ABSTRACT

Kathy O. Barber. A PROGRAM EVALUATION OF THE LEARNING FOCUSED MODEL IN CRAVEN COUNTY (Under the direction of Dr. James McDowelle). Department of Educational Leadership, March 2018.

This program evaluation was to provide guidance to school officials for future decisions regarding the Learning Focused Solutions Model. The program evaluation was conducted using the evaluation design by Daniel Stufflebeam called Context-Input-Process-Product (CIPP), which targets program improvement. The four areas examined in the evaluation are context, inputs, processes, and product. The guiding questions for the four areas are: What is the target population and its needs? What are the inputs and resources of the Learning Focused Solutions Model? How is the program monitored? How will the results of the monitoring be tallied? What are the End of Grade Test results during the third year of implementation? What are the results of the walkthrough data? The program evaluation found the target population of third through eighth grade students needed to improve proficiency scores in math. The following recommendations were provided as a result of this determination: (1) The evaluator does not feel the evaluation provided enough evidence to support continuing a district-wide requirement of the Learning Focused Solutions Model for math planning and instruction, therefore it is recommended to revisit the intended use of the Learning Focused Solutions Model. (2) A continuance of a high yield strategy use is recommended. (3) Development and implementation of a reliable monitoring tool for observing high yield strategies is recommended. (4) It is recommended Craven County educational leaders make a determination of its teachers' ability to teach math content and provide professional development to those who do not understand the content. (5) It is recommended that Craven County educational leaders should seek out the best math instructional programs and then provide instructional materials for teachers to use during

math instruction. (6) It is finally recommended that universities place more focus on the pedagogy and strategies for teaching of math content.

A PROGRAM EVALUATION OF THE LEARNING FOCUSED MODEL IN CRAVEN COUNTY

A Dissertation

Presented to

The Faculty of the Department of Educational Leadership

East Carolina University

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by

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A PROGRAM EVALUATION OF THE LEARNING FOCUSED MODEL IN CRAVEN COUNTY

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DEDICATION

I'd like to dedicate this dissertation to my dad, who passed away during my doctoral work. His nickname was "Doc" for which he earned during his time in the Navy, working as a Naval Corpsman. Upon graduation, I will earn the nickname "Doc 2" and I am sure he will be smiling down at me as I carry his nickname forward with pride.

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Finally, to my family, friends, and colleagues who advised and supported my work over the years, a heart-felt “thank you” is whole-heartedly given. Your support to the completion of this work will forever be remembered and appreciated.

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CHAPTER 1: INTRODUCTION

The leadership of the Craven County School District has been analyzing End of Grade Testing Data since 1993. The school district has access to data that details gaps as well as increases and decreases in student performance. Over the last ten years, Craven County Schools has been somewhat stagnant in student performance. H. W. Beasley (personal communication, May 30, 2014). Like many other school systems Craven County Schools (CCS), seems to have been in a cycle of testing, analyzing data, determining areas of need and then working to fix low performance or stalled student growth before the next round of testing begins. Over time CCS has invested time and money into various programs in hopes of improving the stagnant student performance. During the 2014-15 school year, Craven County Schools decided to implement the Learning Focused Solutions Model (LFSM) with the goal of improving proficiency test scores (M. Lee, personal communication, June 2014). The purpose of this study is to determine if the context for the Learning Focused Solutions Model and the rationale for its implementation is sound, and if the model is properly implemented according to the CIPP model assessment.

The CIPP model assessment is a research design developed by Daniel Stufflebeam. His program evaluation design delineates the Context- Input-Process-Product (CIPP). Through the use of the CIPP model, the program evaluation will also determine if the Learning Focused Model is (a) implemented with fidelity and consistency, (b) makes a notable impact on math performance, and (c) is perceived to be successful. The results of this program evaluation will be shared with CCS district leaders to assist with decisions about the future of the Learning Focused Model within the district.

Background of the Learning Focused Model

Dr. Max Thompson founded the Learning Focused Model in 1993 in response to evaluation data from The Education Evaluation Consortium and the United States Department of Education. Dr. Thompson used research conducted by these agencies to determine strategies that were found to produce exceptional results in student learning. He used this research to create a framework for instructional delivery. Over time Thompson incorporated Robert. J. Marzano's research into this framework. After combining his research from the Education Evaluation Consortium, the United States Department of Education and Marzano, Dr. Thompson presented an improved Learning focused Solutions Model in 1998.

Since its early creation new strategies for learning have been implemented for the improvement of the LFSM, however a basic framework has remained. This framework includes: (a) a backwards planning model, (b) use of research-based and evidence based classroom practices, (c) and the use of an acceleration model. According to Thompson, the LFSM framework is an accelerated exemplary practice model for schools and districts that is based on over twenty years of research and results. This framework significantly improves student performance by providing a balanced approach, incorporating exemplary practices for leaders and exemplary instructional strategies (Thompson, 2015). The LFSM bases its product on four dimensions of exemplary practice as a means for schools to reach their goals (Thompson, 2015). The LFSM provides specific research-based or evidence-based strategies for each of these dimensions (see Figure 1).

Dr. Thompson also states, teachers in exemplary schools plan at least a month ahead and then during weekly planning meetings lesson plans are minimally revised. In a school using the LFSM all teachers use the same template for planning and plan lessons around a skill or concept

Effective Teaching	High Expectations
• apply an exemplary lesson planning framework to instruction • plan collaboratively • map standards • integrate exemplary practices and learning strategies • plan effective reading assignments • cultivate a learner-centered culture	• increase rigor with the Levels of Learning Framework • explicitly teach students to independently use higher order thinking • plan lessons that integrate higher order thinking effectively • plan effective grade-level assignments and assessments for learning • eliminate assignment-grade level gaps
Support All Students	**Continuous Improvement**
• accelerating learning framework • apply customization and scaffolding to meet each student's needs • implement practices that catch struggling students up • increase challenge for higher achievers • maximize every student's achievement and progress	• get lasting results with the exemplary practices implementation framework • define focus goals and benchmarks to accomplish objectives • participate in the online collaborative network and in onsite and online professional development to increase quality

Note. The 4 Dimensions of Exemplary Practice from Advancing Schools: Insights from Exemplary Leaders (Thompson, 2015, p. 7).

Figure 1. Four dimensions of exemplary practices.

that lasts 3-5 days. According to the LFSM there are five high-yield strategies that are used to improve student performance and all five must be in every lesson pan. The high-yield strategies are: (1) Higher Order Thinking, (2) Summarizing, (3) Vocabulary in Context, (4) Advanced Organizers, and (5) Non-Verbal Representations. Teachers are trained on various ways to use the five high-yield strategies and are given the expectation to have all five strategies in each lesson plan.

Although the use of these high-yield strategies are a feature of the LFSM, the strategies alone are not new to education. Research dated from 1938 can be found to corroborate the validity of using the high yield strategies described in the LFSM. The research results of Dewey (1938) and Piaget (1973) validate the pedagogy of developing higher order thinking skills. Additionally, research conducted by Dewey (1938) and Bento (2009) asserted that greater progress with skills across the curriculum are made when learners are taught to think critically. Research can also be found to support the high yield strategy of summarizing. In 1991, Kirkland and Sunders stated summarizing skills are essential in an academic setting due to the frequency of summary assignments and the potential for using summarizing as a study. Also, Borasi, Siegel, Fonzi and Smith (1998) found that stopping frequently to share questions and interpretations with a partner provided students with a constructive way to approach the reading of a text they had initially perceived to be quite difficult (p. 281). In the sixties, Ausurbel provided research on the benefits of using advance organizers while in 2001 Marzano provided research to support the use of non-verbal representations. In 1979, Gipe provided research that supports teaching vocabulary in context. Finally, the Mid-continent Research for Education and Learning (McRel) conducted research between 1998 and 2001 on the high-yield strategies suggested through the LFSM and this research showed favorable results for the strategies. With

all of this research to be found supporting the strategies recommended by Learning Focused, one may wonder why it is considered a model for teaching instead of simply a compiled list of teaching strategies that have been proven to be solid practices. According to Max Thompson (2006), the LFSM is a *framework* for schools that puts all of the high-yield strategies in a format that is easily followed.

The centerpiece of the framework is the lesson plan template. The template itself contains a place for teachers to include (a) the standard being taught, (b) the vocabulary that will be used during the lesson, (c) the activities that lead up to the final assessment, (d) the graphic organizer(s) that will be used, (e) the summarizing strategy, and (f) the final assessment of the lesson. The Craven County School System began using this framework during the 2014-2015 school year and all of the teachers in the district were trained on how to use the lesson plan template. During this training they also were taught how to include all of the high-yield teaching strategies recommended by the LFSM in the lesson plan template.

This program evaluation will use the CIPP Evaluation Model to evaluate the context for the Learning Focused Solutions Model, the inputs for the model, the processes used with the model, and the final testing results after the implementation of the model. The program evaluation model will be used to determine if the LFSM is implemented with fidelity and consistency in the Craven County elementary schools and middle schools and whether or not the model made a notable impact on math performance at the elementary and middle school level.

Introduction to Problem of Practice

Legislation (House Bill 435) passed during the 2013 long session of the North Carolina General Assembly requiring the inclusion of School Performance Grades as part of the North Carolina School Report Cards starting with the 2013-14 school year (NCDPI, 2013). Every

school receives a letter grade of A-F using 80% of student proficiency on End of Grade Testing and 20% of student growth as determined by the EVAAS (Education Value-Added Assessment System) (NCDPI, 2015). With the current state of Craven County Schools reflecting low proficiency in End of Grade Math, the focus of the district has turned to increasing math proficiency. With this focus in mind, Craven County Schools began to search for what strategies, programs and pedagogy work best to increase student performance on End of Grade Tests (A. Brown, personal communication, April 20, 2013).

The No Child Left Behind Act of 2001 (NCLB), signed into law by President Bush in 2002, reauthorized the Elementary and Secondary Education Act (ESEA), a law that encompasses Title 1 requirements. ESEA was first enacted in 1965 and guides the use of federal aid for students with disadvantages. NCLB contains requirements for student testing performance, annual school report cards, and teacher requirements. In 2013 NCLB included the mandate to bring all third grade students to a proficient reading level by the 2013-2014 school year (U.S. Department of Education, 2004). Effective in the 2013-2014 school year, legislation directs the State Board of Education (SBE) to award NC public schools overall school scores for achievement, growth and performance and to designate that a school has met, exceeded, or has not met expected growth. The law further states, the designation of student growth shall be clearly displayed in the annual school report card (NCDPI, 2013).

Over the last decade individual school leadership teams, within the Craven County School District, have selected the math programs for their school. This school-based decision making model has resulted in a variety of programs being used for math across the district. A list of at least ten different math programs found in the 25 schools within the district can be counted and no systematic framework for lesson planning, math instruction, remediation, or interventions

was in place. Due to the lack of alignment, the amount of math programs being used in the district, and low math scores Craven County Schools selected to use the LFSM for the purpose of improving proficiency on behalf of the students in third through eighth grade (M. Lee, personal communication, June 2013). The district superintendent requested a program evaluation of the Learning Focused Solutions Model to determine whether or not data supports improved student achievement, particularly, math proficiency. This program evaluation focuses on the impact of the LFSM on math proficiency in grades 3-8 of the Craven County School District, specifically this program evaluation will determine if LSFM: (a) is implemented with fidelity and consistency, (b) makes a notable impact on math performance, and (c) is perceived to be successful. The results of this program evaluation will be shared with CCS district leaders to assist with decisions about the future of the Learning Focused Model within the district.

