked educational reform across the nation, which became known as the Excellence Movement (DuFour & Eaker, 1998).

Eleven years later, the United States government passed the Improving America's Schools Act (1994) which tied federal funding to state-administered end-of-year test scores in an attempt to make school districts accountable for the learning of all students.

No Child Left Behind (2001) further tied school district funding to state administered end-of-year test scores with the goal that all students would become proficient in reading by 2020. The Individuals with Disabilities Act (2004) ensured education for all children by providing funding for students with disabilities from birth through age three and age three through 21.

While the various legislative acts were enacted and court decisions made, many schools began their own reform movements that strived to restructure schools. The goal of these movements was to give schools and parents more choices. Voucher programs allowed students to choose the school they would attend through the use of public education dollars. Afro-centered, Waldorf, Montessori, progressive, religious, and charter schools provided different approaches towards education. Homeschooling allowed parents to educate their children at home. Site-based management allowed individual schools to be the decision makers. Many of these reform movements are still alive in public education today (Jennings, 2012).

With limited success realized in educational reform, President George Bush convened a summit meeting with state governors to address education in 1989 (DuFour & Eaker, 1998). The result of this summit was a set of six national educational goals geared towards closing "the skill-and-knowledge gap" (U.S. Department of Education, 1991, p. 5). These six educational goals were later amended to include eight educational goals (DuFour & Eaker, 1998). Congress created the National Education Standards and Improvement Council in 1994 to "review and endorse state and national standards" (DuFour & Eaker, 1998, chapter 1, section 3, para. 4). National control of the standards was transferred to state control in 1996 (DuFour & Eaker, 1998).

Educational experts started examining more student focused approaches in the late 1900s as a practical means to accomplish the philosophical, political, and theoretical changes expected in education. The outcomes-based education movement guided teachers in determining what students needed to learn and how they would learn it. Marzano (2003) studied and reported the characteristics of effective schools. DuFour & Eaker (1998) developed the framework for professional learning communities from the work of previous researchers. Hattie (2016) completed over 1,137 meta-analyses and discovered the teaching strategies with the highest effect sizes.

A Focus on Teaching and Learning through Collaboration: A Collaborative Culture

DuFour & Eaker (1998), Marzano (2003, 2007), Hattie (2012), and Schmoker (1999) investigated school improvement and discovered the importance of collaboration among teachers. DuFour & Eaker (1998) stated, "if schools [were] to be significantly more effective, they must break from the industrial model upon which they were created and embrace a new model that enable[d] them to function as learning organizations" (chapter 1, section 5, para. 2). Embracing a school model centered around teaching and learning required each individual in the school to participate in deliberate collaboration. Through collaboration, the focus on teaching and learning could be accomplished and the school could function as a learning organization (DuFour & Eaker, 1998).

Research showed that one of the largest effects of teacher collaboration was student academic growth (Schmoker, 1999). Since schools were designed to assist students in achieving academic growth, there was a continued need for teacher collaboration. Developing and nurturing teacher collaboration required teachers to possess an understanding of collaboration. Teacher collaboration was based on teams,

had a collegial atmosphere, and included the willingness to share knowledge and wisdom (November, 1998; Schmoker, 1999). Schmoker (1999) expanded the characteristics of teacher collaboration to include goal-oriented teaching and environments of collegial support.

DuFour & Eaker (1998) defined the collaborative inquiry process of teacher collaboration as one focused on teaching and learning. The collaborative inquiry process expected participants to ask reflective questions. The practice of asking questions occurred regularly. The answers to the reflective questions changed the instruction that occurred within the classroom. Reflections on student learning that revealed expected proficiency levels yielded a desire to improve teaching practices and continuously improve learning. Reflections that revealed students were struggling to learn resulted in the research and use of new instructional methods aligned to student needs (DuFour & Eaker, 1998).

Highly collaborative teacher teams resulted in measurable improvements in student achievement and superior resolutions for student learning problems (Little, 1990; Schmoker, 1999). Schmoker found that teachers on collaborative teams supported each other's weaknesses with their own strengths and provided regular aid to novice teachers. Finally, research revealed "an expanded pool of ideas, materials, and methods" (Little, 1990, p. 527) were developed through the regular collaboration of teacher teams.

Student growth was realized through a focus on continuous improvement (Schmoker, 1999). Educators communicated and collaborated to build a culture of continuous improvement (DuFour & Eaker, 1998.) DuFour & Eaker stated that the culture of continuous improvement

> [was] more likely to be sustained when teachers participate[d] in reflective dialogue: observe[d] and react[ed] to one another's teaching; jointly develop[ed] curriculum and assessment practices; work[ed] together to implement new programs and strategies; share[d] lesson plans and materials, and collectively engage[d] in problem solving, action research, and continuous improvement. (DuFour & Eaker, 1998, chapter 6, section 3, para. 12)

The continuous improvement realized through collaboration required structure. The structures for collaboration were carefully planned and cultivated (DuFour & Eaker, 1998). The structures helped teachers foster a sense of continuous improvement (DuFour & Eaker, 1998). The structures were cyclical and repeatable. The cycles included "setting goals, reflecting, planning, experimenting, analyzing results, and revising plans" (DuFour & Eaker, 1998, chapter 12, section 5, para. 22).

While the results of collaboration are positive and desired, DuFour & Eaker (1998) cautioned that a substantive change of this kind would be difficult due to "an existing system with a well-entrenched structure and culture" (chapter 3, section 1, para. 21). One hurdle to effective schools was the isolation felt by teachers (DuFour & Eaker, 1998). This was a tradition ingrained in traditional schools (DuFour & Eaker, 1998). This isolation needed to be replaced by collaboration. The purpose of the collaboration needed to be explicit (DuFour & Eaker, 1998, chapter 6, section 5, para. 20).

Creating a collaborative culture in the school required a significant investment of time and resources within the organization (DuFour & Eaker, 1998). "The schools that are successful in implementing significant change regard[ed] teacher collaborative time for teachers as a critical resource – an essential tool that enable[d] teachers to enhance

their individual and collective effectiveness" (Louis, Kruse, & Marks, 1996, cited in DuFour & Eaker, 1998). The school district needed to address public perception, because "Americans tend[ed] to regard any time that a teacher is not standing in front of a class as 'down time'" (DuFour & Eaker, 1998, chapter 6, section 5, para. 15).

Collaborative teams were formed with a purpose (DuFour & Eaker, 1998). Collaborative teams may have shared students. DuFour & Eaker (1998) further stated that collaborative teams may be comprised of teachers who taught a common grade level or who taught a common content area. Teacher teams may also be created as task forces or for professional development.

A Focus on Student Learning

DuFour & Eaker (1998) stated that the goal of education should be "to help every child live a successful and satisfying life and make a contribution to community and country" (chapter 4, section 2, para. 3). DuFour & Eaker (1998), Marzano (2003, 2007), and Hattie (2012) offered guidance on the most effective ways to meet this goal. DuFour & Eaker stated that "teachers collectively increase[d] the effectiveness of their schools when they collectively identif[ied] and work[ed] toward the result they desire[d], develop[ed] collaborative strategies to achieve their goals, and create[d] systems to assess student learning" (DuFour & Eaker, 1998, chapter 8, section 1, para. 1). While continuing to search for a model of instruction that could be replicated in the classroom, Marzano (2007) discovered no succinct framework of instruction. Marzano discovered that there were common characteristics of effective instruction. They were effective instructional setting, effective curriculum design, and effective classroom management.

Goal setting. Meeting the goal of student achievement required educators to define the goals for student learning (DuFour & Eaker, 1998). Marzano (2003) ranked a guaranteed and viable curriculum as having high impact on student learning. Such a curriculum clearly identified essential learning standards that could be delivered within the duration of learning available throughout a school year These learning standards were sequenced in such a way that students were given "ample opportunity to learn" (Marzano, 2003, p. 30).

Once learning goals were defined, educators engaged in a cycle that used assessment to guide instruction and fostered a commitment for continuous improvement (DuFour & Eaker, 1998). Monitoring the progress of students through this cycle ensured that the focus stayed on student learning (DuFour & Eaker, 1998). Monitoring also allowed for the timely feedback of student achievement towards the learning goals (Marzano, 2003).

Assessment. "Testing typically happen[ed] at the end of the year, [was] evaluative in nature, and the feedback [was] almost always too late to help the student or the teacher make meaningful use of the information (Reeves in Ainsworth & Viegut, 2006, Foreword, section 1, para. 1). "However, by coupling large-scale assessment measures with a powerful in-classroom assessment system, educators [could] utilize the building blocks needed to make a profound difference in the achievement of entire classes of individuals" (Ainsworth & Viegut, 2006, Foreword, section 2, para. 2). Assessment, when used within the curriculum design, allowed teachers to evaluate the proficiency levels of students before and during teaching and adjust instruction to the needs of the student (DuFour & Eaker, 1998).

Hattie (2012) supported this research when he published the results of his meta-analysis, providing four components to effective lesson planning. Hattie defined one component of effective lesson planning as teachers having knowledge about student academic abilities before beginning a new lesson. Teachers measured student proficiency through various methods. One way was through the administration of common formative assessments. Common formative assessments could be given formally through the use of paper and pencil tests or informally through classroom observations during a lesson. Measurement could also be taken through individual student conferencing where teachers participated in one-on-one conversations with students about student learning. Records of the student's level of success were recorded and used as a planning board (Hattie, 2012).

Marzano (2010) reported his findings on formative assessments. According to Marzano (2010), both teachers and students benefitted from formative assessments in the classroom. Students were given feedback on specific skills or content. This allowed students to target their learning and seek continuous improvement of the skill or content being taught. Assessment results provided teachers' feedback on student proficiency levels. Teachers then knew what needed to be reviewed or retaught before moving forward with lessons.

Marzano (2010) described some assessments as obtrusive. Obtrusive assessments include multiple-choice, matching, alternative choice, true/false, multiple response, fill in the blank, or short response. Obtrusive assessments also included oral responses, formal oral reports, probing discussions, and demonstrations. Marzano (2010) described other assessments as unobtrusive. Unobtrusive assessments included student-generated

assessments Regardless of the type, formative assessments provided both teachers and students with important feedback on current student proficiency levels. Similar to the research of Hattie (2012), Marzano (2010) found that it was important to track student progress on learning goals using the formative assessments. The tracking provided a written record that could be used as a reference when planning lessons.

Hattie (2012) described an additional characteristic of the effective classroom as one where teachers adjusted teaching based on the learning rate of students. Differentiation took place in small groups or individual conferences. The differentiation in the effective classroom was purposeful. The use of common formative assessments throughout the lesson delivery provided teachers with immediate data used to determine who needed small group instruction or individual conferences (Ainsworth & Viegut, 2006).

Assessments needed to be aligned to the goals of learning and used to effectively monitor a student's progress towards mastery of the goals (DuFour & Eaker, 1998). Teacher awareness of the rate of student learning as students progressed throughout the lesson was another component of effective lesson planning (Hattie, 2012). Teachers used daily formative assessments to assist in this measurement. The formative assessment allowed a teacher to monitor which students met and did not meet the daily expectations of the lessons (Hattie, 2012). Marzano (2017) gave examples of effective formative assessments and included voting techniques and response boards that were repeated multiple times throughout a lesson. These assessments could be administered to the whole class or to individual students (Marzano, 2017). Teachers then adapted lessons to

meet the students' needs, constantly moving student achievement closer to the identified educational outcome (Hattie, 2012).