Purpose of Evaluation

According to Kelly Hinchcliffe and Tyler Dukes of WRAL, all North Carolina public schools, including charter schools, have received A through F letter grades since 2013-14, when the General Assembly passed legislation requiring it (WRAL, 2017). Schools are also judged on whether their students exceeded, met or did not meet academic growth expectations during the year. Test scores, attendance, teacher data and student data are published in the newspapers and can be found on the NC Department of Instruction website (Available at http://www.ncpublicschools.org). Funding that is connected to performance also causes concerns to school districts. High stakes accountability measures encourage school systems to make wise decisions about the use of funds and student proficiency and student growth are the measures that tend to drive budget decisions (L. Mills, personal communication, February 10, 2014).

Therefore the purpose of this program evaluation is to determine the merit and worth of the LFSM.

In the 2014-2015 School Year, the Craven County School District third through eighth grade math proficiency average variation from the previous year was a positive 3.5%. The Learning Focused Solutions Model was introduced and principals were trained on the expectations of the LFSM. All elementary and middle schools began the implementation process. Prior to the start of the 2015-2016 school year, professional development for the use of the Learning Focused Lesson Plan Template, and the high-yield strategies was delivered to all Craven County teachers in grades 3-8. At the end of the 2015-2016 school year, the math proficiency for grades 3-8, showed an overall average increase of 2.3 percentage points. Prior to the beginning of the 2016-2017 school year, Learning Focused Train the Trainer professional development was conducted with all of the school administrators and during the 16-17 school year, the LFSM moved into its third year of implementation. During the third year of the implementation there was a heightened expectation of fidelity in the use of the model, this included monitoring of the implementation through walk-through observations (M. Lee, personal communication, March 2017). With a higher level of implementation of the LFSM a program evaluation has been requested by the Superintendent of Craven County Schools.

Significance of the Program Evaluation

To this evaluator's knowledge, there has been no other evaluation conducted on the Learning Focused Solutions Model using the Stufflebeam CIPP program evaluation method. This evaluation will help the Craven County school system make decisions about the implementation of the LFSM. According to Fitzpatrick, Sanders and Worthen (2011), "evaluation information is an essential part of good decision making" (p. 172). Stufflebeam

(2005) defines evaluation as: "the process of delineating, obtaining, reporting and applying descriptive and judgmental information about some object's merit, worth, probity, and significance to guide decision making, support accountability, disseminate effective practices, and increase understanding of the involved phenomena" (p. 61). This program evaluation will evaluate the LFSM in order to provide administrators valid information regarding whether or not the use of the model improves math performance. The high level of finance use, personnel needed, and time commitments make it critical for the school district to closely monitor the implementation of the LFSM and its impact on student learning. The results will be shared in order to assist with decisions about its implementation and continuance. The cyclical nature of the CIPP model will involve as many stakeholders as necessary to inform decision making concerning the LFSM. Although research and studies can be found on the LFSM, this evaluator has not been able to find any other evaluation on this model using the CIPP approach, nor has she been able to find any evaluation focused exclusively on the impact the LFSM has on math performance exclusively.

Douglas Daugherty completed his research on the effects of the LFSM on third grade reading performance in 2011. In his research the LFSM was studied through its implementation and use in three suburban elementary schools and compared to three similar elementary schools not using the program. Daugherty's (2011) research indicated favorable results for the LFSM. However, according to his research, "the Learning-Focused Schools Program specializes in connecting reading comprehension, writing across the curriculum, accelerating and scaffolding learning, balanced literacy, and differentiated assignments, with the overall goal of raising achievement" (p. 5). It is interesting to note Daugherty states the LFSM specializes in reading, however since the model is not a specific program but rather a framework for good instructional

practice Craven County Schools has used LFSM for planning math instruction as well as reading. Therefore, the significance of this program evaluation is high because it will provide a framework for evaluating the LFSM outcomes specific to math.

Questions to Stimulate Evaluation Processes

Based on the program evaluation design, the following questions are applicable:

1. According to walk-through data, are the teachers at the elementary level implementing the High Yield Strategies with fidelity?
2. According to walk-through data, are the teachers at the middle school level implementing the High Yield Strategies with fidelity?
3. Did the End of Grade Math Proficiency scores go up during the third year of implementation for Elementary Schools in Craven County?
4. Did the End of Grade Math Proficiency scores go up during the third year of implementation for Middle Schools in Craven County?
5. Do the teachers using LFSM perceive it as successful?

Due to the nature of this work, it has been determined that the program evaluation is the best method to use in determining the effectiveness of the Learning Focused Solutions Model. There is a difference in research and evaluation. Research is intended to advance knowledge, while an evaluation's purpose is to provide useful information to those who hold a stake in whatever is being evaluated, often helping them to make decisions (Fitzpatrick, 2011). A program evaluation is a well-organized method for collecting and using information to answer questions about projects, or programs, chiefly about their effectiveness and productivity. This evaluation will follow the research design developed by Daniel Stufflebeam. His design is the Context-Input-Process-Product (CIPP) model. Stufflebeam's model is one of the decision-

oriented evaluation approaches structured to help administrators make good decisions. Stufflebeam (2015) defines evaluation as "the process of delineating, obtaining, reporting and applying descriptive and judgmental information about some object's merit, worth, probity, and significance to guide decision making, support accountability, disseminate effective practices, and increase understanding of the involved phenomena" (p. 61).

The CIPP Program Evaluation structure consists of the following elements: the context, the input, the process, and the product (see Table 1).

Stufflebeam has always emphasized using multiple methods, both qualitative and quantitative in order to use the most appropriate tool for measuring the topic of interest at the time (Fitzpatrick, 2001). Qualitative data will be used to determine teacher's confidence in using the model and their opinion of the fidelity of implementation while quantitative data will be used to determine the difference in student performance on the NC End of Grade Math Test prior to the implementation of the LFSM and after its implementation. Quantitative data from the walkthroughs will also be used to determine the level of fidelity of using the high-yield strategies.

Definition of Terms

The following terms ae used in this study. These definitions are provided to help with an understanding of the terms used within the body of the text.

Advanced Organizer - A tool used to inform students about what they will learn during a lesson (Thompson, 2006).

Exemplary Schools - 90%+ students are on free and or reduced meals, 90%+ students are minority, and 90%+ students are on or above grade level (Reeves, 2000).

Table 1

The CIPP Related to the Learning Focused Solutions Model and this Study

Context	Input	Process	Product
What is the target population and its needs? • The target populations are the Elementary and Middle Schools in Craven County • There is a need to improve math performance on the NC End of Grade Test	What are the inputs and resources of the Learning Focused Solutions Model? <u>Inputs</u> • Lesson Plan Template • Professional Development <u>Resources</u> • Learning Focused PLC website • Learning Focused Lesson Plan book • Learning Focused District Coach	How is the program monitored? How will the results of the monitoring be shared and tallied? • The program is monitored through administrative walkthroughs • The walkthrough data will be collected using a Likert scale during each walkthrough to determine the level of fidelity of high-yield strategy use • An average score for each high-yield strategy will be computed for the elementary level and the middle school level	What are the End of Grade Test results during the third year of implementation? What are the results of the walkthrough data? • EOG Math Testing Data will be analyzed to determine the changes in math proficiency for the elementary and middle school levels • The walkthrough data will be analyzed to determine the level fidelity at the elementary and middle school levels

EVAAS Growth Model - An Education Value-Added Assessment System for K-12; a customized software system available to all North Carolina school districts. EVAAS provides North Carolina's educators with tools to improve student learning and to reflect and improve on their own effectiveness while measuring the academic growth of students from one point in time to another (NCDPI, 2013).

Higher Order Thinking - Going beyond recall and summarization of information by analyzing and using information to reason logically (Thompson, 2006).

Non Verbal Representation - Information in the form of a visual image (Thompson, 2006).

School Performance Report Card - A comprehensive resource for information about student achievement, the school environment and student safety at the state, district and school levels (NCDPI, 2017).

Summarizing - Condensing important information into one's own words (Thompson, 2006).

Vocabulary in Context - Words central to understanding the concepts of the lesson (Thompson, 2006).

CHAPTER 2: REVIEW OF RELATED LITERATURE

North Carolina Accountability Assessments

According to the North Carolina Department of Public Education (NCDPI, 2015), federal and state policies require all eligible students, including students identified as Limited English Proficient (LEP) and students with disabilities to be included in statewide testing (NC Testing Program, 2015). In an Assessment Brief provided by NCDPI End of Grade assessments are curriculum-based achievement tests. The mathematics assessments at grades 3–5 assess student achievement in the five strands of the mathematics curriculum: (1) Operations and Algebraic Thinking, (2) Number and Operations in Base Ten, (3) Number and Operations—Fractions, (4) Measurement and Data, and (5) Geometry. The mathematics assessments at grades 6–8 assess student achievement in the five strands of the mathematics curriculum: (1) Ratios and Proportional Relationships, (2) the Number System, (3) Expressions and Equations, (4) Geometry, and (5) Statistics and Probability (NCDPI, 2015).

According to the NCDPI Division of Accountability Services/North Carolina Testing program, the purpose of the North Carolina Statewide Testing program is state and school system accountability (NCDPI, 2015). The tests are designed to measure what students have learned over an entire academic year. There are a variety of testing forms but each form contains a sample of items measuring different aspects of the NC Standard Course of Study. In October 2013, the State Board of Education adopted the five levels of achievement with level 1 and 2 not considered proficient, while levels 3, 4 and 5 considered as proficient with levels 4 and 5 rated as college or career ready. It is important to know the correlation between scale scores and achievement levels is due to the fact that the changes of the scale scores for each student over time is used in the Education Value-Added Assessment System (EVAAS) to determine student

growth. North Carolina uses this model for measuring student growth when EOGs are done. Student growth is the amount of academic progress that students make over the course of a grade or class. It is also important to know how the scoring of tests is aligned with the NCSCOS and how much weight each domain carries for the final student score.

According to NCDPI, members of the Test Development Section invited NC educators to collaborate and develop recommendations for prioritization of standards indicating the relative importance of each standard, the anticipated instructional time, and the appropriateness of the standard for a multiple-choice or gridded response time format. The test-development staff from NCDPI met to review the results from the teacher panel and developed the weighted domains for Grades 3-8 (see Table 2 and Table 3).

One may think since teachers are given the NC Standard Course of Study, the domains are named and the percentage that is on the test for each domain is provided, it would be fairly easy for teachers to be able to provide instruction that prepares students to be successful on the End of Grade Test. However, when looking deeper into the teaching of math and achieving student success on test-taking of math one may find it is not as simple as knowing what to teach and being told what will be tested. There is research dating back to 1927 that tries to address the best way to teach math.

Brief History of Mathematics Reform

In his work, The Psychology of Arithmetic, Edward Thorndike called upon school psychologists to make schools more efficient and effective in order to educate large populations of children (Ellis & Berry, 2005). In his work Thorndike explained the need for linguistic skill in order to perform math at a higher level, he did however feel that rote practice was beneficial prior to the acquirement of extensive mathematical language. In 1927, Thorndike outlined the

Table 2

Weight Distributions for Grades 3-5

Domain	Grade 3	Grade 4	Grade 5
Operations and Algebraic Thinking	30-35%	12-17%	5-10%
Number and Operations in Base Ten	5-10%	22-27%	22-27%
Number and Operations – Fractions	20-25%	27-32%	47-52%
Measurement and Data	22-27%	12-17%	10-15%
Geometry	10-15%	12-17%	2-7%
Total	100%	100%	100%

Note. NCDPI/Accountability Services Division, 2017.