Planning for learning. Hattie (2012) reported that another component to effective instruction was the careful analysis of learning standards to determine the expected level of student proficiency. The selection of materials and methods of instruction aligned to student need and clearly taught the stated goals (DuFour & Eaker, 1998). The framework of the lesson was designed upon research-based strategies (Marzano, 2003).

Marzano (2017) described a process that teachers could follow when planning for instruction. The first step was "to unpack the standard, identify what is essential, and organize the content into a proficiency scale" (Marzano, 2017, chapter 1, section 6, para. 5). The teacher would then determine what the student needed to know and how the student was expected to show the learning (Hattie, 2012; Marzano, 2003). Once the criteria of student mastery was defined, the teacher carefully planned instruction that was aligned to the expected student outcomes (Hattie, 2012). The planned "instruction should be clear and focused" (DuFour & Eaker, 1998, chapter 10, section 4, para. 32) on the criteria.

Teacher collaboration in lesson planning. The collaboration that occurred on effective teams supported the lesson planning and was "really action research – carefully conducted experimentation with new practices and assessments of them" (Schmoker, 1999, chapter 1, section 5, para. 1). Schmoker's research indicated that to conduct the action research, teams must work within a specific framework. Schmoker defined the framework for teacher collaboration as beginning with a question. The beginning question examined the effectiveness of decisions made at the end of the previous

collaborative meeting. For example, a team might examine the effectiveness of an agreed upon strategy or a team might examine difficulties that team members experienced while implementing an agreed upon research based strategy. Once the question was answered, the team proceeded with the "most urgent learning problem" (Schmoker, 1999, chapter 1, section 8, para. 6). The meeting ended with a plan and commitment to address the urgent learning problem identified in the previous step of the collaborative framework. This cycle was repeated at every team meeting and often only required a 30-minute commitment per week (Schmoker, 1999).

In order for the framework of meetings to be successful, Schmoker (1999) stated that it must be centered around student performance data. Teacher teams analyzed the student performance and set meaningful goals. Then, teachers monitored students' progress towards those goals by regularly analyzing new student performance data. Schmoker contended that this goal-oriented focus on student performance through the use of data resulted in large-scale, substantial gains in a short time. These successes energized the team into implementing alternative instruction on a regular basis, instead of reverting back to the less effective teaching methods often found in the classroom (Schmoker, 1999).

Selection of teaching methods and material. The meta-analysis of Hattie (2012) revealed that specific teaching practices yielded high effect sizes during lesson delivery. One teaching practice was for students to collaborate and engage in meaningful dialogue. Another was student engagement in learning through teacher invitation. Goal setting was another quality of the highly effective classroom. These goals were transparent and

resulted in student awareness of the criteria for academic success. Students were able to evaluate themselves based on the pre-determined criteria.

Classrooms with highly effective teachers provided explicit instruction and deliberate practice based on student need. Specific feedback was given frequently to assist students in moving closer to success. Hattie's research demonstrated the importance of lesson delivery and the correlation between effective teaching practices and higher levels of student achievement (Hattie, 2012).

A Focus on Teaching

As Marzano (2007) conducted his research on effective schools, he discovered that "the one factor that surfaced as the single most influential component of an effective school is the individual teachers within the school" (Marzano, 2007, Introduction, section 1, para. 2). Marzano (2003) researched the difference in student achievement based on teacher effectiveness and discovered that the least effective teachers have students who only gain 14 percentile points in one year contrasted to highly effective teachers, whose students gain 53 percentile points in one year. An average student gains 34 percentile points in achievement in one school year. These results in student achievement are compounded over a three-year period. Students in classrooms with highly effective teachers gained 83 percentile points in three years, contrasted to students in classrooms with the least effective teachers who only gained 29 percentile points in three years (Marzano, 2003). Marzano synthesized the research of many others to identify three factors that assist teachers in becoming high effective. Effective teachers used effective instructional strategies, had good classroom management, and utilized a classroom curriculum design (Marzano, 2003).

Collaborative reflections upon teaching and learning allowed teachers to learn beside each other (DuFour & Eaker, 1998). These reflections developed collegiality (Marzano, 2003). This was extremely important when considering the expectation for new teachers to teach at the same level as veteran teachers (DuFour & Eaker, 1998). Hattie's (2012) research revealed that a component of effective lesson planning occurred when teachers worked together, having conversations about student learning. Teacher lesson planning was directly impacted. Teachers were able to collaborate on the most effective teaching strategies to use in the classroom and align those strategies to the lessons delivered in the classroom. The collaboration created a culture where "professional teachers are students of teaching and consumers of research" (DuFour & Eaker, 1998, chapter 10, section 4, para. 23).

Ainsworth and Viegut (2006) provided a model teachers could follow to assess student learning and collaboratively learn from one another. First teachers would "unwrap" the power standard.

> The four-step "unwrapping" process include[d] a simple technique for (1) identifying the key concepts and skills embedded in the wording of the standard; (2) creating graphic organizers to represent the unwrapped content and skills; (3) determining the Big Ideas inherent in the "unwrapped" standards, and (4) writing Essential Questions to guide and focus classroom instruction and assessment. (Ainsworth & Viegut, 2006, chapter 4, section 1, para. 2)

The development of common formative assessments followed the "unwrapping" process and included a timeline for implementation. An analysis of the student performance on the common formative assessments indicated student strengths and

weaknesses. Reflection of the analysis led to the selection of best practices that were research-based and aligned to student needs. Teachers agreed upon strategies to use in the classroom and timelines for re-assessment. The result was a cycle of continuous improvement focused on teaching and learning (Ainsworth & Viegut, 2006).

Schmoker conducted research on continuous school improvement. Schmoker (1999) illustrated the positive impact of educators who utilized and analyzed student results to guide instruction. Furthermore, Schmoker pointed out that this analysis should be conducted frequently in order to reap the largest benefits for students. Schmoker advocated for teacher collaboration as a key in the analysis process. According to Schmoker, effective teacher collaboration resulted in exponentially more effective teaching practices in the classroom.

Hattie's (2012) research also revealed the importance of teacher reflection. Reflection was also part of Ainsworth and Viegut's (2006) model. Hattie (2012) further explained that actions occurring after lessons were delivered resulted in high effect sizes. During effective moments, teachers dialogued with other teachers about their teaching experiences. They examined the extent to which students learned the expected content. They determined the skills students still needed to acquire. Teachers then looked at their own teaching to determine which practices had the highest effect on student learning and shared the identified practices with their colleagues. Finally, teachers engaged in debates with their peers about the effect strategies had on student learning, agreeing on the most effective ones to use in the future.

Staff Development

Teachers were an important resource for schools. As such, schools invested time and resources in high quality staff development. DuFour & Eaker (1998) defined staff development as "content [that] expand[ed] the repertoire of teachers to meet the needs of student who learn[ed] in different ways" (DuFour & Eaker, 1998, chapter 12, section 6, para. 4). Quality staff development was based on the research behind the qualities of good teaching and could be addressed in collaborative teams (DuFour & Eaker, 1998). DuFour & Eaker (1998) stated that "the attention to different learning styles, focus on authentic problems, opportunities for guided practice, and chance to work with others that reflect good teaching also reflect[ed] good staff development and were evident in the professional learning community" (chapter 12, section 7, para. 3). Members of collaborative teams following a framework for collaboration were able to coach each other towards the mastery of new skills (DuFour & Eaker, 1998).

Teacher collaboration also provided opportunities for "enhancing the pedagogical skills in a reflective, cooperative manner" (Marzano & Waters, 2009, p. 56). Teachers followed the framework of collaboration to systematically evaluate the effectiveness of instructional strategies. Collaborative discussions resulted in common lesson plan design and common instructional language. Observing master teachers utilizing effective instructional strategies was another component of professional development built into collaborative teacher teams. Action research was conducted on instructional strategies when collaborative teams evaluated assessment data (Marzano & Waters, 2009).

Changing the Culture of Education

Research supported the development of collaborative teams that followed a cycle of continuous improvement to meet the learning needs of their students. DuFour & Eaker (1998) explained that an urgency must be presented but that urgency "does not require a persistent state of panic" (chapter 3, section 3, para. 3). DuFour & Eaker (1998) cautioned that sustaining a change in practice at this level would be difficult. DuFour & Eaker (1998) also stated that "the most effective strategy for influencing and changing an organization's culture [was] simply to identify, articulate, model, promote, and protect the shared values" (chapter 7, section 2, para. 1). This simple strategy offered a strategy to overcome the difficulty expected when attempting to effect a cultural change within a building.

DuFour & Eaker (1998) stated that a collaborative culture could be sustained through common goals and procedures. Common goals and procedures included reflecting upon teaching and learning at an individual level. Individual reflection and refinement of teaching practices led educators to a deeper level of analysis and refinement of their own craft. The refinement of teaching practices at an individual level in a collaborative environment provided the opportunity for the analysis and refinement of teaching at the team level. Ultimately, this culture of continuous improvement created a culture of true professionalism.

Additional Characteristics of Effective Schools

Marzano (2003) defined additional characteristics of effective schools that indirectly affected student learning. These characteristics are supported by numerous studies. Marzano (2003) defined one such characteristic as parent and community

involvement. Parents and schools had open pathways for communication. Parents were involved in the day-to-day operations of the school. Parents and community members were able to have "some voice in key school decisions" (Marzano, 2003, p. 48). Marzano (2003) further explained that these avenues for communication created a sense within the family that education was important. When one perceived something as important, the person spent more time caring for the important item. In this case, school became important to the student and parent.

Another component of effective schools was a safe and orderly environment (Marzano, 2003). Clear rules and expectations for school behavior were established. Consequences for not following school rules were established and followed. Students were taught self-discipline. Detection systems for students prone to violence were developed. By creating a safe and orderly environment, students and teachers had the necessary psychological energy to attend to teaching and learning (Marzano, 2003).

Effective schools were also described as ones where teachers established a safe and orderly environment in the classroom. This was accomplished by "establishing and enforcing rules and procedures" (Marzano, 2003, p. 89). Consequences for inappropriate behavior were established and enforced. Relationships between students and teachers were developed and nurtured. An awareness of the characteristics of students was developed by teachers and "helped them maintain a healthy emotional objectivity with their students" (Marzano, 2003, p. 102). Research revealed that classrooms that were safe and orderly were not chaotic. These classrooms enhanced student learning. Classrooms with ineffective classroom management were chaotic and often inhibited student learning (Marzano, 2003).

Data-Based Decision-making in Education

Data analysis could be used to "identify and correct gaps in the curriculum" (Goldring & Berends, 2008, p. 13). Once these gaps were identified, educational leaders could set and prioritize student learning goals. These goals were tightly aligned to the curriculum. Next, as instruction took place, building level administrators would monitor student progress and adapt instruction accordingly. When inadequate progress was made with individual students or small groups of students, educational leaders would implement remedial instruction as an intervention to help these identified students succeed. This process moved the school district toward continuous improvement and "built a sense of learning through community" (Goldring & Berends, 2008, p. 7).