Table 3

Weight Distribution for Grades 6-8

Domain	Grade 6	Grade 7	Grade 8
Ratios and Proportional Relationships	12-17%	22-27%	N/A
The Number System	12-17%	7-12%	2-7%
Expressions and Equations	27-32%	22-27%	27-32%
Functions	N/A	N/A	22-27%
Geometry	12-17%	22-27%	20-25%
Statistics and Probability	7-12%	12-17%	15-20%
Total	100%	100%	100%

Note. NCDPI/Accountability Services Division, 2017.

work of the elementary school concerning math as*:*

> (1) Working knowledge of the meanings of numbers. (2) Working knowledge of the system of decimal notation. (3) Working knowledge of the meanings of addition, subtraction, multiplication, and division. (4) Working knowledge of the nature and relations of certain common measures. (5) Working ability to add, subtract, multiply and divide with integers, common and decimal fractions, and denominate numbers, all being real positive numbers. (6) Working knowledge of words, symbols, diagrams and the like as required by life's simpler arithmetical demands or by economical preparation therefore. (7) The ability to apply all the above as required by life's simpler arithmetical demands or by economical preparation therefore, including (7a) certain specific abilities to solve problems concerning areas of rectangles, volumes of rectangular solids, percent, interest and certain other common occurrences in household, factory, and business life (pp. 24-25).

The Progressive Education Association believed student interests should be a factor to consider when implementing instructional practices and the teacher should be more of a facilitator of instruction instead of a direct instructor (Stengel, B. S., Przychodzin, Marchand, & Martella, 2004).

In the mid-20th century, concerns of the Russians launching the Sputnik satellite into space before the Americans were able to launch a satellite prompted Congress to create the National Science Foundation (NSF). During this time the New Math phenomenon was developed. NSF provided funding to numerous projects that worked to overhaul mathematics education. Practices developed during this time such as usage of math manipulatives can still be seen in today's classrooms. Other programs that developed during the New Math era were the

use of textbooks for math and the creation of Advanced Placement testing by the College Entrance Examination Board. These approaches laid the groundwork for future reform in mathematics (Klein, 2003).

In the early 1970s a Back-to-Basics reform was launched as a shift to the New Math movement. Advocates of the Back-to-Basics movement pushed for the simplification and orderly development of math skill. This movement was closely connected to the competency test movement in the 1970s and 1980s, but the critics of both the Back-to-Basics and competency tests espoused that the textbooks were Thorndike-like and did little to prepare students for higher levels of cognition and understanding (Wilson, 2003). The debate about how to teach math best continued. In 2005, Ellis and Berry stated many of the revisions of mathematics education formulated over the past century have been created within the procedural-formalist paradigm. Ellis and Berry found the procedural-formalist style views math as a set of facts, skills and procedures that have very little to do with human familiarity while the cognitive-cultural view of mathematics education believes that all students can learn mathematical concepts as long as they are presented to the student in a culturally pertinent way.

The National Council of Teachers of Mathematics (NCTM) sensed there needed to be a change in American mathematics. Therefore, in 1989 they published updated standards (NCTM, 1989). In 1998 Burrill explored implications of the NCTM standards by reviewing the changes that have occurred in mathematics education. Burrill saw the need to create a curriculum that flows from various grade levels into one coherent whole, so students can have a shared common knowledge. Burrill felt a curriculum designed this way would reduce the emphasis on the repeat and remediation cycle and allow for a broader and more useful base of mathematics in the

classroom and would help make mathematics consistent across grade levels nationally (Grelk, B. J., Kloeber, J. M., Jackson, J. A., Parnell, G. S., & Deckro, R. F., 1998).

In 2000, mathematical challenges of the 2st Century were explored at the American Mathematical Society Conference, sponsored by the American Mathematical Society, at UCLA. Topics such as Mathematics and Computing, Quantum Computation, High-Dimensional Data Analysis, and Modeling Perception and Inference in Intelligent Systems were covered. The presenters at the conference believed at the heart of many of the great intellectual challenges of the 21st century lies mathematical challenges (Lebo, 2000). More than a decade later and after much discussion and presentation of theories, claims about what modern students needed for math were no longer as compelling.

Like much of the country, North Carolina educator concerns about how to teach math have shifted over the years. Most recently the concern over Common Core Math has been in the forefront. Math test scores in NC have slid dramatically backwards since the implementation of Common Core with the largest gap being between white students and black students and between economically disadvantaged and non-economically disadvantaged student (Bonner, 2017). With all the concern over the achievement gap and poor math performance, new guidelines for students in kindergarten through eighth grade was approved by a 6-4 legislative vote, therefore, teachers in North Carolina will begin using retooled math guidelines in 2018.

Mathematics Reform and Its Relationship to Study

The review of mathematics reform provides a timeline of changes in pedagogy, instruction, and materials from 1927 to 2017. The history of math reform includes many of the same practices found in today's classrooms such as direct instruction, cooperative instruction, math textbooks, the use of manipulatives and the use of skill and drill methods. The Learning

Focused Solutions Model is not a math program nor a math curriculum. It does not provide instructional materials, manipulatives, textbooks, or teacher manuals.

What the LFSM does provide, however, is a planning template that requires the teacher to plan for on-grade-level-lessons that include summarizing, vocabulary review, collaborative learning in pairs, higher order questioning and on grade level assessments. Teachers can also find ideas to support their math instruction on the LFSM website. Although the majority of the resources on the website are related to reading there are some specific to math. Currently one can find 3 math lesson plans, 23 math graphic organizers, 8 pictures of math anchor charts, and 1 video of modeling math instruction.

Summary

The history of mathematics reform literature review depicts the effort dedicated over time to improve student performance in math. The LFSM claims the practice of summarizing, previewing content vocabulary, use of collaborative pairs, use of higher order thinking questioning and effectively planning will improve math performance. This program evaluation will evaluate the effectiveness of using the LFSM in Craven County Schools for math planning and instruction.

Cooperative Instruction in Math

In 1961 Dewey was a major force in progressive education in the United States during the early to mid-20th century. His work led the way for other researchers such as Jean Piaget, Carl Rogers, and Lev Vigotsky. All of these scholars shared Dewey's belief that education naturally facilitates the developing tendencies and potential of each child (Matthews, 2003). Teachers seem to understand this theory well. They display this understanding through the use of enriched experiences in order to help students internalize information that may not be feasible

under ordinary circumstances. Dewey believed "the contents of the child's experience as more important than the subject-matter of the curriculum" (Matthews, 2003, p. 342).

In 1953 Piaget, another forerunner of constructivist theory, centered his focus on constructivism around how an individual builds knowledge. According to Piaget (1953), the nature of knowledge should be studied empirically through experimentation of learners in their natural environments. He believed humans cannot be given information and immediately understand it, he thought humans must construct their own knowledge.

Another proponent of cooperative instruction, Constance Kamii, conducted research during 1996, in which she compared students in classrooms that did and did not use the direct instruction approach of carrying and borrowing to answer a math equation. Students were heterogeneously placed by ability. The work of two hundred and twenty students was examined during the study. Kamii found that students who used traditional algorithms to answer questions were more likely to answer the question correctly but could not articulate how the numbers were related to each other and why they had to borrow and carry. Kamii concluded teaching algorithms as harmful because it does not allow children to develop their own thinking. She stated "Algorithms remove the knowledge of place value children have already constructed, which in turn prohibits them from developing number sense" (Kamii, 1996). Kamii asserted that math sums must be internalized and believed the traditional goal of memorizing facts to be an incorrect practice. She believed mathematical classroom practices should not include repetition. Kamii proclaimed students should be exposed to numerical reasoning through daily life experiences, games and problem-solving discussions and if repetition was to be done it should be accomplished using games where students are motivated to learn arithmetic (Smith, 2015).

The National Research Council for Mathematics Learning Study Committee released a report in 2001 that recommended math teachers use a mixed-methods approach to engage students in five competencies of conceptual understanding, strategic competency, adaptive reasoning, productive dispositions, and procedural fluency. The report concluded if learning styles were considered and student-centered techniques used students can be successful at a higher rate and process information faster. The council recommended that a mixture of direct instruction and cooperative approaches be used to instruct students in mathematics (Kilpatrick, Swafford, & Findell, 2001).

In comparison to Dewey, Piaget, Rogers, and Vigotsky, the LFSM also promotes the cooperative style of learning for mathematics. Thompson encourages the use of Collaborative Pairs to discuss math problems. Thompson sates, one way to foster engagement is by the use of Collaborative Pairs. This strategy pairs together students, gives each student a role and responsibility, and sets up a quick task for the students to complete. In Accelerating Learning for All Students, 2013 the reasoning behind Collaborative Pairs is explain as a way for students know what to do, when to do it, who to do it with, and how quickly it needs to get done. Each student has a role and responsibility, and the Collaborative Pairs tasks can easily be structured so that the students rely on each other, holding them accountable to their partners and accountable to themselves. In Teaching with the Brain in Mind (1998), Jensen explained talking about our learning activates the frontal lobe of the brain. This is the part of the brain responsible for creativity, judgement, planning and problem solving. Also Strayer and Strayer (2012), in Check-in Assessments for Differentiated Lessons, remind us that students need to talk about what they learned so that they can organize the information and store it in their long-term memory.

In Learning-Focused Lessons (2010), Thompson suggests students are paired so that lower-performing students are with average-performing students, average-performing students with average-performing students and average-performing students with high-performing students. This is a strategy named Collaborative Pairs. The use of Collaborative Pairs is the cooperative instruction model the LFSM recommends.

Thompson states, "Once students have completed their Collaborative Pairs task, they are still accountable to the group, as the teacher can ask, "What did your partner say?" This keeps students on their toes, knowing that the teacher may very well call their name to share out to the whole group. Thompson also stated "the use of more than a pair is not as effective as a pair because it's hard to get lost in a pair. When there are more than two students working together it is easier for those students who do not understand the content to hide" (M. Thompson, personal communication, 2013).

Direct Instruction for Math

The National Institute for Direct Instruction (NIFDI) is a non-profit organization that promotes direct instruction. Direct Instruction (DI) is a model for teaching that emphasizes well-developed and carefully planned lessons designed around small learning increments and clearly defined and prescribed teaching tasks (NIFDI, 2015). Siegfried Engelmann, creator and senior author of DI, is a strong proponent for DI. In a series of videos he explains his opinion on individual learning styles, the role of rote learning, instructional grouping and individualized instruction. In his videos he states DI has higher ratings than any other way to teach math. He emphasizes DI is not only for struggling students but for all students. In relation to individual learning styles Engelmann states the idea of individual learning styles are constructs that are made up and the program that is the best is the best for all. He states children need to understand

there are relationships between the auditory and visual and students need to understand this, but he questions how a student can be an auditory reader. He says “they can’t, because reading is visual” (Engelmann, 2015). In regards to rote learning, Engelmann states that certain things are simply rote. He gives the example that counting to six is rote learning. He says numbers have names, order, and properties that are rote and that math is a good example of rote learning. He also discusses learning fractions in his videos he states, students need to learn fractions by rote learning. To sum up his assessment of rote learning Engelmann (2015) said, “If something is rote you teach it in a way that has fidelity so the kids learn the essential features that they need to know, but you are very careful about how you sequence it”.