The process. Initially, data-based decision-making began as a top down approach with the administrators and involved teachers later in the later steps. The first three steps were completed by a few building leaders selected by the administrator. These few individuals were responsible for the data. This team would collect and aggregate the data. They would also disaggregate the data into subgroups that aligned with the No Child Left Behind Act (2001). Once the data were aggregated and disaggregated, the team would create a structured warehouse of data. Finally, the team would compile graphics that displayed the data needed for teachers to use (Boudett, City & Murnane, 2007).

The next step in the process was analyzing the data. During this process the administrator either led the meeting or appointed a leader. The meeting was attended by all teachers who were responsible for educating the students and whose data were being examined. Teachers sought to understand how the students were thinking and they

analyzed the assessment data. The teacher attempted to see the data through the students' eyes. Digging into the data was the next step in the process. Administrators asked teachers to challenge assumptions about teaching and learning. They did this by looking at each data set. The teacher team, under the leadership of the administration, would triangulate all data points to identify common vocabulary and learner centered problem(s) that were preventing proficiency (Boudett et al., 2007).

After understanding learning, educators examined their own instruction. Administrators had to be very careful when analyzing teaching practices so teachers did not feel inadequate. Instead, administrators ensured that this step was viewed as an opportunity to refine the craft of teaching. By examining both internal and external resources, teachers were asked to determine the most effective teaching strategies that aligned with previously identified learner-centered problems. Once these strategies were identified, teachers agreed on their implementation (Boudett et al., 2007).

The development of an action plan followed. All parts of the action plan were recorded. The administrator assisted educators in aligning student-centered problems with agreed upon teaching strategies and the curriculum. The time and duration of each teaching strategy was agreed upon (Boudett et al., 2007).

Creating an assessment plan was the next component of the data-based decision-making cycle. Assessments measuring progress towards the goal were chosen for the short, medium, and long term. Teachers agreed to administer these assessments. A calendar of assessment administration was be developed and recorded for future use. Finally, the team would set SMART goals for each assessment (Boudett et al., 2007).

The final step of the data-based decision-making process was to set the plan in action. Teachers were expected to follow the plan. The administrators were tasked with checking in on the teachers, ensuring that teacher performance followed the recorded plan. Administrators also checked in with teachers to make sure learning outcomes were being met. Teachers were given the opportunity to inform administrators about what additional resources and support they needed. Administrators reminded the teachers often of the expected student outcomes. Finally, when the goals were met, administrators celebrated with teachers and students (Boudett et al., 2007).

State Impact

Research conducted by Marzano (2003, 2007, 2017) and Hattie (2012) revealed the positive impact that teachers could have on student learning. DuFour & Eaker's (1989) research provided a framework that school leaders could use to guide teachers in creating larger effect sizes in their instruction. Various data-based decision-making models provided school districts a step-by-step process to follow when using student data to implement the framework of the PLC. The packet adopted by Missouri and many other states was based on research of the National Center on Educational Outcomes (University of Minnesota, 2016).

Missouri Collaborative Work Grant. In 2012-2013, the Office of Special Education of MO DESE initiated the Collaborative Work Grant (CWG) as a response to an achievement imbalance between students with disabilities and students without disabilities. Missouri districts that had an imbalance in proficiency levels between students with disabilities and without disabilities, that had a measurable number of students with disabilities, that were not a priority or focus school due to not meeting AYP

standards, and were not in a district that had lost accreditation, were invited to participate. The CWG, as defined by MO DESE, was "an educational framework designed to improve teaching and learning practices at the classroom level with the goal of improved outcomes for all students, especially students with disabilities" (MO DESE, 2015, p. 1) (see Figure C2 in Appendix C). The CWG was based upon the work of Hattie, DuFour & Eaker, Marzano, and others. However, the main focus was on the work of Visible Teaching and Learning by Hattie (2012). The CWG's desired outcome was to create and maintain a teacher/learner relationship through the use of a building-wide model. This relationship would be developed through the following key components: "collaborative culture, data-based decision-making, common formative assessment, and effective teaching/learning practices" (MO DESE, 2015, p. 2). Additionally, all work conducted at the building level through the CWG would be aligned to Missouri Learning Standards (MO DESE, 2015) (see Figure D1 in Appendix D).

MO DESE published the following eight frames of mind as expectations of the collaborative work. These were based upon the work of Hattie (2012) in *Visible Learning for Teachers: Maximizing Impact on Learning.*

1. Teachers/leaders believe that their fundamental task is to evaluate the effect of their teaching on students' learning and achievement.
2. Teachers/leaders believe that success and failure in student learning is about what they, as teachers or leaders, did or did not do… We are change agents!
3. Teachers/leaders want to talk more about the learning than the teaching.

4. Teachers/leaders see assessment as feedback about their impact.
5. Teachers/leaders engage in dialogue not monologue.
6. Teachers/leaders enjoy the challenge and never retreat to "doing their best."
7. Teachers/leaders believe that it is their role to develop positive relationships in classrooms/staffroom.
8. Teachers/leaders inform all about the language of learning. (MO Edu-Sail, n.d.b, para. 6)

Six key practices were identified as part of the data team model. These practices were based upon the research and publications of the National Center on Educational Outcomes. When implemented with fidelity, these six practices resulted in the largest amount of student academic improvement.

Key Practice 1: Use Data Well

Key Practice 2: Focus Your Goals

Key Practice 3: Select and Implement Shared Instructional Practices

Key Practice 4: Implement Deeply

Key Practice 5: Monitor and Provide Feedback and Support

Key Practice 6: Inquire and Learn. (MO DESE, 2015, page 2)

MO DESE set additional guidelines for districts participating in the CWG. Building administrators were expected to support the data team process. All teachers were expected to participate in the data team process. Each building selected an area in either English Language Arts or mathematics as the focus of the collaborative team work. Each team would follow the framework provided in the CWG. Teachers would support

each other in all parts of the collaborative team process. One hundred percent implementation of the collaborative data team model was expected or the building would be removed from participation (MO DESE, 2015).

MO DESE defined the expected practices of the collaborative work to be completed in teams. Building staff would learn more effective teaching practices through the collaborative work of the data team. A common research-based teaching strategy would be used to teach the identified area of either English Language Arts or mathematics. Common Formative Assessments (CFA) would be developed and aligned to the selected standards (see Figure D2 in Appendix D). All students, including those with an Individualized Education Plan, would be administered the CFA. The results of these CFAs would then be used as a tool by the collaborative team to measure the effectiveness of the common teaching strategies (MO DESE, 2015).

The Missouri Department of Elementary and Secondary Education then partnered with the Professional Development Network (PDN) of Missouri to develop a set of common training packages to be delivered to the school districts that committed to the Collaborative Work Grant (see Figure C1 in Appendix C). The training packages taught teachers and administrators to be an effective data team by following a common framework. As part of the framework, data teams identified effective teaching and learning practices to be implemented in classrooms (see Figure D3 in Appendix D). Data teams also developed CFAs to measure the effect of instruction. Teachers in the data team were expected to administer the CFAs and use the results in data-based decision-making (MO DESE, Office of Special Education, 2013).

MO DESE described the data-based decision-making cycle as a combination of the work of Reeves and Ainsworth. In Missouri's cycle, data teams began by collecting and charting data. Afterwards, they analyzed the data and prioritized learning targets. The next step in the process was to set SMART goals. Once the SMART goals were established, teams decided upon agreed upon research-based instructional methods (e.g., reciprocal teaching). Finally, teams determined indicators for results. At that point, the teams implemented the plan and monitored results. The process could be revisited at any step as teams determined need during the monitoring phase (MO Edu-Sail, 2017a) (see Figure D3 in Appendix D).

The PDN also created checklists for districts to use as an implementation fidelity check. The intent of these checklists was to provide districts with a quantitative measurement that could be used to ensure that districts were consistently implementing the data team process. The checklists were rubrics that described expected criteria of the collaborative team. Districts could use these short and focused fidelity checklists to self-monitor and adjust implementation. The checklists were based upon the following pillar topics: collaborative data teams, data-based decision-making, common formative assessments, and effective teaching/learning practices. Supplemental topics were available for using technology in classroom instruction and school-based implementation of coaching. Finally, schools could use the checklists to evaluate teaching and learning in the following topics: assessment of capable learners, feedback, reciprocal teaching, student teacher relationships, spaced versus massed practice, metacognition, and direct instruction (MO Edu-Sail, 2017b) (see Figure D4 in Appendix D).

Chapter 3

Methods

This dissertation study had two purposes. The first purpose was to determine if there was a change of student achievement in reading and mathematics after the full implementation of the data team model as measured by a nationally standardized achievement test. The second purpose was to determine if there was a change of academic achievement in the subgroup, students with an IEP, as measured by a nationally standardized achievement test. To investigate these issues, the researcher collected archived student achievement data from third through fifth grade students on the STAR Enterprise Reading assessment and the STAR Enterprise Mathematics assessment. Students were administered these tests during the 2015-2016 school year. The study was designed to examine whether students experienced a change in achievement levels between the fall, winter, and spring testing windows after the implementation of the data team model. The results were used as a preliminary examination into the effectiveness of the data team model upon student achievement. Chapter 3 contains an explanation of research methodology for this study. This chapter also includes a description of the research design, selection of participants, measurement, data collection procedures, data analysis, and hypothesis testing and limitations.

Research Design

A quasi-experimental quantitative research design including archival data was utilized for this study. The variables included in the research were the achievement test scores in STAR reading and STAR mathematics. These assessments were administered

three times, including the fall, winter, and spring assessment windows. These windows were established by Renaissance Learning as national testing windows.

Selection of Participants

The population for the study included all students in grades 3, 4, and 5 attending a Missouri public school that implemented the data team model to address curricular areas in need of improvement. The sample consisted of all students in grades 3, 4, and 5 attending School District XYZ during the 2015-2016 school year. These students were members of classrooms whose teachers implemented the data team model. Students in the sample were given the same district-defined Tier 1 instruction as other students in the grade level. All students in the sample were assessed using nationally standardized STAR reading and mathematics assessments.

Measurement

The instrumentation used in this study included the STAR reading and STAR mathematics assessments. These measurements were used to monitor the academic achievement of the elementary schools in School District XYZ.

STAR Enterprise. Renaissance Learning (2013) stated that STAR Enterprise assessments are computer adaptive tests given in an online setting and designed to assist teachers in quickly assessing student learning in reading and mathematics. Because the assessments are adaptive in nature, each question's difficulty is adjusted based on the student's answer to the previous question. STAR Enterprise assessments base their adaptive testing on item response theories. Questions asked during the assessment are skills-based. Results are reported as scale scores and allow educators to print various reports. Those reports can then be used to modify classroom instruction, predict student

achievement, or progress monitor student achievement based on Response to Intervention frameworks. The size of the test item bank allows educators to choose how often students take the assessment (Renaissance Learning, 2013).

STAR Enterprise reading assessment. Renaissance Learning (2013) further stated that the STAR Enterprise reading assessment consisted of 34 questions administered online in an average 15-minute timeframe. This assessment evaluated reading skills appropriate for grades K-12 based on Common Core reading standards. The evaluation was composed from an item bank with more than 5,000 questions, allowing for multiple assessments per year (Renaissance Learning, 2013).