Engelmann believes instructional grouping is productive when students are taught to be successful in their group and are encouraged to believe they are smart. He states, “When you place a kid in a group where everyone is at the same level, they love that group. That is part of being a kid, being in a group that is like you.” According to Engelmann the idea that a teacher can provide individualized instruction in a typical classroom of kindergarten through second grade, is a preposterous plan due to the fact there is not enough time in a day. He states, “The main goal of a teacher is to use time with desperate proficiency. Group kids so you can work with a larger group and manage the individual progress of each child.” Engelmann suggests that if there are one or two in the group that fall behind, don’t change the group proceeding ahead and to work with those who fall behind at a different time. He says, “The object is to teach as much as you can to as many kids as you can while that clock goes tick-tock. Therefore, one must have good programs and good technique” (Engelmann, 2015).

The National Institute for Direct Instruction recommends the use of DISTAR Arithmetic, Connecting Math Concepts, Corrective Math, Essentials for Algebra, and Funnix Math. All of

which are programs a teacher can use to teach math in a direct instructional manner. The National Institute ofr Direct Instruction does not market DI programs, they do however promote them on their website. The following description of DI programs have been provided by the NIDI (2015) and the Best Evidence website along with the NFDI website.

- The DISTAR Arithmetic programs teach the fundamental skills of math. The focus of Level I is basic addition and subtraction operations. Students master rote, rational, and ordinal counting, algebra operations, concepts of more and less, and simple picture and story problems. In Level II, students practice extensions of what they mastered in Level I, learn to solve column addition problems (with regrouping), and work with multiplication and fractions.
- Corrective Mathematics is a remedial system that solves a wide range of problems for struggling older students, even if they have failed with other approaches. Explicit, step-by-step lessons are grouped into separate modules that may be taught separately or concurrently to customize instruction for particular student needs. The program contains modules for addition; subtraction; multiplication; division; basic fractions; fractions, decimals, percent and ratios and equations. Upon completion of one or more of the modules, students are armed with the basic strategies they need to access conventional math instruction with success.
- Essentials for Algebra is designed for students in middle school or high school who are at risk of failing to meet graduation requirements in math. The program teaches pre-algebra and introduces Algebra I content. The program focuses on providing a solid foundation for a traditional Algebra I course and other topics presented in math exams. Students learn about exponents, rate equations, signed-number multiplication,

geometry, function tables, fractions, story problems and other topics. Essentials for Algebra enables students to translate a wide range of problem types into algebraic equations.

- Connecting Math Concepts: Comprehensive Edition is a six level program (Levels A-F) designed to accelerate the math learning performance of students in grades K through 5. The program provides highly explicit and systematic instruction in the wide range of content specified in the Common Core State Standards for Mathematics.
- Funnix is a computer based program consists of 100 lessons and was designed for preschool or kindergarten children with no math or counting skills. It is also applicable for older students who have not learned beginning math operations. The program was intended to be used with home schooled children.

DI models are highly segmented and sequenced and consist of design and effective presentation techniques (Carnine & Silbert, 1997). According to NIFDI, six meta-analyses have examined the Direct Instruction programs. All of them concluded the DI programs have highly positive effects on student achievement and that they are more effective than other curricular approaches. John Hattie (2009) examined meta-analyses of over 300 research studies relating to student achievement and concluded that Direct Instruction is highly effective. No other curricular program showed such consistently strong effects with students of different ability levels, of different ages, and with different subject matters. In 2003, Borman and Associates examined studies of 29 comprehensive school reform models. They found that much more evidence was available for the Direct Instruction model than for other interventions. Direct Instruction was found to produce the strongest effects of all models examined. Also, Adams and Engelmann

(1996) conducted a meta-analysis of 34, highly controlled studies that looked at the effectiveness of Direct Instruction programs. They found very strong, positive results. In 2011, Coughlin's meta-analysis focused on 20 studies of Direct Instruction that employed a randomized control group design. Strong positive effects were found with reading, language, mathematics, and other areas. Similar results appeared with general education and special education students. Finally in 2013, Stockard used meta-analytic techniques to examine data from scores on state assessment tests from 18 different sites. Again, strong effect sizes were found. Results were similar across different grades, schools with different SES and racial-ethnic composition, and in different areas of the country.

In 2004, Hill and MacMillan declared the implementation of DI models as essential to school success in the wake of federal and state mandates such as No Child Left Behind. Hill and Macmillan defined DI as having been based on the theory that instruction erases the student misinterpretations and can improve learning. They also expressed the need for teachers and administrators to understand the essential components of the approach in order to successfully implement any direct instruction. Hill and Macmillan (2004) sited that the DI approach can be used with diverse levels of student abilities.

In 2011, researchers at Al-Balqa Applied University in Jordan examined the effect of DI on math achievement in fourth and fifth grade students with learning disabilities. They found DI formats can be applied to any age student and in numerous contexts (Abdulhameed & Al-Makahleh, 2011). Their research included sixty students in fourth and fifth grade mathematics classes. The students attended special education classes in a resource setting. The students were selected as a random sample through learning centers within the city of Amman, Jordan. The students were randomly assigned to experimental and control groups. Two tests were used to

measure student mathematical achievement, the use of mathematical skill in everyday life and the students' attitudes about mathematics. The experimental students received training on basic math using DI. The control group was taught using cooperative learning. The results of the experiment indicated that a statistically significant difference existed among achievement scores of the experimental and control groups on the post tests.

Direct Instruction for math is delivered in small groups that are created according to student ability levels. In most elementary and middle school classrooms direct instruction of math is conducted during Guided Math sessions. In Guided Math groups, students engage in standards-based lessons, where the teacher focuses on a particular concept, strategy or skill. Teachers use scaffolding during the Guided Math lesson as they conduct conversations that include intensive questioning (Newton, 2010). The LFSM focuses on whole-group on-grade-level lesson planning, which is not the same as the direct instruction found during Guided Math. However the lesson plan template used in the LFSM does contain a place to list differentiated assignments for struggling students and remediation plans. Teachers are directed to provide the plans for direct instruction as they create their on-grade-level lessons, so the "direct instruction delivered will be constructed of remediation of the on-grade-level content taught during the lesson" (M. Thompson, personal communication, 2013).

Current Math Initiatives

According to NCDPI (2017), within the NC Standard Course of Study are The Standards for Mathematical Content and Practice. The content standards provide a clear focus of content that must be mastered at each grade level, K-8. High School Standards specify the mathematics all students should study to be college and career ready. They are organized by conceptual categories or themes: Number and Quantity, Algebra, Functions, Modeling, Geometry, and

Statistics and Data. Equally important are the Standards for Mathematical Practice, describing the behaviors or 'habits of mind' of mathematically proficient students. With these standards as the foundation, local school leaders make decisions about the comprehensive curriculum that they choose to deliver to students so that they can reach the content standards for every grade and subject (NCDPI, Curriculum and Instruction, 2017)

Since local school leaders are bestowed the duty of making decisions about the curriculum to use, there seems to be a continuous search for what works best. The Johns Hopkins School of Education Center for Data Driven Reform in Education regularly conducts program reviews and posts the results of their research on the Best Evidence Encyclopedia website. According to the website, The Best Evidence Encyclopedia is a free web site created by the Johns Hopkins University School of Education's Center for Data-Driven Reform in Education (CDDRE) under funding from the Institute of Education Sciences, U.S. Department of Education. It is intended to give educators and researchers fair and useful information about the strength of the evidence supporting a variety of programs available for students in grades K-12. The Best Evidence Encyclopedia provides summaries of scientific reviews produced by many authors and organizations, as well as links to the full texts of each review. The summaries are written by CDDRE staff members and sent to review authors for confirmation (Best Evidence, 2017).

The CDDRE summarizes evidence on three types of programs designed to improve the mathematics achievement of students in grades K-6. They are (1) Mathematics Curricula (MC), such as Everyday Mathematics, Saxon Math, and other standard and alternative textbooks. (2) Computer-Assisted Instruction (CAI), such as Jostens/Compass Learning and SuccessMaker. (3) Instructional Process Programs (IP), such as cooperative learning, classroom management

programs, and other approaches primarily intended to change teachers' instructional strategies rather than curriculum or textbooks (Slavin, Lake, & Groff, 2008).

In grades 6-12, the review summarizes evidence on three types of programs designed to improve the mathematics achievement. These are (1) Mathematics Curricula (MC), such as The University of Chicago School Mathematics Project, Connected Mathematics, Saxon Math, and other standard and alternative textbooks, (2) Computer-Assisted Instruction (CAI), such as I Can Learn, Jostens/Compass Learning, and Accelerated Math and (3) Instructional Process Programs (IP), such as cooperative learning, mastery learning, and other approaches primarily intended to change teachers' instructional strategies rather than curriculum or technology (Slavin et al., 2008).

The key findings for elementary mathematics include 13 studies of mathematics curricula (2 randomized), 38 studies of CAI (15 randomized), and 36 studies of instructional process programs (20 randomized). The finding for each of the types of programs designed to improve mathematics learning in elementary students are as follow:

- Mathematics Curricula (MC). The review found limited evidence that it matters which textbook is used, at least for student outcomes on standardized tests. Studies of curricula supported by the National Science Foundation, such as Everyday Mathematics and Math Trailblazers, found small differences in math achievement in comparison to control groups. Similarly, Saxon Math and traditional math texts had little evidence of effectiveness. Median effect size across 13 studies: +0.10.
- Computer-Assisted Instruction (CAI). Most studies of CAI find positive achievement outcomes. However, the outcomes are very mixed, and the highest-quality studies find few positive effects. Also, most qualifying studies evaluated programs that are no

longer available; there are few studies of current versions of CAI. Median effect size across 38 studies: +0.19.

- Instructional Process Strategies (IP). The highest-quality studies and strongest positive effects were found for instructional process programs such as cooperative learning, classroom management and motivation programs, and small-group tutoring programs. Median effect size across 36 studies: +0.33.

The key findings for middle to high school students included 40 studies of mathematics curricula, 40 studies of CAI, and 22 studies of instructional process programs. The finding for each of the types of programs designed to improve mathematics learning in middle and high school students are as follows:

- Mathematics Curricula (MC). Taken together, there were 40 qualifying studies evaluating various mathematics curricula, with a sample size-weighted mean effect size of only +0.03. This is less than the effect size of +0.10 for elementary mathematics curricula reported by Slavin and Lake (2008). There were eight randomized and randomized quasi-experimental studies, also with a weighted mean effect size of +0.03. Effect sizes for the NSF-supported textbooks had a weighted mean effect size of 0.00 in 26 studies. However, the NSF programs add objectives not covered in traditional texts, so to the degree those objectives are seen as valuable, these programs are adding impacts not registered on the assessments of content covered in all treatments.
- Computer-Assisted Instruction (CAI). A total of 40 qualifying studies evaluated various forms of computer-assisted instruction. Overall, the weighted mean effect size was +0.08. No program stood out as having notably large and replicated effects.

There were few differences among programs categorized as core (weighted mean ES=+0.09 in 17 studies) and supplemental (weighted mean ES=+0.08 in 20 studies). Computer-managed learning systems (ES=-0.02 in 3 studies) had lower effect sizes.