To estimate the reliability of the STAR Reading Enterprise assessment, two statistical analysis were conducted on a random national sampling of more than 1.2 million students who completed the STAR Reading Enterprise assessment between September 2012 and June 2013. An internal consistency reliability analysis yielded a combined internal reliability of 0.97 with a range from 0.93-0.95. A test-retest correlation coefficients analysis yielded a combined estimate of 0.90 for all grade levels with a range of 0.54-0.85 (Renaissance Learning, 2013).

The STAR Reading Enterprise assessment was used to measure both "reading comprehension and a broad range of other reading skills" (Renaissance Learning, 2013, p. 22). In order to ensure the validity of this measure, the content of the assessments was aligned to state and national curriculum standards, including the Common Core State Standards. The average correlation between the content of the STAR Reading Enterprise assessment and state and national curriculum standards ranged from 0.60-0.87, which is considered strong (Renaissance Learning, 2013)

STAR Enterprise mathematics assessment. Renaissance Learning (2013) further published that the STAR Enterprise Mathematics assessment consisted of 34 questions administered online in an average 20-minute timeframe. This assessment evaluated mathematics achievement appropriate for grades K-12 based on the Common Core mathematics standards. The evaluation came from an item bank with more than 5,000 questions, allowing for multiple assessments per year (Renaissance Learning, 2013).

To estimate the reliability of the STAR Math Enterprise assessment, two statistical analyses were conducted on a random national sampling of more than 1.2 million students who completed the STAR Math Enterprise assessment between September 2012 and June 2013. An internal consistency reliability analysis yielded a combined internal reliability of 0.97 with a range from 0.90-0.95. A test-retest correlation coefficients analysis yielded a combined estimate of 0.93 for all grade levels with a range of 0.76-0.84 (Renaissance Learning, 2013).

The STAR Math Enterprise assessment was used to measure "a broad range of mathematics skills" (Renaissance Learning, 2013, p. 25). In order to ensure the validity of this measure, the content of the assessments was aligned to state and national curriculum standards, including the Common Core State Standards. The average correlation between the content of the STAR Math Enterprise assessment and state and national curriculum standards ranged from 0.55-0.80, which is considered moderate to strong (Renaissance Learning, 2013)

Data Collection Procedures

Prior to the statistical analysis of the data, the researcher asked the district on June 3, 2017 (see Appendix B) for permission to use the student data. Next, the researcher

submitted a proposal on July 5, 2017, for research to the Baker University Institutional Review Board (see Appendix B). This review board served as a safeguard to the human subjects of this study. The approval from IRB was received on July 24, 2017 (see Appendix #B. Once approved, archived STAR assessment data in reading and mathematics were made available to the researcher. Archived STAR assessment data were obtained from School District XYZ's data base on STAR Enterprise assessments by the Director of Informational Services on September 4, 2017. The data were collected and organized on an Excel spreadsheet and imported into IBM® SPSS® Statistics Faculty Pack 21 for Windows for statistical analysis.

Data Analysis and Hypothesis Testing

RQ1. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

H1. There was a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading assessment.

RQ2. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

H2. There was a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics assessment.

RQ3. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

H3. There was a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading assessment.

RQ4. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

H4. There was a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing.

For RQ1-RQ4, a repeated measures ANOVA test was used to address each of the four research questions. This statistical test was used as there was a categorical variable with three categories: fall, winter, and spring assessment window. The fall assessment window occurred before students participated in the data team process. The winter assessment window occurred mid-way through the data team process. The spring assessment window occurred at the end of the school year when students had been part of the data team process for the entire school year. The significance level was set at .05.

Limitations

The samples of this study were taken from students attending School District XYZ in the third, fourth, and fifth grade, so caution should be utilized when generalizing the results of this study to other grade levels and other school districts. Since this study

was quasi-experimental in nature, no causality conclusion should be reached between student achievement and the data team model. Other factors that may have impacted this study include student anxiety level upon being administered a computer-based assessment and student health conditions.

Summary

For this study, students in grades 3-5 completed the STAR Enterprise Reading and STAR Enterprise Math assessments. STAR Enterprise assessments results were chosen as a part of this study because School District XYZ administered the assessments as a measure of student achievement. The results of the statistical analysis upon these assessments were used to explore the influence of the data team model on student mathematics and reading achievement of students in grades 3-5. These results are reported in Chapter 4.

Chapter 4

Results

This dissertation study had two purposes. The first purpose was to determine if there was a change of student achievement as measured by a nationally standardized achievement test. The second purpose was to determine if there was a change of academic achievement in the subgroup, students with an IEP, as measured by a nationally standardized achievement test. No Child Left Behind (2001) defined the subgroup of all students as every student enrolled in the school. No Child Left Behind (2001) defined the subgroup, students with an IEP, as every student who had an IEP, regardless of the area of disability.

The STAR Enterprise Reading Assessment and the STAR Enterprise Mathematics Assessment were utilized in this study. Grades 3, 4, and 5 students attending School District XYZ were administered the STAR Enterprise Reading Assessment and the STAR Enterprise Mathematics Assessment in three waves that corresponded with STAR Enterprise's national testing windows: fall, winter, and spring. The research was conducted in an attempt to explore the difference between student achievement before and after the full implementation of the data team model in School District XYZ. The results of this study were intended to explore the impact of the data team process on the academic growth of the all subgroup and the subgroup composed of students with an IEP. Finally, the results of this study could be used as an avenue to explore when looking for ways to improve student achievement. Chapter 4 presents the results of the data analysis

for the hypotheses associated with each of the research questions posed in the study.

Descriptive Statistics

The target population for this research study was limited to all third, fourth, and fifth grade student attending School District XYZ during the 2015-2016 school year. The sample consisted of 985 students, of which 315 (32.0%) were third grade students, 324 (32.9%) were fourth grade students, and 346 (35.1%) were fifth grade students. The 985 students were comprised of 489 (49.6%) male and 496 (50.4%) females. One hundred of the students (10.2%) comprised the subgroup of students: students with an IEP. No Child Left Behind (2001) defined the subgroup, students with an IEP, as every student who had an IEP, regardless of the area of disability.

Hypothesis Testing

The results of the hypothesis testing to address the four questions that guided this study are discussed in this section. Each research question is followed by its corresponding hypothesis statement. The method used to test each hypothesis is described as well as the results of each test. The significance level of $p = .05$ was utilized for all statistical analysis. Repeated measures ANOVA tests were used to test the research hypotheses. The variables for research questions 1-4 were the fall, winter, and spring assessment window. The IBM® SPSS® Statistics Faculty Pack 21 for Windows was utilized to analyze the assessment data for this research study.

RQ1. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

H1. There was a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading assessment.

Outliers were detected, and 105 outliers were found. The outliers were excluded from the following analysis. A one-way repeated measures ANOVA was conducted to compare student reading achievement in fall wave of testing, winter wave of testing, and spring wave of testing conditions. Sphericity was assumed ($\chi^2(2) = 2.953$, $p = .228$). There was a significant difference of reading achievement across the three times, $F(2,1162) = 204.904$, $p < .001$. Bonferroni-corrected paired-samples *t* tests were used to make post hoc comparisons between conditions. A first paired sample *t* test indicated that there was a significant difference between the fall testing window ($M = 518.33$, $SD = 168.78$) and the winter testing window ($M = 575.34$, $SD = 172.61$). A second paired sample *t* test indicated that there was a significant difference between the winter testing window ($M = 575.34$, $SD = 172.61$) and the spring testing window ($M = 605.65$, $SD = 189.99$). A third paired sample *t* test indicated that there was a significant difference between the fall testing window ($M = 518.33$, $SD = 168.78$) and the spring testing window ($M = 605.65$, $SD = 189.99$) (see Table A5 in Appendix A).

The results indicated that students' scores grew in reading achievement from the fall testing window to the winter testing window to the spring testing window. Additionally, there was a statistically significant increase in student reading achievement

between the fall testing window and the winter testing window, between the winter testing window and the spring testing window, and between the fall testing window and the spring testing window. These results indicated that there was an increase in student reading achievement after implementing the data team model between each of the assessment windows: fall, winter, and spring.

RQ2. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

H2. There was a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics assessment.

Outliers were detected and 65 outliers were found. The outliers were excluded from the following analysis. A one-way repeated measures ANOVA was conducted to compare student mathematics achievement in fall wave of testing, winter wave of testing, and spring wave of testing conditions. Or for the ANOVA, results indicated that the sphericity assumption was violated ($\chi^2(2) = 16.578$, $p < .001$), and thus the degrees of freedom associated with the *F* tests were adjusted based on Huynh-Feldt ε-correction values. There was a significant difference of mathematics achievement across the three times, F (1.964, 1549.626) = 891.664, $p < .001$. Bonferroni-corrected paired-samples *t* tests were used to make post hoc comparisons between conditions. A first paired sample *t* test indicated that there was a significant difference between the fall testing window (M = 642.17, SD = 89.49) and the winter testing window (M = 679.29, SD = 81.83). A second paired sample *t* test indicated that there was a significant difference between the winter

testing window (M = 679.29, SD = 81.83) and the spring testing window (M = 717.59, SD = 85.39). A third paired sample t test indicated that there was a significant difference between the fall testing window (M = 642.17, SD = 89.49) and the spring testing window (M = 717.59, SD = 85.39) (see Table A5 in Appendix A).

The results indicated that students' scores in mathematics grew from the fall testing window to the winter testing window to the spring testing window. Additionally, there was a statistically significant increase in student mathematics achievement between the fall testing window and the winter testing window, between the winter testing window and the spring testing window, and between the fall testing window and the spring testing window. These results indicated that there was an increase in student mathematics achievement after implementing the data team model between each of the assessment windows: fall, winter, and spring.

RQ3. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?

H3. There was a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading assessment.

Among 100 IEP students, four outliers were found and excluded from the following analysis. A one-way repeated measures ANOVA was conducted to compare student reading achievement in fall wave of testing, winter wave of testing, and spring wave of testing conditions. Sphericity was assumed ($\chi^2(2) = 2.960$, p =.228). There was a significant difference of the reading achievement across the three times, F (2,126) =

5.087, $p = .008$. Bonferroni-corrected paired-samples *t* tests were used to make post hoc comparisons between conditions. A first paired sample *t* test indicated that there was a significant difference between the fall testing window ($M = 264.25$, $SD = 132.78$) and the winter testing window ($M = 293.33$, $SD = 134.49$). A second paired sample *t* test indicated that there was a significant difference between the fall testing window (M = 264.25, SD = 132.78) and the spring testing window ($M = 294.06$, $SD = 157.58$) (see Table A5 in Appendix A).

The results indicated that students' reading achievement scores grew from the fall testing window to the winter testing window to the spring testing window. Additionally, there was a statistically significant increase in student reading achievement between the fall testing window and the winter testing window and between the fall testing window and the spring testing window. Furthermore, the results indicate there was no statistically significant change between the winter testing window and the spring testing window. These results indicated that there was an increase in student reading achievement after implementing the data team model between each of the assessment windows except between the winter and spring assessment window.

RQ4. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?

H4. There was a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing.