- Instructional Process Strategies (IP). As was true in the Slavin and Lake (2008) review of elementary math programs, the middle and high school approaches with the strongest evidence of effectiveness are instructional process programs. Across 22 qualifying studies, the median effect size was +0.18. However, outcomes varied considerably by type of approach. Two forms of cooperative learning, STAD (now disseminated as Power Teaching) and IMPROVE, had a weighted mean effect size of +0.46 across 7 studies, and 4 of these, with a weighted mean effect size of +0.48, used random assignment to conditions. The findings for these cooperative learning programs are in line with those of the elementary review, which found a median effect size of +0.29 for cooperative learning (Slavin & Lake, 2008).

The review of current math initiatives found slight median effect size for various math curricula and computer assisted instruction. The highest effect size found for improvement in math learning was the use of effective instructional practices such a cooperative learning, classroom management, motivation programs, and small-group tutoring programs. According to the Best Evidence Encyclopedia, the curriculum programs and computer assisted instructional programs for math all provide an average effect size of .08 to .10. The average effect size of effective instructional practices was .29 to .48. The LFSM advertises its promotion of an intentional focus on grade level expectations, an increase of purposeful use and application of the top learning strategies, motivation and engagement of all students, and personalize instruction on its website, found at achievenowpd.com (Learning Focused, 2017). The framework LFSM

promotes does align positively with the findings noted in the Best Evidence Encyclopedia. This evaluation will use the Stufflebeam CIPP Evaluation Model to determine if the rationale for the implementation of the LFSM is sound and if the model is properly implemented according to the CIPP model assessment and if the use of the model has made a positive impact on the math performance of Craven County students in grades three through eight.

Research on LFSM and Math Instruction

The Learning Focused Solutions Model does not promote any specific math program, it simply provides the framework for teacher planning for math to include the same high-yield strategies found in reading instruction. The high-yield strategies are (1) Higher Order Thinking, (2) Summarizing, (3) Vocabulary in Context, (4) Advanced Organizers, and (5) Non-Verbal Representations. Teachers are trained on various ways to use the five high-yield strategies and are given the expectation to have all five strategies in each lesson plan for math. The one-page lesson plan template is used to narrow the focus for a lesson that lasts 3-5 days (Thompson, 2006). On the Learning Focused PLC website teachers are able to find examples of how to incorporate the high yield strategies and teachers can use the website to take courses for professional development on the LFSM as well. Although the LFSM website contains examples of how to incorporate the high-yield strategies and professional development courses about the LFSM there is no clear-cut guide for math instruction. The decision of how to teach mathematics is left to the teacher to decide because the LFSM is only a framework for planning instruction. Currently one can find only three sample lesson plans for math on the Learning Focused PLC website. All three of these plans contain the use of high yield strategies, however there is no textbook, computer program, or math program mentioned in any of these lesson plans. Many teachers express a desire to have the support of a textbook, program or computer-based program

to aid in their teaching. A first grade teacher provided her opinion during a recent conversation stating:

> The LFSM website provides many examples of how to incorporate the high yield strategies, however there is no distinct outline of how to teach the standards. This tends to leave many teachers at a loss for how to go about teaching math standards (B. Gahagen, personal communication, June 21, 2017).

The high yield strategies the LFSM recommends such as summarization, collaborative learning, vocabulary previewing, and higher order thinking have been researched and some studies show these strategies have made a positive influence on math performance.

In her work, Classroom Questioning, Kathleen Cotton reviewed 37 research documents on classroom questioning and found that the use of higher order thinking questions in teaching is positively related to fact retention and student achievement. Her findings concluded higher order questioning had the most favorable response with students above third grade, but added little improvement to math achievement in primary grade students. In 1987, during the annual meeting of the American Educational Research Association in Washington DC, Soled reported the results of two studies, one involving 100 seventh graders and the other involving 85 ninth graders, in mathematics and science. The use of higher cognitive questions in the classroom, in the instructional materials, and in tests resulted in greater gains in both higher and lower mental process achievement on the part of experimental students.

In the Bart Williams blog post, Four Types of Questions that Increase Rigor, he states Marzano recommends giving students exposure to higher order thinking types of questions in order to integrate the new content and deepen their understanding of it. Marzano clarifies this by explaining some questioning types may seem like a better fit for certain subject areas, but each of

them can and should be used in all subject areas (Williams, 2015). Dr. Stanley Pogrow explains higher-order thinking skills are valued because they are believed to better prepare students for the challenges of adult work and daily life and advanced academic work. In his research he found higher-order thinking may also help raise standardized test scores and a curriculum emphasizing higher-order thinking skills has been found to substantially increase math and reading comprehension scores of economically disadvantaged students (Darmer, 2005). Max Thompson recommends using higher order types of questioning in both reading and math. In his book, Successful Leadership for Struggling Schools, Thompson states that all major testing companies had agreed to set a target for all tests to be at least 75% higher level items. In his work, Thompson says the use of higher order thinking strategies will give a school a 1.61 improvement effect size.

Scott Eckman found summarizing in math class beneficial to sixth grade math students. In his work he studied students who were taught how to summarize concepts and how to explain their thinking in different ways to the teacher and their peers. He found summarization such as verbal and written strategies, and strategies involving movement and discussions, can be useful in mathematics classrooms to improve student understanding, engagement and learning tasks, as a form of formative assessment (Eckman, 2005). Summarizing and note taking are functionally complex processes that can take on many forms, making it difficult to study. However, research has suggested that there is some overall benefit of summarizing and note taking, and that some types of note taking may be more beneficial than others. Marzano et al. (2001) reported an average effect size of 1.00 when combining studies on note taking and summarizing. Max Thompson also reports an average effect size of 1.00 for distributed summarizing. The LFSM

lesson plan template contains a box for teachers to write in what the summarization activity will be after each learning activity.

Collaborative learning in math is promoted through the LFSM as *Collaborative Pairs,* Thompson trains teachers to use Numbered Heads as a collaborative strategy. In Strategies That Work, he states:

> Numbered Heads is a Collaborative Pairs Strategy that ensures active involvement of all your students by giving specific tasks to each partner. Instead of allowing one or two students to respond to questions, all members of the class are engaged. Numbered Heads keeps stronger personalities from always taking the lead during discussions (Thompson, 2015, p. 74).

The PALS Math program also bases its use on students working in pairs. Research conducted by Fuchs, Fuchs and Hamlett reports benefits to peer tutoring in primary grades, with children with learning disabilities benefitting the most from working in a pair. John Hattie also recommends working in a collaborative group, in his work: A Synthesis of over 800 meta-analyses relating to Achievement, he states cooperative learning is most powerful when students have acquired sufficient background knowledge to be involved in discussion and learning with peers. He also explains cooperative learning is most useful with verbal problem solving and spatial problem-solving and the positive effects increase with age (Hattie, 2009). However Dr. Ranee Kaur Banerjee (2015) believes ultimately the effectiveness of collaborative learning depends on how well you design and communicate the activity and how your groups take to the task.

Vocabulary previews may include teaching the definitions of the words, creating visuals of the words or providing examples of the word in use. In Teaching Numeracy: 9 Critical Habits to Ignite Mathematical Thinking, Margie Pearse explains there is a strong correlation between a

student's word knowledge and future academic success. She believes teachers need to look at developing vocabulary in mathematics. Learning new content vocabulary is critical to deepening mathematical understanding (Pearse, 2011). Chard (2007), from Intervention Central, explains pre-teaching math vocabulary provides students with the language tools to grasp abstract mathematical concepts and to explain their own reasoning and Thompson (2006) describes previewing as Velcro for the brain and gives previewing vocabulary a .73 effect size.

One can find numerous educational expert recommendations for the same strategies recommended by the LFSM and the Lesson Planning Template provided by the LFSM contains a place to include the recommended high yield strategies. The Learning Focused Company provided training to the Craven County School system on the various high yield strategies and how to incorporate them in lesson planning. Unfortunately, there is little documentation that specifically studies results in math proficiency after the implementation of the LFSM. However one doctoral student, Wendy Royer, conducted a study to determine the effects of LFSM in math and reading after the first year of implementation of the model with fourth and fifth grade students. The only significant finding from the study was increased reading achievement from the experimental group of fifth grade students taught by teachers with formal training in the model. There was no significant findings related to math, in this study.

Sandy Caton, from the Brandywine School District in Ohio, conducted a study on the effects of the LFSM in high schools. The standardized test scores of students in the classes of participating teachers were compared over one academic year with students in comparison classes to determine the impact of the LSM on the academic achievement of those students. The standardized test scores were disaggregated by gender and minority status to determine the impact on academic achievement. The results indicated some improvement in the achievement of

student in the classes participating in the LFSM, but there was no statistically significant improvements found.

Robin Bearden conducted a mixed methods study on the effectiveness of the theoretical frameworks embedded within the LFSM in 2009. Although a t-test failed to find significant difference between the test scores of a Learning Focused school and a non-Learning Focused school, a qualitative analysis of focus group data from the Learning focused school demonstrated that the faculty perceived the model as having the capacity to improve the academic achievement of students as well as improve the school culture.

In 2013, Robin Simmons conducted a study involving 12 high school science classes. Based on the data collected in her research the classes using the LFSM were more overall more successful academically than the classrooms using traditional instructional methods. Finally, Douglas Daugherty conducted a study comparing third grade reading performance of students who were taught using the LFSM to students who were not in a LFSM classroom. There were several notable findings in this study. For all the students who participated in the LFSM for a 3 year period more children met or exceeded standards in *reading* than those not exposed to the LFSM. Dougherty's study was conducted using data from *reading performance only*, while the study conducted by this evaluator will be conducted using data from math performance.

Most research found on the LFSM is based on reading performance. This may be due to more emphasis placed on reading improvement in schools that have used the LFSM. When discussing the professional development received for implementing the LFSM, Jennifer Cook stated she felt the model was developed for reading (J. Cook, personal communication, October, 2017). When asked about planning for math instruction, Sue Brumbaugh (personal communication, October 2017), a fourth grade teacher, stated:

> When planning for math, I follow the district pacing guide because it provides an Essential Question and the standard. Then I fill in with my classroom activities and a summarizing activity. The pacing guide is what helps me decide what to teach but the other learning strategies I plan for are things I would do with or without the Learning Focused planning template because those strategies are things good teachers do anyway.

According to Douglas Dougherty (2011), "the Learning-Focused Schools Program specializes in connecting reading comprehension, writing across the curriculum, accelerating and scaffolding learning, balanced literacy, and differentiated assignments, with the overall goal of raising achievement" (p. 5).

Although more research can be found relating the LFSM to reading and the company's website provides more resources to use for reading instructions, it is still a recommendation of Learning Focused to use the same instructional framework for math instruction. The small amount of research projects, on the LFSM specific to math, report the model as not making any significant difference in math performance for the schools involved. This program evaluation will use the Stufflebeam CIPP Evaluation Model to determine if the rationale for the implementation of the LFSM is sound, if the model is properly implemented according to the CIPP model assessment and if the use of the model has made a positive impact on the math performance of Craven County students in grades three through eight.

Professional Development and Math

One cannot teach mathematics well without a thorough understanding of content and knowledge of pedagogy. That pedagogy also includes acquiring knowledge and skills for instruction, technology integration and assessment (Duebel, 2016). In their research report,

Scaling up Innovative Practices in Mathematics and Science, Carpenter, Blanton, Cobb, Franke, Kaput, and McClain (2004) stated,

> The most critical things that teachers need to learn revolve around content knowledge and the student learning trajectories specific to that knowledge. Further, learning specific content and learning how students learn that content should be central to professional development efforts for teaching for learning with understanding.

In 2008, the National Mathematics Advisory Panel, which reviewed studies on teachers' mathematical knowledge, stated "it is clear that teachers' knowledge of mathematics is positively related to student achievement" (p. 37). In order to increase teachers' effectiveness in the classroom, the Panel recommended strengthening the math preparation of elementary and middle school teachers via preservice teacher education, early career support, and professional development programs. The Panel further explained by stating the following:

> Teachers must know in detail and from a more advanced perspective the mathematical content they are responsible for teaching and the connections of that content to other important mathematics, both prior to and beyond the level they are assigned to teach (p. 37).

In 2012, the Conference Board of the Mathematical Sciences made recommendations in the Mathematical Education of Teachers II for preK-12 teachers to have greater involvement of mathematicians and statisticians in teacher education so that "the nation's mathematics teachers have the knowledge, skills, and dispositions needed to provide students with a mathematics education that ensures high school graduates are college and career ready as envisioned by the Common Core State Standards" (Preface section, p. xi).

Not only is ongoing professional development important to current teaching staff, but preparing future teachers properly has also been found extremely important as well. The National Council for Teacher Quality conducted a study in 2008 titled No Common Denominator: The Preparation of Elementary Teachers in Mathematics by America's Education Schools (Greenberg & Walsh, 2008). Based on groundwork set during a meeting in Washington DC in March 2007, the eight members of this Mathematics Advisory Group for this study, guided the National Council on Teacher Quality's evaluation of the mathematics preparation of elementary teachers. The Mathematics Advisory Group consisted of mathematicians and distinguished teachers with a long history of involvement in K-12 education. The team was able reach a solid consensus as to the essential topics that all aspiring elementary teachers must study based on a comprehensive review of national and international curricula, studies, and policy documents, as well as expert opinion (Greenberg & Walsh, 2008). The findings include four critical areas (number and operations, algebra, geometry and measurement, and data analysis and probability) are identified, along with essential topics and the estimated number of hours of instruction within each. The recommendation translates to 115 hours of math content instruction or about three 45-hour courses (see Table 4).

There are professional development requirements each year to ensure teachers stay up to date on curricula and pedagogy and curriculum-based professional development "must be intimately tied to the actual tools teachers use" (Schmidt, 2002, p. 8). Various models of professional development exist, including coaching and mentoring, face-to-face training, train-the-trainer, and web-based training (Poplin, 2003). Regardless of method employed, educational professional development should be used to enhance the teaching and learning process. The end result to identifying the *best* math professional development is inconclusive, therefore if you are

Table 4

The Breadth of Mathematics Content that Elementary Teachers Need

Critical Areas	Essential Topics	Estimated Class Time Needed
Number and operations	Whole numbers and place value; Fractions and integers; Decimals (including ratio, proportion, percent); Estimation	40 hours
Algebra	Constants, variables, expressions; Equations; Graphs, functions	30 hours
Geometry and Measurement	Measurement; Basic concepts in plane and solid geometry; Polygons, circles; Perimeter, area, surface area, volume	35 hours
Data Analysis and Probability	Probability, data display and analysis	10 hours.

Note. Adapted from Greenberg, J., & Walsh, K. (2008). No common denominator: The preparation of elementary teachers in mathematics by America's education schools, p. 17. Washington, DC: National Council on Teacher Quality. Retrieved from http://www.nctq.org/p/publications/docs/nctq_ttmath_fullreport_20090603062928.pdf

looking for what professional development teachers must unequivocally receive, in order to improve student achievement, you will not be able to find a definite answer. However, Duebel explains the bottom line of research for the best math professional development below.

> Gersten, Taylor, Keys, Rolfhus, and Newman-Gonchar (2014) attempted to answer this question in a literature review of 643 studies of professional development interventions related to math in grades K–12 in the United States. Thirty-two of the studies used a research design for assessing the effectiveness of math professional development approaches, and five of those met What Works Clearinghouse evidence standards. Of the five, only two found statistically significant positive effects on student math proficiency. Professional development approaches used in those two (Gersten et al, 2014, p. 2) were:
>
> - Intensive math content courses accompanied by follow-up workshops (study by Sample McMeeking, Orsi, & Cobb, 2012).
>
> - Lesson study focused on linear (measurement) model of fractions (Lewis, Friedkin, Baker, & Perry, 2011).

Learning Focused Solutions Model and Professional Development

The Learning Focused Solutions Model provides professional development in three ways. There are Learning Focused Trainers who can deliver on-site professional development, online professional development is available, and there is a program that certifies trainers through the Learning Focused Train the Trainer Certification Program. The Learning-Focused Instructional Framework is implemented in a distributed professional development sequence of three topics. These topics are: The High Performance Learning Focused Lesson, Increasing the Rigor of Learning Focused-Lessons: Higher Order Thinking, Reading and Writing, and Accelerating Learning Focused Lessons: Catching Kids Up illustrates the LFSM professional development

sequence and the information covered during each professional development session (see Table 5).

The Learning Focused Online Professional Development site provides micro-PD courses to support the three professional development topics. According to the Learning Focused website, participants can complete Learning-Focused professional development workshops or concise targeted workshops all online and on their own schedule while learning everything you needed to effectively implement The Learning-Focused Instructional Framework and the top research-based learning strategies, evidence-based learning strategies and exemplary practices (Learning Focused, 2017). The online micro-PD courses contain much of the same information found in the face to face professional development, but according to one teacher taking the courses online provided a better understanding to the Learning Focused pedagogy (R. Eure, personal communication, October, 2017).

Summary

Most researchers agree professional development for math instruction should be on the specific math content. Equally important, learning how students learn math content should be central to math professional development. Preparing future teachers properly for math instruction has been found particularly important and many universities continue to look at what coursework should be required of teaching students.

Learning Focused offers professional development on its framework for learning and provides ideas for using graphic organizers, writing, anchor charts with math instruction. However it does not provide professional development on math content.

Table 5

Distributed Professional Development Sequence of the Learning Focused Framework

Sequence Number	Title of PD Activity	Information Covered During PD
1	The High Performance Learning Focused Lesson	This is the first stage in the professional development and it provides the instructional framework and the structure for lesson planning. This professional development is considered the foundational road map that connects standards to exemplary instruction.
2	Increasing the Rigor of Learning Focused-Lessons: Higher Order Thinking, Reading and Writing	This is the second stage of professional development and it adds a focus on rigorous instruction, questions, learning activities, grade-level assignments, and assessments
3	Accelerating Learning Focused Lessons: Catching Kids Up!	This is the third stage of professional development and it provides the resources, knowledge and skills for proactively planning and teaching using specific strategies and practices that ensure all students are successful with rigorous expectations and instruction.

Note. Learning Focused, Lessons You Believe In (2017). Retrieved from http://achievenowpd.com/

CHAPTER 3: PROGRAM EVALUATION DESIGN

The program evaluation will consist of surveys involving 102 teachers, ranging from third through eighth grade. Survey data from 20 administrators and walkthrough data from all schools involved will be included in this program evaluation as well. The 2016-2017 Math End of Grade testing data from 15 elementary schools and 5 middle schools will also be collected and analyzed for this program evaluation. Teacher and students names will be held confidential and surveys will be done on an anonymous basis. The schools involved in the program evaluation are located in a southeastern North Carolina school district. Nine of the Elementary Schools are Title I schools that receive additional federal funding due to a free and reduced lunch population of over 60%. Six of the elementary schools do not have a population with more than 60% free and reduced students. All five middle schools receive local funding to supplement their instruction. According to the NC Department of Instruction, the average class size for grades 3-8 in Craven County is 20 students per teacher and the attendance rate is 95% (NCDPI, 2017).

According to the Craven County Schools data, at the end of the 2016-2017 school year 3,735 Craven County students in grades 3-8 participated in the End of Grade Mathematics test with 202 teachers administrating the test. There are five subgroups found within the 3,735 test takers. These subgroups are (1) Asian, (2) Black, (3) Economically Disadvantaged, (4) Students with Disabilities, and (5) White. In grades 3-8, taking the Mathematics EOG, at the end of the 2016-2017 school year were 4% Asian students, 29% Black Students, 55% Economically Disadvantaged, 13% Students with Disabilities and 50% White Students.

The initials for every elementary and middle school in Craven County Schools (CCS), the Growth Status for the last 3 years, the School Performance Grade Score for the last 3 years, the School Performance Grade for the last 3 years, and the difference between the School

Performance Grade Score for the 15-16 school year and the 16-17 school year are provided. These will be the schools involved in the program evaluation (see Table 6).

During the 2014-2015 School Year the LFSM was introduced to administrators of the Craven County School District and implementation began. During the 2015-2016 school year every teacher in the district received professional development, from the Learning Focused trainers, on how to use the Lesson Plan Template effectively and how to include the high yield strategies into their lessons successfully. At the beginning of the 2016-2017 school year all administrators in Craven County Schools received the Train the Trainer professional development for the LFSM and the expectation of full implementation was set (C. M. Wilson, personal communication, May 25, 2017). The results of full year of implementation of the LFSM will be analyzed in this evaluation through the use of Stufflebeam's CIPP Program Evaluation Model.

The CIPP Model

According to Fitzpatrick et al. (2011) in the 4th Edition of Program Evaluation Alternative Approaches and Practical Guidelines, the CIPP Evaluation model is considered a decision-oriented approach. According to Fitzpatrick et al. (2011), the rationale for a decision-oriented evaluation is that evaluative information is an essential part of good decision making and the evaluator can be most effective by serving administrators, managers, policymakers, boards, program staff and others who need good evaluative information.

Fitzpatrick et al. contend Stufflebeam has been an influential proponent of decision-oriented evaluation. Stufflebeam (2005) defines evaluation as "the process of delineating, obtaining, reporting and applying descriptive and judgmental information about some object's merit, worth, probity, and significance to guide decision making, support accountability,

Table 6

Growth Status and School Performance Scores and Grades for the 3-Year Period in CCS

School	Growth Status 14-15	Growth Status 15-16	Growth Status 16-17	SPG Score 14-15	SPG 14-15	SPG Score 15-16	SPG 15-16	SPG Score 16-17	SPG 16-17	SPG Score Diff 16-17
AHB	MET	EXCEEDS	MET	57	C	75	B	75	B	0
BDQ	MET	MET	MET	65	C	67	C	65	C	-2
BES	EXCEEDS	MET	MET	68	C	64	C	64	C	0
BME	MET	NOT MET	NOT MET	70	B	58	C	57	C	-1
CES	EXCEEDS	EXCEEDS	MET	73	B	82	B	83	B	1
VFL	NOT MET	MET	MET	52	D	64	C	71	B	7
GCF	MET	MET	MET	60	C	68	C	68	C	0
GAB	EXCEEDS	MET	NOT MET	79	B	74	B	76	B	2
HJM	NOT MET	EXCEEDS	EXCEEDS	59	C	67	C	69	C	2
HES	MET	EXCEEDS	NOT MET	58	C	66	C	60	C	-6
HMS	EXCEEDS	EXCEEDS	NOT MET	68	C	66	C	60	C	-6
JTB	MET	EXCEEDS	MET	57	C	57	C	53	D	-4
JWS	EXCEEDS	EXCEEDS	MET	55	C	60	C	62	C	2
ORE	MET	NOT MET	MET	51	D	43	D	51	D	8
RBE	MET	MET	MET	50	D	53	D	58	C	5
TPE	EXCEEDS	MET	EXCEEDS	59	C	60	C	67	C	7
TCM	MET	MET	NOT MET	72	B	72	B	70	B	-2
WCM	EXCEEDS	EXCEEDS	NOT MET	60	C	58	C	51	D	-7
WJG	MET	EXCEEDS	EXCEEDS	79	B	82	B	84	B	2
AWE	EXCEEDS	MET	EXCEEDS	74	B	68	C	80	B	12

Note. (Craven County Schools, 2016).

disseminate effective practices, and increase understanding of the involved phenomena" (p. 61). The acronym CIPP, by which Stufflebeam's evaluation model is best known, is made up of the four types of evaluation used in the model. These types of evaluation are (1) Context Evaluation, (2) Input evaluation, (3) Process Evaluation, and (4) Product Evaluation. Fitzpatrick et al. (2011) state The CIPP model has had the most staying power of any early evaluation model and its focus on serving decision-making remain solid.