Among 100 IEP students, nine outliers were detected and excluded from the following analysis. A one-way repeated measures ANOVA was conducted to compare student mathematics achievement in fall wave of testing, winter wave of testing, and spring wave of testing conditions. Sphericity was assumed ($\chi^2(2) = 5.176$, $p = .075$). There was a significant difference of mathematics across the three times, F (2,144) = 29.526, $p < .001$. Bonferroni-corrected paired-samples t tests were used to make post hoc comparisons between conditions. A first paired sample t test indicated that there was a significant difference between the fall testing window (M = 491.47, SD = 105.11) and the winter testing window (M = 542.81, SD = 92.27). A second paired sample t test indicated that there was a significant difference between the fall testing window (M = 491.47, SD = 105.11) and the spring testing window (M = 564.48, SD = 111.32) (see Table A5 in Appendix A).

The results indicated that students' mathematics scores grew from the fall testing window to the winter testing window to the spring testing window. Additionally, there was a statistically significant increase in student mathematics achievement between the fall testing window and the winter testing window and between the fall testing window and the spring testing window. Furthermore, the results indicate there was no statistically significant increase between the winter testing window and the spring testing window. These results indicated that there was a change in student mathematics achievement after implementing the data team model between each of the assessment windows except between the winter and spring assessment window.

Summary

This chapter utilized descriptive statistics to describe the demographics of the sample including gender, grade level, and the sub-population of students with an IEP. The results of a repeated measures ANOVA were presented to provide evidence of change in student achievement in reading and mathematics achievement. Chapter 5 includes the study summary, overview of the problem, purpose statement and research questions, review of the methodology, major findings, and findings related to the literature, conclusions, implications for actions, and recommendations for future research.

Chapter 5

Interpretation and Recommendations

Education experienced many reform movements throughout the last century. The focus of reform evolved from compulsory education to school structure to teaching and learning. Legislation and social movements served as the catalyst for this educational reform. The most recent reform, focusing on teaching and learning, yielded positive results in student achievement yet required a paradigm shift in school structure. Such a shift contrasted with the deeply ingrained practices of the past. Modern day researchers provided school districts, schools, and teachers evidence-based frameworks and strategies to use when effecting such a shift. The Missouri Department of Elementary and Secondary Education provided Missouri school districts with the Missouri data team model, a framework purported to guide teachers, schools, and school districts in implementing the most current research on teaching and learning. However, little research had been completed on the effect of the Missouri data team model on student learning. This study examined the effect of the Missouri data team model on the reading and mathematics proficiency levels of students attending grades 3-5 in School District XYZ after the full implementation of the Missouri data team model. This chapter provides a summary of the findings and recommendations for future research related to the effect of the Missouri data team model on student proficiency levels in reading and mathematics.

Study Summary

The purpose of this study was to determine the change in academic achievement in mathematics and reading as measured by STAR Enterprise assessments

after full implementation of the Missouri data team model. Additionally, the change of academic achievement in reading and mathematics in the subgroup, students with an IEP, as measured by STAR Enterprise was studied. No Child Left Behind (2001) defined the subgroup of all students as every student enrolled in the school. No Child Left Behind (2001) defined the subgroup, students with an IEP, as every student who had an IEP, regardless of the area of disability. The following section summarizes the current study. An overview of the problem, the purpose of the study and research questions, review of methodology, the study's major findings, conclusions, and recommendations for future research are provided.

Overview of the problem. A reflection on the accomplishments of school reform prior to the 1990s by politicians and educators resulted in "a startling conclusion: There weren't any" (Fiske, 1992, p. 24, cited in DuFour & Eaker, 1998). The Restructuring Movement of the 1990s reaped much of the same result, "leaving students virtually untouched and [schools] unable to make a real difference in meeting the challenges they faced" (DuFour & Eaker, 1998, chapter 1, section 3, para. 11). DuFour & Eaker (1998), Hattie (2012), and Marzano (2003) offered hope and guidance for meeting the challenges that American schools faced. A description of effective schools emerged from their research. Creating a culture in the classrooms of today that was effective had its own set of challenges. "The way that teachers were trained, the way the hierarchy operated, and the way education was treated by political decision makers resulted in a system that was more likely to retain the status quo than to change" (Fullan, 1993, p. 3). A framework for collaboration and the use of data-based decision-making in the school was developed from the additional research of Ainsworth (2003), Schmoker (1999) and Reeves (2004).

Little research was available to determine the consistent effectiveness of the framework in helping educators meet the challenges of students today.

Purpose statement and research questions. The study in this dissertation was conducted for two purposes: (1) to determine the change in academic achievement in mathematics and reading as measured by STAR Enterprise assessments in reading and mathematics and (2) to determine the change in academic achievement of reading and mathematics in the subgroup, students with an IEP, as measured by STAR Enterprise. Archived data from the assessments administered at the beginning, middle, and end of the year was analyzed to determine if a statistically significant change occurred while students were in classrooms that participated in the Missouri data team initiative. Four research questions guided this study to investigate these ideas.

1. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?
2. To what extent was there a change in student achievement after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Mathematics testing?
3. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in the fall, winter, and spring assessments windows of the STAR Reading testing?
4. To what extent was there a change in student achievement in the subgroup of students with an IEP after implementing the data team model as measured in

the fall, winter, and spring assessments windows of the STAR Mathematics testing?

Review of the methodology. A quasi-experimental quantitative research design including archival data was utilized for this study. The variables included in the research were the achievement test scores in STAR reading and STAR mathematics. These assessments were administered three times, including the fall, winter, and spring assessment window. Archived assessment data for students in grades 3, 4, and 5 attending a Missouri public school that implemented the data team model during the 2015-2016 school year were collected. A repeated measures ANOVA test was used to address each of the four research questions. The significance level was set at .05.

Major findings. Findings of the current study are presented relative to the research questions. Results of hypothesis testing for research question one were significant. The results indicated that students in the subgroup, all students, experienced a statistically significant change from the fall to winter, from winter and spring, and from fall to winter waves of testing in reading achievement.

Results of hypothesis testing for research question two were significant. The results indicated that students in the subgroup, all students, experienced a statistically significant change from the fall to winter, from winter and spring, and from fall to winter waves of testing in mathematics achievement. Results of hypothesis testing for research question three were significant. The results indicated that students in the subgroup, students with an IEP, experienced a statistically significant change from the fall to winter and from fall to spring waves of testing in reading achievement. Results of hypothesis testing for research question three were significant. The results indicated that students in

the subgroup, students with an IEP, experienced a statistically significant change from the fall to winter and from fall to spring waves of testing in mathematics achievement.

Findings Related to the Literature

This section examines the study's findings as they relate to the literature connected to the Missouri data team model and student achievement. Specifically, the research focused the impact of the reform on teaching and learning. Key findings in research are presented that resulted in the current understanding of evidence-based or research-supported best practices in teacher collaboration and effective schools. The Missouri data team model attempted to synthesize this research and provide a framework for teachers to follow when improving teaching and learning.

The results of the study support an expectation that students will show growth throughout the year when attending classrooms that implement the Missouri data team model. The results of this study provided support that the implementation of the Missouri data team model may have a correlation with continuous improvement in student proficiency levels. While not directly related, the study also supported the work of DuFour & Eaker (1998), Marzano (2003, 2017) and Hattie (2012), which served as the foundation of the Missouri data team model. At the heart of all three bodies of research is the assumption that best practices in teaching are centered around student needs for learning and are met best through a collaboration of educators. Schmoker (1999) further purports that continuing a framework of data analysis leads to changes in teaching to meet the needs of students. Schmoker (1999) and Ainsworth (2003, 2006) served as the guide for the Missouri data team model. While not directly related, the Missouri data team model further supports the learning of students by synthesizing the work of DuFour

& Eaker (1998), Marzano (2003), Hattie (2012), Reeves (2004), Ainsworth (2003), and Schmoker (1999) into a cycle of continuous improvement based on action research. This study shows a possible correlation between student learning and continued improvement of student proficiency levels when students attend classrooms that implement the Missouri data team model.

Conclusions

This section provides conclusions drawn from the current study. Implications for action, recommendations for future research, and concluding remarks are provided.

Implications for action. The findings from this study have implications for School District XYZ as well as other schools and districts in the state of Missouri. The implications of this study could be used as a preliminary support for the implementation of the Missouri data team model in classrooms and its effect on student proficiency levels. The results of this study indicated that the subgroup of students, all, who were in classrooms with full implementation of the Missouri data team model experienced continuous improvement throughout the school year. The results of this study indicated that the subgroup of students, students with an IEP, who were in classrooms with full implementation of the Missouri data team model experienced continuous improvement from fall to winter, but did not experience continuous improvement from winter to spring. In an attempt to determine why student proficiency levels in this subgroup were stagnant from winter to spring, education leaders need to evaluate the choice of power standards made by teachers and their alignment to the assessment tools utilized in the Missouri data team model. Ainsworth (2003) and Schmoker (1999) provided guidance on choosing the best standards, developing assessments, and evaluating student

performance on the assessments. Another assessment that needs to be made by education leaders in an attempt to determine the cause for stagnant scores in students with an IEP from winter to spring is the impact each teaching strategy had upon student learning throughout the use of the Missouri data team model. This study will allow educators to study the alignment and success of each strategy to the needs of individual students in these classrooms. DuFour & Eaker (1998) and Hattie (2012) provided support for these practices when targeting continuous improvement of student proficiency. Finally, education leaders need to assess if each step in the data team model was followed collaboratively and whether it impacted student proficiency levels on achievement tests. Gaps in student achievement, especially those not making continuous improvement, will likely continue without purposeful collaboration (DuFour & Eaker, 1998).

Recommendations for future research. The current study allowed the researcher to evaluate whether students in classrooms with full implementation of the Missouri data team model experience a change in reading and mathematics proficiency levels from the beginning to the end of the school year. This study was unique as it was one of the first to examine proficiency levels within School District XYZ once the curriculum scope and sequence was mandated and district level resources were identified. The study was a preliminary examination of the Missouri data team model on student proficiency levels using Tier 1 assessment data. Because the study featured one public school district during the 2015-2016 school year, additional research would be necessary to make generalizations to a broader population. The first recommendation would be to extend the current study by expanding the sample to include multiple years of student data. A multi-year sample would allow for the examination of change in student

proficiency levels across years and from spring to the following fall. The second recommendation is to extend the current study by comparing growth of student proficiency with other Missouri school districts following the Missouri data team model. The third recommendation is to extend the current study by comparing growth of student proficiency with other Missouri school districts who are and are not utilizing the data team framework for collaboration.

While this study addressed student growth in reading and mathematics achievement, the study cannot determine definitively if the growth was caused by the Missouri data team model implementation. The fourth recommendation is to expand this study to include a more comprehensive examination of the effect of each step of the Missouri data team model on student growth. As part of this examination, the proportion of time spent on each step should be examined and compared. The fifth recommendation is to include other variables related to student achievement and school effectiveness.

Concluding Remarks

School leaders across our nation have large amounts of student data available but "lack the knowledge about how to transform mountains of data on student achievement into an action plan that will improve instruction and increase student learning" (Boudett et al., 2007, p. 1). As schools attempt to meet the evolving and challenging needs of students, educational leaders must build capacity among teachers to collaborate, analyze this data and use it to improve teaching. This analysis must be completed by collaborative teacher teams. These collaborative teams must be provided with a framework to follow, one that guides teaching through the process of selecting and analyzing standards, developing assessments to assess learning, and choosing research-

based teaching strategies to use in the classroom. A collaborative culture should be fostered by school leaders throughout the district and built within both the district and building level policies and procedures. Teachers must be expected to use instructional strategies with high effect sizes and work towards continuous improvement. The success of every student ultimately must serve as the litmus test for every educational decision.

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Appendices

Appendix A: Percentage of Students Scoring Proficient or Advanced

Table A1.

Percentage of Students from the All Subgroup Scoring Proficient or Advanced on the English Language Arts MAP Assessment

	2010	2011	2012	2013	2014
3rd Grade	58.7%	54.7%	63.4%	67.8%	66.3%
4th Grade	60.9%	65.5%	64.7%	66.3%	60.6%
5th Grade	64.9%	66.3%	63.3%	64.6%	60.9%

Note: Adapted from *PCR-3 Strategic Planning – Longitudinal Report by Platte County R-III.* (2017). [Data File and Code Book]. Retrieved from http://204.185.224.216/GOSMR/long/MAP.php.

Table A2.

Percentage of Students from the IEP Subgroup Scoring Proficient or Advanced on the English Language Arts MAP Assessment

	2010	2011	2012	2013	2014
3rd Grade	14.3%	10%	26.9%	21.1%	25%
4th Grade	33.4%	14.3%	23.5%	30%	9.6%
5th Grade	19.3%	35.2%	31.8%	14.3%	33.3%

Note: Adapted from *PCR-3 Strategic Planning – Longitudinal Report by Platte County R-III.* (2017). [Data File and Code Book]. Retrieved from http://204.185.224.216/GOSMR/long/MAP.php.

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Table A3.

Percentage of Students from the All Subgroup Scoring Proficient or Advanced on the Mathematics MAP Assessment

	2010	2011	2012	2013	2014
3rd Grade	59.9%	59.3%	63.4%	68.3%	72.1%
4th Grade	50.2%	50.4%	50.7%	53.7%	52.4%
5th Grade	57.6%	56.1%	55.2%	62%	60.9%

Note: Adapted from *PCR-3 Strategic Planning – Longitudinal Report by Platte County R-III.* (2017). [Data File and Code Book]. Retrieved from http://204.185.224.216/GOSMR/long/MAP.php.

Table A4.

Percentage of Students from the IEP Subgroup Scoring Proficient or Advanced on the Mathematics MAP Assessment

	2010	2011	2012	2013	2014
3rd Grade	19%	19%	30.8%	26.4%	15%
4th Grade	33.4%	9.6%	29.4%	26.7%	23.8%
5th Grade	16.2%	23.5%	18.1%	23.8%	20.8%

Note: Adapted from *PCR-3 Strategic Planning – Longitudinal Report by Platte County R-III.* (2017). [Data File and Code Book]. Retrieved from http://204.185.224.216/GOSMR/long/MAP.php.

Table A5.

STAR Enterprise Assessment Data Mean Scores

	Fall	Winter	Spring
Reading: All	518.33	575.34	605.65
Math: All	642.17	679.29	717.59
Reading: IEP	264.25	293.33	294.06
Math: IEP	491.47	542.48	564.48

Note: Adapted from IBM SPSS Statistics Faculty Pack 21 analysis of archived data utilized in the study.

Appendix B: IRB Documentation

Permission for data to use for dissertation
5 messages

Amy Cordova <cordovaa@platteco.k12.mo.us> Fri, Jun 23, 2017 at 9:21 AM
To: Mike Brown <brownm@platteco.k12.mo.us>

Dr. Brown,

My new research analyst that is part of my dissertation team would like for me to just use star assessment data in mathematics and ELA as I assess whether or not grades 3, Four, and five are making statistically significant progress while being part of the data team. I am getting ready to complete my IRB. As part of that process, I need permission from the district to use that data. As always, all names and student identifying pieces of data will be removed as part of the research study.

I also need a letter with official permission from the district to use this data. This letter needs to be on district letterhead. It needs to give me permission to use star assessment data in grades three, four, and five for the 2015 - 2016 school year.

I plan to submit my IRB on Tuesday or Wednesday of next week. Please let me know if you are able to complete the permission and get it to me by then .

Thanks, Amy

Platte County
HOME OF THE PIRATES
Tradition. Pride. Vision.

June 26, 2017

Platte County R-III School District
998 Platte Falls Road
Platte City, MO 64079

Dear Amy Cordova:

I am granting permission for you to use district owned archived data from the STAR Reading and STAR Mathematics benchmark tests administered to 3-5th grade students during the 2015-2016 school year. In order to ensure student confidentiality, the data provided and used in the study will not be individual student identifiable. I further grant permission for the data to be used in your dissertation study as you seek to determine the effectiveness of the data team process. I understand that you will be analyzing the data in order to determine if there was a statistically significant change in students' scores who were in classrooms that utilized the data team process. I understand that the results of your study will be published in your completed dissertation and the raw data returned to the district.

Sincerely yours,

Dr. Michael Brown, Assistant Superintendent

BAKER UNIVERSITY

School of education
Graduate department

Date:
IRB PROTOCOL NUMBER _____
(irb USE ONLY)

IRB Request
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. Research Investigator(s) (Students must list faculty sponsor first)

Department(s) **School of Education Graduate Department**

Name	Signature	
1. Dr. James Robins		Major Advisor
2. Dr. Li Chen-Bouck		Research Analyst
3. Dr. Dennis King		University Committee Member
4. TBD		External Committee Member

Principal Investigator: Amy Cordova
Phone: 816.916.6221
Email: CordovaA@platteco.k12.mo.us
Mailing address: 101 Roller Ct
Platte City, MO 64079

Faculty sponsor: Dr. James Robins
Phone: 913.344.1222
Email: jim.robins@bakeru.edu

Expected Category of Review: ___Exempt X Expedited _ __Full

II: Protocol: (Type the title of your study)

Data Team Effectiveness and Student Growth in STAR Assessment Data

Summary

In a sentence or two, please describe the background and purpose of the research.

The Platte County School District believed that the implementation of a consistent Tier 1 model of instruction and the consistent use of the data team model would improve student achievement. The Platte County School District was able to mandate the use of consistent curriculum resources and a scope and sequence for grades 3-5 in mathematics and reading. However, the Platte County School District had not examined the effect of the data team process on student achievement. Therefore, a study of student achievement, both in the subgroup and non-subgroup population, should be examined in an attempt to explore the difference between student achievement before and after the full implementation of the data team model.

The purpose of this study was to determine the change in academic achievement in mathematics and reading as measured by a nationally standardized achievement test. Additionally, the change of academic achievement in the subgroup, students with an IEP, was also determined in mathematics and reading as measured by a nationally standardized achievement test. These measurements would be taken at the beginning, middle, and end of the year to determine if a statistically significant change occurred while students were in classrooms that participated in the data team initiative.

Briefly describe each condition or manipulation to be included within the study.

There are no conditions or manipulations in this study

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.

The investigator has received permission to analyze archival STAR Reading and STAR Mathematics data from the STAR Assessment website from the 2015-2016 school year at Platte County R-III School District in Platte City, MO at the third, fourth, and fifth grade level. Documentation of permission to use archival STAR Reading and STAR Mathematics data is attached.

Will the subjects encounter the risk of psychological, social, physical, or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

There are no psychological, social, physical, or legal risks involved in this study.

Will any stress to subjects be involved? If so, please describe.

There will be no stress on subjects involved in this study.

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

The participants will not be deceived or misled in this study.

Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.

There will be no requests for personal or sensitive information for this study.

Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.

There will be no materials that might be considered offensive, threatening, or degrading presented to study participants.

Approximately how much time will be demanded of each subject?

No time will be required of any subject due to the use of archival STAR Reading and STAR Mathematics data from the STAR Assessment website.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

The subjects in this study will be 1,080 in the third, fourth, and fifth grade during the 2015-2016 academic school years. All identifying information related to the research has been redacted to ensure and protect the privacy of subjects.

What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

Archival STAR Reading and STAR Mathematics data will be used from subjects in this research. Therefore, there was no pursuit of participation or inducement of any kind to participate.

How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

Permission was sought and granted to use archival STAR Reading and STAR Mathematics data from the STAR Assessment website for this research. It was made clear in this request that all identifying information related to this study would be redacted to ensure and protect the privacy of every subject.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

The archival STAR Reading and STAR Mathematics data collected and analyzed in this study will not be part of any permanent record.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

Given that archival STAR Reading and STAR Mathematics data was used for this research every "subject" has already participated in the computer based assessment during the 2015-2016 school year. Therefore, for the purposes of this study, 100% of subjects participated in the STAR Reading and STAR Mathematics assessment.

What steps will be taken to insure the confidentiality of the data? Where will it be stored? How long will it be stored? What will be done with it after the study is completed?

To ensure the confidentiality of the subjects within the study, individual and school names will not be collected, recorded, or stored. The data that is collected will be stored through the defense of the dissertation and will be removed afterward.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

There are no known risks for participants involved in the study.

Will any data from files or archival data be used? If so, please describe.

Archival STAR Reading and STAR Mathematics data served as the basis of this study of study academic growth in classrooms participating in the data team process. Permission was sought and granted from Dr. Mike Brown, Assistant Superintendent of Curriculum and Instruction in the Platte County School District to use archival STAR Reading and STAR Mathematics data from STAR Assessments for this research. It was made clear to Dr. Brown in my request that all identifying information related to this study would be redacted to ensure and protect the privacy of every subject involved.

Baker University Institutional Review Board

July 24, 2017

Dear Amy Cordova and Dr. Robins,

The Baker University IRB has reviewed your research project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at EMorris@BakerU.edu or 785.594.7881.