Data Collection Procedures

Data will be collected from administrators and teachers who used the LFSM during the 2016-2017 school year. Surveys focused on the process portion of the CIPP Evaluation will utilize the Likert rating scale of 1-5 with "1" responses indicating a Strongly Disagree, "2" representing Disagree, "3" representing Neither Disagree nor Agree, "4" indicating Agree and "5" signaling Strongly Agree. These surveys will be created using Google Forms and will be emailed to elementary teachers and middle school teachers in the Craven County School District. A week will be given for teachers to complete the survey. Anonymity will be assured for all teachers by not asking for the teacher's name to be included in the survey. The survey questions have been reviewed and approved for content validity. The survey questions to be used are:

1. I received training on the use of the Learning Focused Lesson Planning Template.
2. I received the Learning Focused Effective Lesson Planning book during my training.
3. I use the Lesson Planning book as a resource.
4. I use the Learning Focused Lesson Plan Template for planning math lessons.
5. I can identify the high-yield strategies recommended by the LFSM.
6. I use the Learning Focused PLC website as a resource.

7. I understand the Learning Focused District Coach is a resource I can contact for support.
8. The Learning Focused District Coach provided support to our school during the 2016-2017 School Year.
9. I feel I have implemented the LFSM with fidelity in my math class.
10. I feel the LFSM has helped my students achieve proficiency in math.

An open-ended question will be included to give each teacher a chance to state a reason they feel they have or have not implemented the LFSM during math. The information from the open-ended question will be used to determine an overlying theme concerning teacher confidence in using the LFSM with math.

There will also be a survey sent to administrators who oversaw the LFSM. The survey questions have been reviewed and approved for content validity. The questions are as follows:

1. My teachers have been provide professional development on the Lesson Plan Template.
2. My teachers received the Learning Focused Lesson Plan book during training.
3. My teachers use the LFSM Lesson Plan Template for planning math.
4. My teachers' lesson plans demonstrate an understanding of the high-yield strategies in math lessons.
5. I understand the Learning Focused District Coach is a resource I can contact for support.
6. The Learning Focused District Coach provided support to our school during the 2016-2017 School Year.
7. I used the walkthrough template during the 2016-2017 school year.

8. I feel the walkthrough template provides good information about the fidelity of high-yield strategy use.
9. I feel my teachers have implemented the LFSM with fidelity in math.
10. I feel the LFSM helped my students achieve math proficiency.

An open-ended question will be included to give each administrator a chance to state a reason they feel the school has or has not effectively implemented the LFSM in regards to math. The information from the open-ended question will be used to determine an overlying theme concerning administrative confidence in using the LFSM with math.

The survey data, from both surveys, will be gathered and analyzed to determine the following:

- if teachers received professional development on the Learning Focused Lesson Planning
- do teachers use of the lesson planning template for math
- do teachers who use the Learning Focused PLC website
- have teachers who used the district Learning Focused Coach for support
- do teachers feel they can identify the high-yield strategies
- do administrators feel their teacher's lesson plans demonstrate an understanding of how and when to use the high-yield strategies
- do administrators who feel the walkthroughs provide accurate information concerning the fidelity of high-yield strategy use

The surveys directed towards process portion of the CIPP evaluation will help provide an understanding to the hurdles that threaten the program's success, and what revisions may be needed. Question numbers 9 and 10, from the process surveys, will give the evaluator an idea of

teacher and administrator confidence in the LFSM's ability to help students achieve proficiency in math.

The product questions of the CIPP program evaluation will be answered through data analysis of NC Math EOG test results and administrative the LFSM Walkthrough results. The template for the LFSM Walkthrough is included in the Appendices. The results of the data analysis will also provide guidance for continuing, modifying, adopting or terminating the LFSM. The following questions will be answered through analysis of Learning Focused Walkthrough Data and the 2016-2017 End of Grade Mathematics testing data from Craven County Elementary and Middle schools:

1. How many Learning Focused Walkthroughs were conducted in the Elementary and Middle schools?
2. What was the average score of fidelity for each of the high-yield strategies?
3. Based on EOG data from 2015-2017, has overall proficiency in math increased or decreased?
4. When tracking the proficiency of students from grade to grade from 2015-2017 has the level of proficiency increased or decreased for those particular students?

The program evaluation will help to answer questions about the results obtained for math proficiency during the year of full implementation of the LFSM. It will also help to answer questions about the future of the Learning Focused Solutions Model in Craven County Schools. The questions it will help to answer are (a) should it be revised? (b) should it be expanded? or (c) should it be discontinued?

Analysis of Data

The data analysis will include the results of surveys using the numbered responses of "1" correlating with a Strongly Disagree, "2" representing Disagree, "3" representing Neither Disagree nor Agree, "4" indicating Agree, and "5" signaling Strongly Agree. The survey items using the Likert Scale will be measured using the Google Forms analysis tools. The open-ended response comments, on the teacher survey, will be analyzed and organized thematically to discover an overlying theme.

The EOG test data will be analyzed for percent proficient on the NC Math EOG for elementary schools and middle schools. It will also be analyzed to determine the changes in level of proficiency for Craven County elementary schools and middle schools over the last three years.

Summary

In summary, the purpose of this program evaluation is to evaluate the effectiveness of the LFSM at the elementary and middle school level, specifically in relation to math proficiency. The Craven County School District was selected under the suggestion of the superintendent of Craven County Schools. This program evaluation seeks to provide a review of math proficiency scores for grades 3-8 and information regarding the inputs, the processes and the products of the LFSM. Quantitative data will include math proficiency scores and walkthrough results. Qualitative data, gleaned from surveys, will provide a better understanding of the level of success of the LFSM.

This program evaluation will follow a research design by Daniel Stufflebeam called Context-Input-Process-Product (CIPP), which targets program improvement. The intended use of

this evaluation is to provide guidance to school officials for future decisions regarding the Learning Focused Solutions Model.

CHAPTER 4: RESULTS

According to Fitzpatrick et al. (2011), the rationale for a decision-oriented evaluation is that evaluative information is an essential part of good decision making and the evaluator can be most effective by serving administrators, managers, policymakers, boards, program staff and others who need good evaluative information. This program evaluation was done using the CIPP Program Evaluation Model. Fitzpatrick et al. (2011) state The CIPP model has had the most staying power of any early evaluation model and its focus on serving decision-making remain solid. To this evaluator's knowledge, there has been no other evaluation conducted on the Learning Focused Solutions Model using the Stufflebeam CIPP program evaluation method, nor has she been able to find any evaluation focused exclusively on the impact the Learning Focused Solution Model has on math performance exclusively. The intended use of this evaluation is to provide guidance to school officials for future decisions regarding the Learning Focused Solutions Model.

The acronym CIPP, by which Stufflebeam's evaluation model is best known, is made up of the four types of evaluation used in the model. These types of evaluation are (1) Context Evaluation, (2) Input evaluation, (3) Process Evaluation, and (4) Product Evaluation.

Teacher and administrator surveys were used to gather information about the inputs and processes of the Learning Focused Model. End of Grade Test data and data gathered from classroom walkthroughs was used to evaluate the product of the Learning Focused Solutions Model after three years of its use in Craven County.

The evaluation has been completed and the results are presented in three sections. The first section includes the descriptive statistics for each of the survey questions that reflect teacher and administrator responses to the survey questions about the Learning Focused Solutions

Model. The interpretation for the teacher survey is outlined, then each survey item is presented separately. The interpretation of the administrative survey is outlined, then each survey item is presented separately. The standard of interpretation was to use the majority number of responses as a key to interpret the data (see Table 7 and Table 8).

The second section presents the changes in student proficiency rates on the EOG math tests from 2015-2017. The third section presents the information gathered from the Learning Focused Walkthroughs conducted during the 2016-2017 school year. The interpretation of the Learning Focused Walkthrough data is outlined and the actual data from the walkthroughs is presented (see Table 9 and Table 10).

Program Evaluation Teacher Survey Statement Findings

The survey statement: *I have received training on the use of the Learning Focused Planning Template,* received an average score of 4.08. This survey question received 69 responses. Six respondents chose "disagree" (8.7%), three chose "neither disagree nor agree (4.3%), thirty-nine chose "agree" (56.5%), and twenty-one chose "strongly agree" (30.4%). Most participants agree they have received training on the use of the Learning Focused Planning Template (see Figure 2).

The survey statement: I received the Learning Focused Lesson Plan book during my training, received an average score of 3.85. This survey item received 69 responses. Six respondents chose "strongly disagree (8.7%), four chose "disagree" (5.8%), three chose "neither disagree nor agree (4.3%), 37 chose "agree" (53.6%), and 19 chose "strongly agree" (27.5%). According to this survey item results, most participants agree they received a Learning Focused Lesson Plan book (see Figure 3).

Table 7

Interpretation of Teacher Survey Results

Survey Statement	Number of Responses	Average Score	Interpretation of Score
I have received training on the use of the Learning Focused Planning Template.	69	4.08	Agree
I received the Learning Focused Lesson Plan book during my training.	69	3.85	Agree
I use the Learning Focused Lesson Plan book as a resource.	69	2.68	Disagree
I use the Learning Focused Lesson Planning Template to plan Math lessons	65	3.55	Agree
I can identify the High-Yield Strategies recommended by the Learning Focused Solutions Model.	69	3.42	Agree
I use the Learning Focused PLC Website as a resource.	69	2.55	Disagree
I understand the Learning focused District Coach is a resource I can contact for support.	69	3.45	Agree
The Learning Focused District Coach provided support to our school during the 2016-2017 School Year	69	3.46	Agree
I feel I have implemented the Learning Focused Solutions Model with fidelity in my math class.	64	3.12	Slightly Agree
I feel the Learning Focused Solutions Model has helped my students achieve proficiency in Math.	65	2.55	Disagree

Table 8

Interpretation of the Administrative Survey

Survey Statement	Number of Responses	Average Score	Interpretation of Score
My teachers have been provide professional development on the Lesson Plan Template.	13	4.07	Agree
My teachers received the Learning Focused Lesson Plan book during training	13	3.84	Agree
My teachers use the LFSM Lesson Plan Template for planning math.	13	3.76	Agree
My teachers' lesson plans demonstrate an understanding of the high-yield strategies in math lessons.	13	4.30	Agree
I understand the Learning Focused District Coach is a resource I can contact for support.	13	4.0	Agree
The Learning Focused District Coach provided support to our school during the 2016-2017 School Year	13	4.0	Agree
I used the walkthrough template during the 2016-2017 school year.	13	4.0	Agree
I feel the walkthrough template provides good information about the fidelity of high-yield strategy use.	13	5.0	Strongly Agree
I feel my teachers have implemented the LFSM with fidelity in math	13	3.0	Neither Agree Nor Disagree
I feel the LFSM helped my students achieve math proficiency.	13	2.84	Disagree

Table 9

Craven County Learning Focused Walkthrough Data Summary for the 16-17 School Year

High-Yield Strategy	Number of Walkthroughs	Average Score
Essential Question (Advance Organizer)	1277	3.35
Student Collaboration	1098	3.06
Higher Order Thinking	410	3.42
Non Verbal Representation	323	3.27
Focus on Vocabulary	223	3.32
Summarizing	199	3.58

Note. (Craven County Schools, 2017).