Sincerely,

Erin R. Morris

Erin Morris PhD
Chair, Baker University IRB

Baker University IRB Committee
Joe Watson PhD
Nate Poell MA
Susan Rogers PhD
Scott Crenshaw

Appendix C: Graphics from Missouri Department of Elementary and Secondary Education - Unpublished

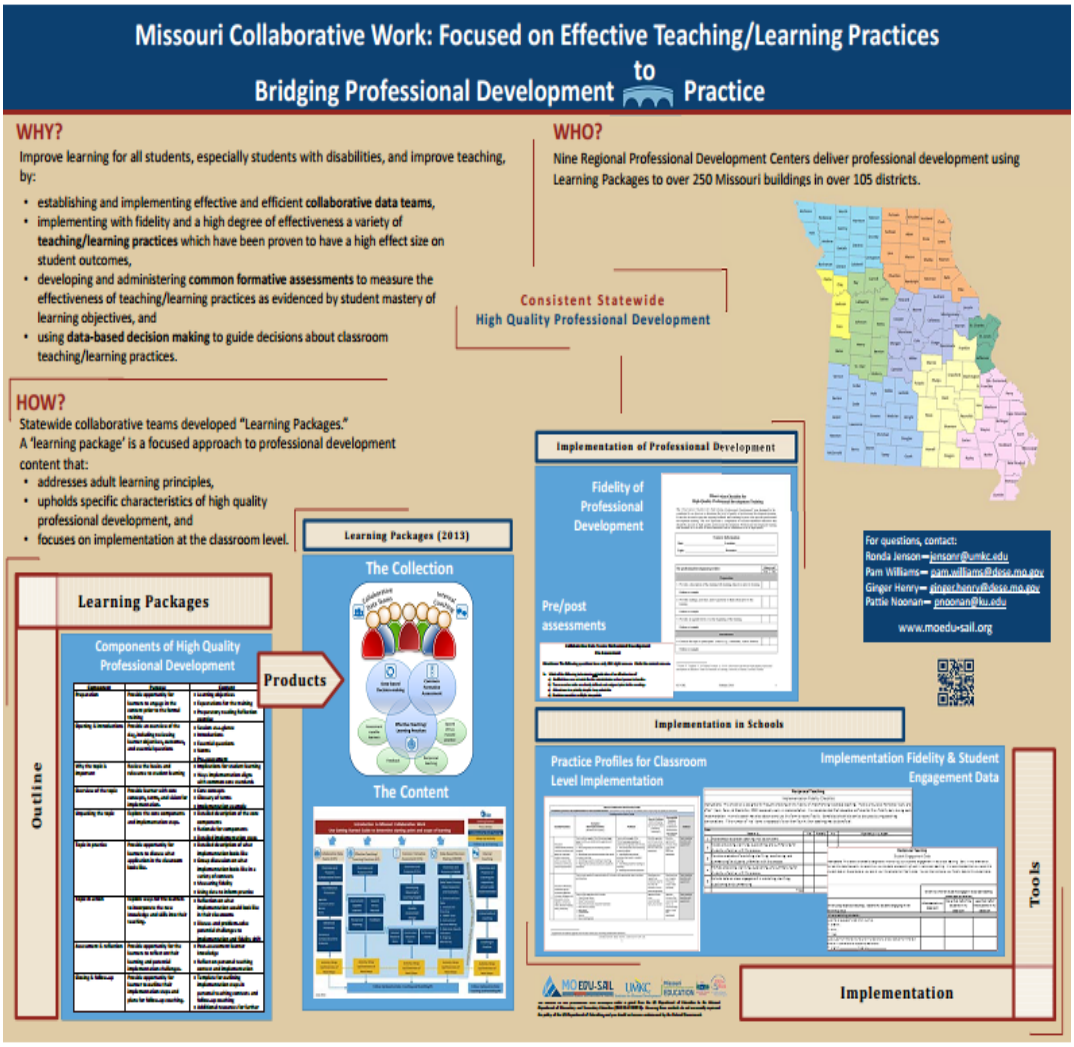

Figure C1. Missouri Collaborative Work: Focused on Effective Teaching/Learning Practices Bridging Professional Development to Practice. Missouri Collaborative Work: and State Personnel Development Grant (SPDG), power point presentation 2013 at Special Education Administrator's Conference at Tan-Tar-A Resort and Conference Center. Slide/page 29.

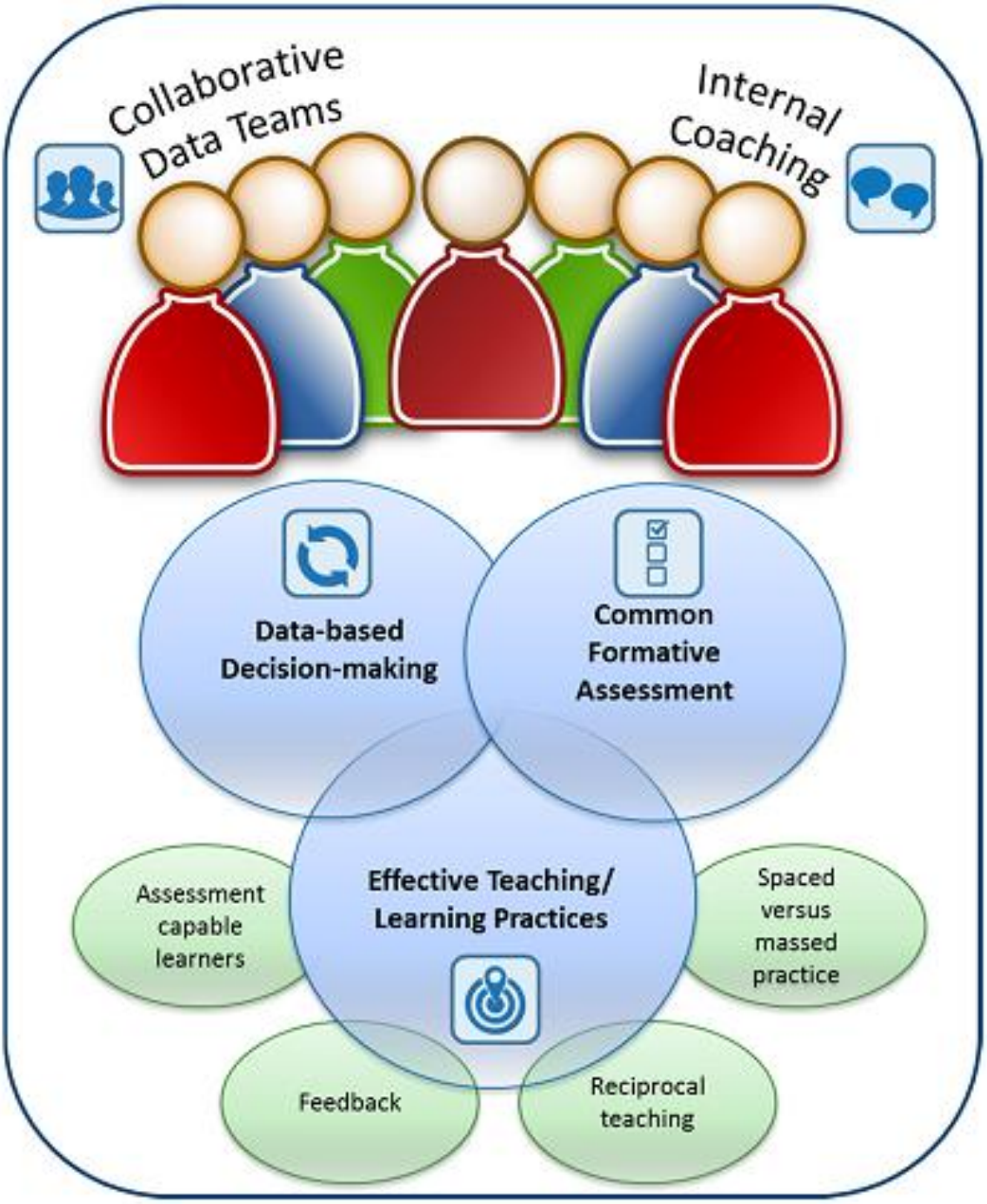

Figure C2. Visual Representation of Collaborative Data Team Components. Missouri Collaborative Work (CW) and State Personnel Development Grant (SPDG), power point presentation 2013 at Special Education Administrator's Conference at Tan-Tar-A Resort and Conference Center. Slide/page 31.

Appendix D: Graphics from Missouri Department of Elementary and Secondary Education

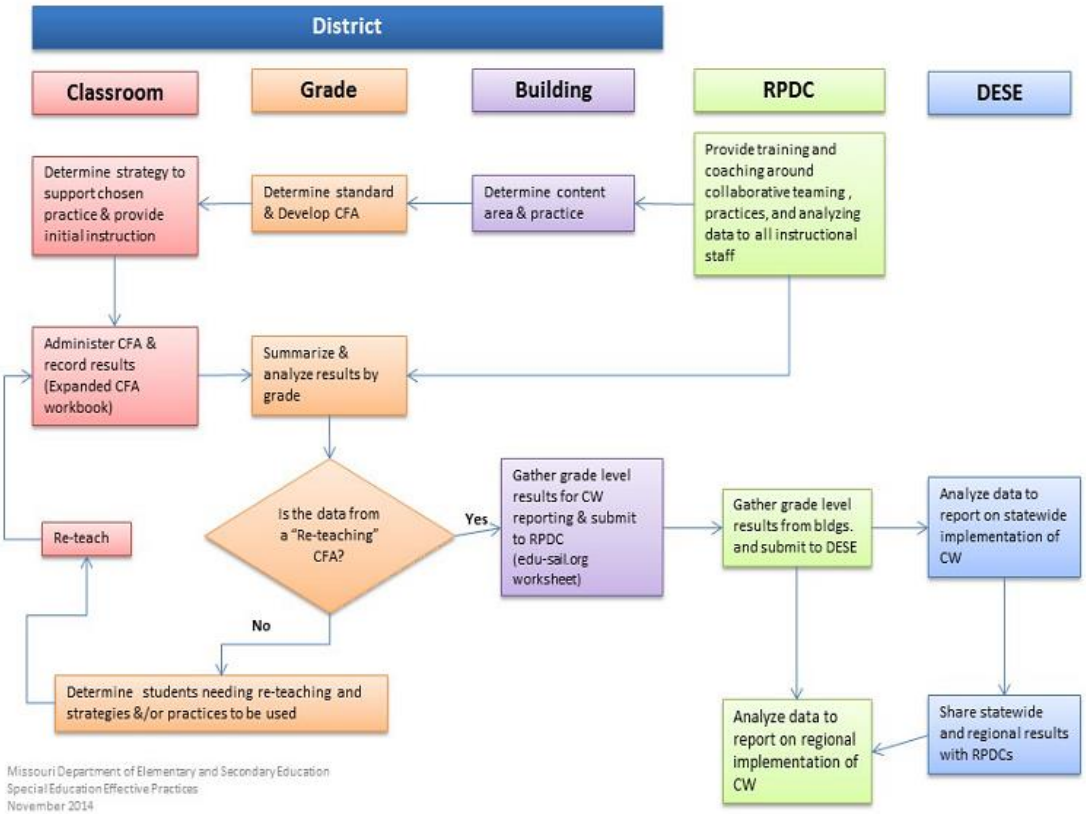

Figure D1. Process Map for Implementation of Collaborative Work Grant. Adapted from https://dese.mo.gov/sites/default/files/se-ep-cw-common-understandings-document.pdf with permission from Missouri Department of Elementary & Secondary Education, Office of Special Education. (2013). Missouri State Personnel Development Grant Learning Packages. Framework & Contents. Kansas City, Missouri: University of Missouri-Kansas City, Institute for Human Development (see Appendix E)

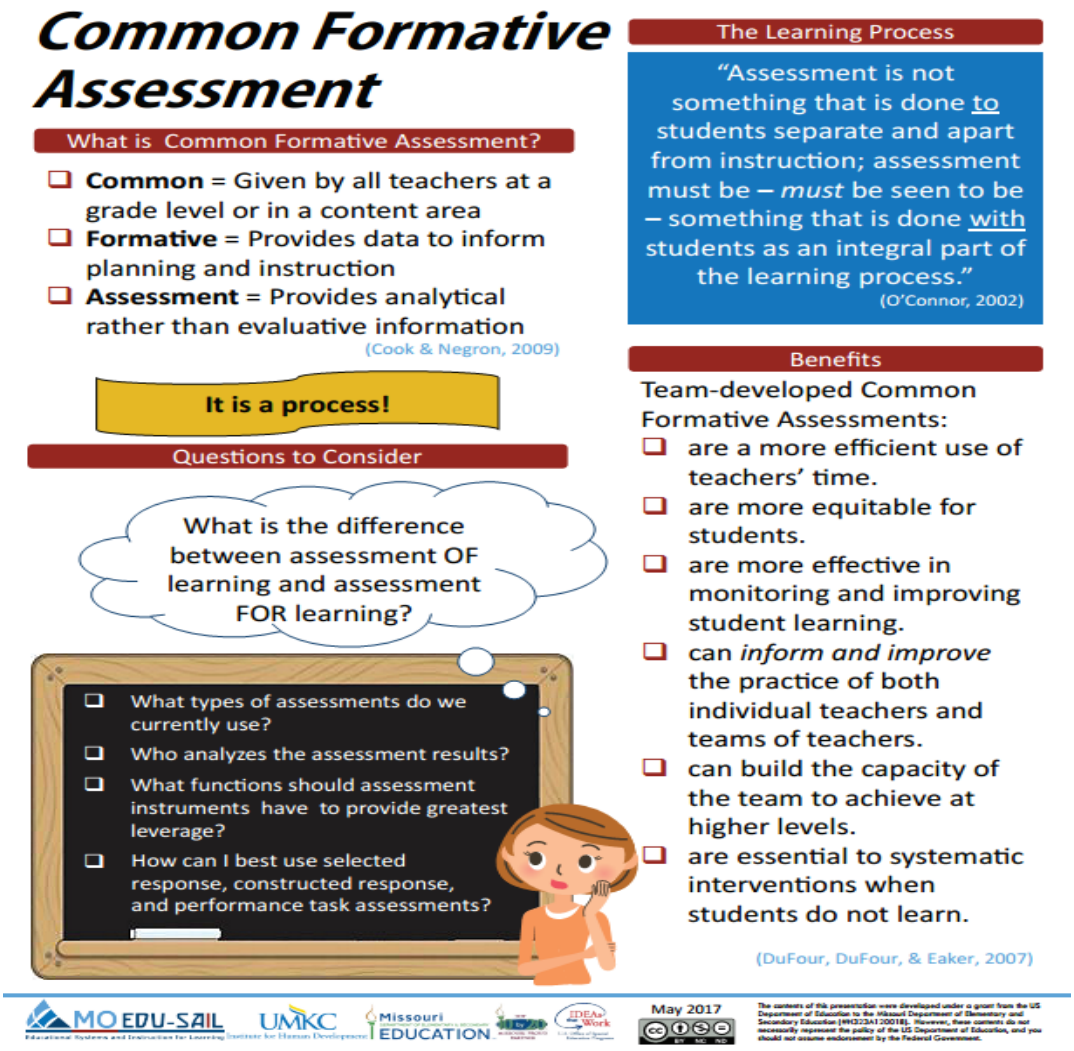

Figure D2. Common Formative Assessment. From http://www.moedu-sail.org/wp-content/uploads/2016/07/CFA-Infographic-5-2017.pdf with permission from Missouri Department of Elementary & Secondary Education, Office of Special Education. (2013). Missouri State Personnel Development Grant Learning Packages. Framework & Contents. Kansas City, Missouri: University of Missouri-Kansas City, Institute for Human Development (see Appendix E)

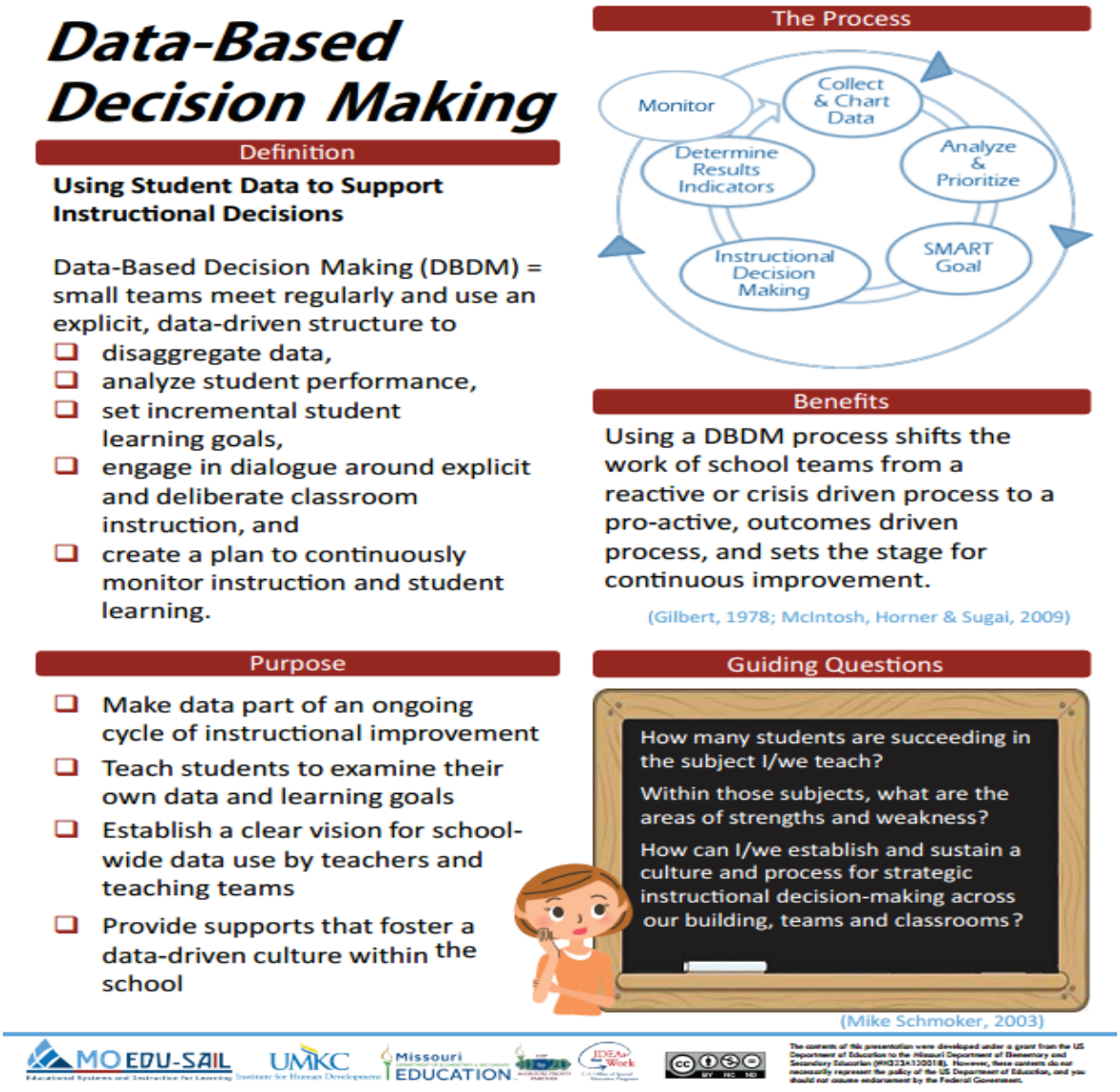

Figure D3. Data-Based Decision Making. From http://www.moedu-sail.org/wp-content/uploads/2016/08/DBDM-Infographic-May-2017.pdf with permission from Missouri Department of Elementary & Secondary Education, Office of Special Education. (2013). Missouri State Personnel Development Grant Learning Packages. Framework & Contents. Kansas City, Missouri: University of Missouri-Kansas City, Institute for Human Development (see Appendix E)

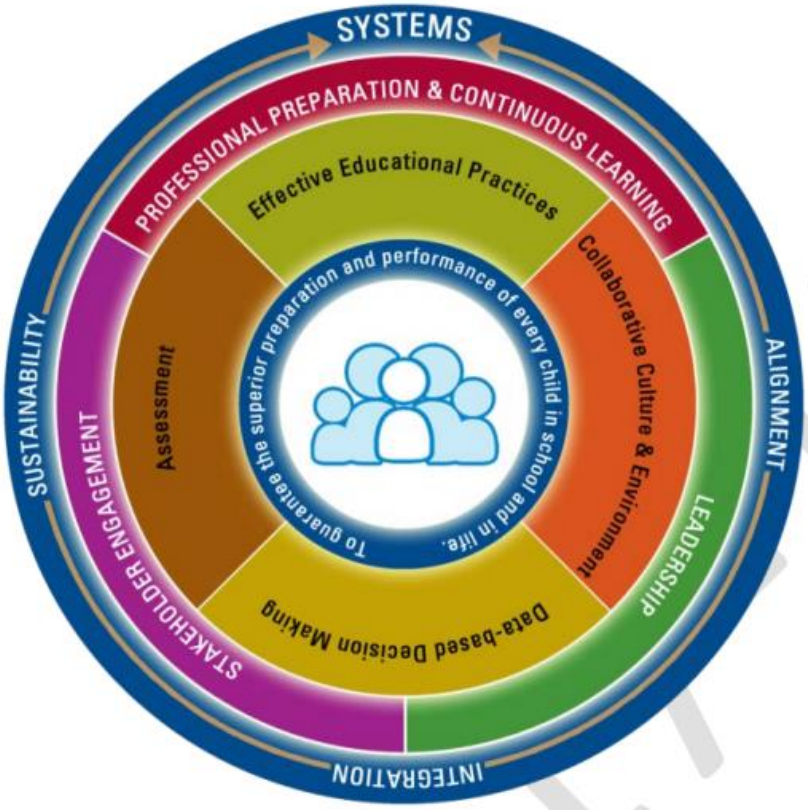

Figure D4. Synthesis of Collaborative Work Grant. Adapted from https://dese.mo.gov/sites/default/files/se-ep-cw-common-understandings-document.pdf with permission from Missouri Department of Elementary & Secondary Education, Office of Special Education. (2013). Missouri State Personnel Development Grant Learning Packages. Framework & Contents. Kansas City, Missouri: University of Missouri-Kansas City, Institute for Human Development (see Appendix E)

Appendix E: Permission from MO DESE to use Graphics from MO Edu-Sail Website

Platte County

Cordova, Amy <cordovaa@platteco.k12.mo.us>

Request to use graphics in dissertation

Scott, Thea <Thea.Scott@dese.mo.gov> Fri, Nov 17, 2017 at 8:37 AM
To: "CordovaA@platteco.k12.mo.us" <CordovaA@platteco.k12.mo.us>
Cc: "Henry, Ginger" <Ginger.Henry@dese.mo.gov>

Good morning,

Thank you for your request. It is fine to use information/graphics from the MOEduSail website. If you choose to use the materials, we ask that you credit us using the suggested citation below.

Missouri Department of Elementary & Secondary Education, Office of Special Education. (2013). Missouri State Personnel Development Grant Learning Packages. Framework & Contents. Kansas City, Missouri: University of Missouri-Kansas City, Institute for Human Development.

Thank you,
Thea Scott

Director, Effective Practices
Office of Special Education
(573) 751-0625

From: Cordova, Amy [mailto:cordovaa@platteco.k12.mo.us]
Sent: Wednesday, November 15, 2017 7:02 PM
To: Williams, Pam
Subject: Request to use graphics in dissertation
[Quoted text hidden]
CordovaA@platteco.k12.mo.us<mailto:CordovaA@platteco.k12.mo.us>