Table 10

2016-2017 Detailed Analysis of Craven County Schools Learning Focused Walkthrough Data

Scale Item	N	Average
Lesson Essential Question Scale Items		
LEQ is posted, visible to all students and written so it is easily understood by all students.	1,277	3.75
LEQ is written to make students think at a high level and is aligned to the learning goals and the assignment.	1,277	3.43
LEQ is provided to students and referred to throughout the lesson to reinforce and connect parts of the lesson being studied.	1,277	2.68
LEQ is driven by standards and clearly focuses on important ideas of the standards and what the lesson is going to teach.	1,277	3.44
Average for Lesson Essential Question Scale		3.35
Collaboration Scale Items		
Students are working in groups of 2 - 4.	1,098	3.10
Students are using classroom talk that is on topic.	1,098	3.14
Collaboration is meaningful and supports learning goals.	1,098	2.99
Teacher effectively facilitates the collaboration to ensure students are engaged.	1,098	3.01
Average for Collaboration Scale		3.06
Higher Order Thinking Scale Items		
Questions cannot be answered with yes/no or with a memorized solution.	410	3.57
Learning Activities are sequenced to move students to higher order thinking.	410	3.41
Assessment Prompt questions and task require higher order thinking.	410	3.38
Students receive explicit instruction on how to use specific thinking strategies before being asked to apply them.	410	3.31
Average for Higher Order Thinking Scale		3.42

Table 10 (continued)

Scale Item	N	Average
Nonverbal Representation Scale Items		
Symbolic Representations of content (photos, maps, mnemonic devices, icons) are aligned to learning goals.	323	3.89
Graphic Organizers are selected according to how they can help students.	323	3.72
Students have opportunities to use manipulatives when appropriate for learning.	323	3.77
Anchor Charts are student friendly, reflect current content and are easily visible by all students.	323	3.69
Use of various types of media (video, music, powerpoint, etc) are used to enhance instruction.	323	3.27
Average for Nonverbal Representation Scale		3.67
Vocabulary Scale Items		
Word Wall that is well organized to promote student learning.	223	3.24
Students are engaged in activities designed for vocabulary development.	223	3.46
Evidence of vocabulary specific anchor charts.	223	2.86
Key vocabulary is relevant and content driven.	223	3.70
Average for Vocabulary Scale		3.32
Summarizing Scale Items		
Students are doing the summarizing not the teacher.	199	3.61
Summarizing is being done throughout the lesson.	199	3.68
Students are summarizing to reinforce key vocabulary of the lesson.	199	3.67
Lesson is adjusted based on feedback from summarizing activities.	199	3.54
The Summarizing Strategy requires students to answer the Lesson Essential Question.	199	3.38
Average for Summarizing Scale		3.58

Note. (Craven County Schools, 2017).

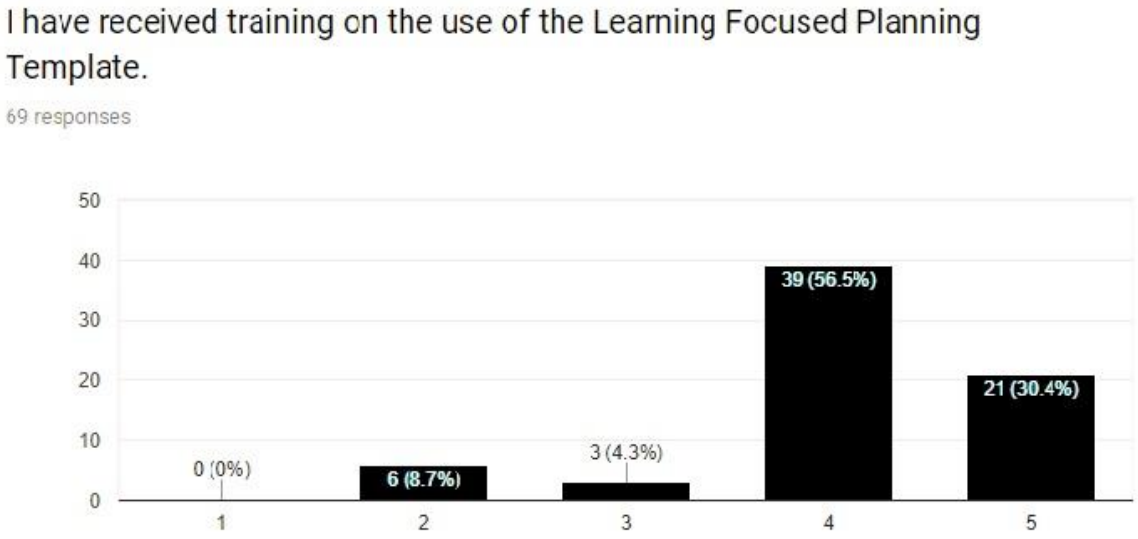


Figure 2. Bar graph of Teacher Survey question 1 results.

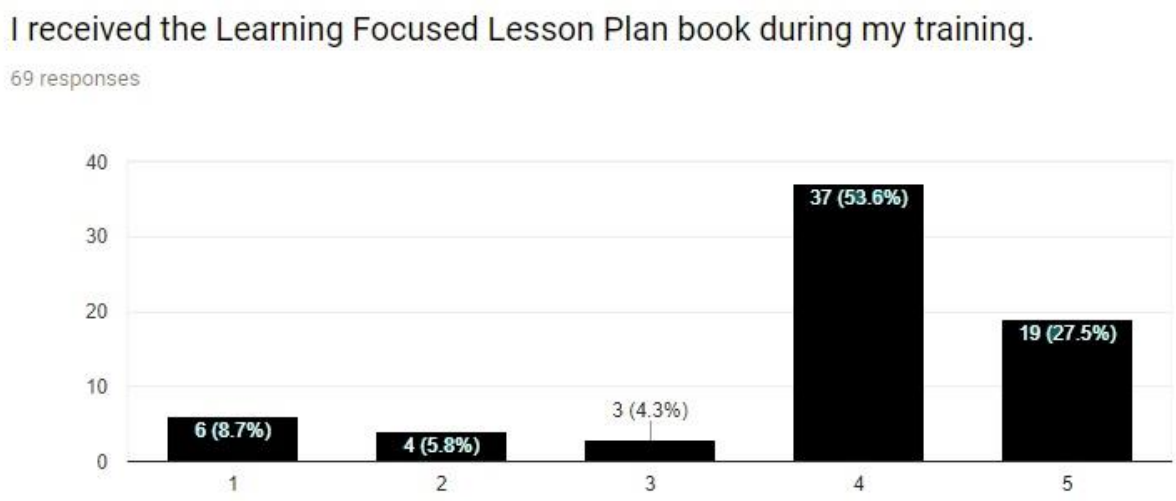


Figure 3. Bar graph of Teacher Survey question 2 results.

The survey question: *I use the Learning Focused Lesson Plan book as a resource*, received an average score of 2.68. This survey statement received 69 responses. Eleven respondents chose "strongly disagree" (15.9%), twenty-four chose "disagree" 34.8%), sixteen chose "neither disagree nor agree" (23.2%), twelve chose "agree" (17.4%), and six respondents chose "strongly agree" (8.7%). According to this survey data, most participants do not use the Learning Focused Lesson Plan book as a resource (see Figure 4).

The survey statement: *I use the Learning Focused Lesson Planning Template to plan Math lesson,* received an average response score of 3.55. This survey statement received 65 responses. Six respondents chose "strongly disagree" (9.2%), five respondents chose "disagree" (77%), eleven respondents chose "neither disagree nor agree" (16.9%), thirty-three respondents chose "agree" (50.8%) and 10 respondents chose "strongly agree" (15.4%). According to this survey item results, most of the respondents agree they use the Learning Focused Lesson Planning Template to plan math lessons (see Figure 5).

The survey statement: *I can identify the High-Yield Strategies recommended by the Learning Focused Solutions Model,* received an average score of 3.42. Six respondents chose "strongly disagree" (87%), five respondents chose "disagree" (7.2%), nine chose "neither disagree nor agree" (13%), forty-two chose "agree" (60.9%), and seven respondents chose "strongly agree" (10.1%). According to this survey item results, most of the respondents agree they can identify the High-Yield Strategies recommended by the Learning Focused Solutions Model (see Figure 6).

The survey statement: *I use the Learning Focused PLC Website as a resource,* received an average score of 2.55. Six respondents chose "strongly disagree" (8.7%), thirty-eight chose "disagree" (55.1%), eleven chose "neither disagree nor agree" (15.9%), nine chose "agree"

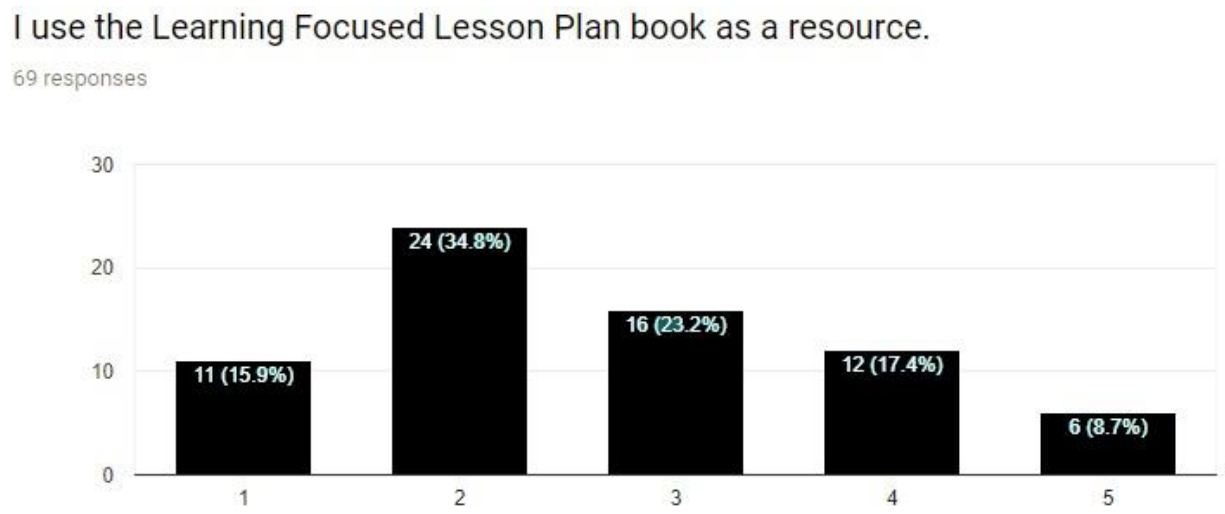


Figure 4. Bar graph of Teacher Survey question 3 results.

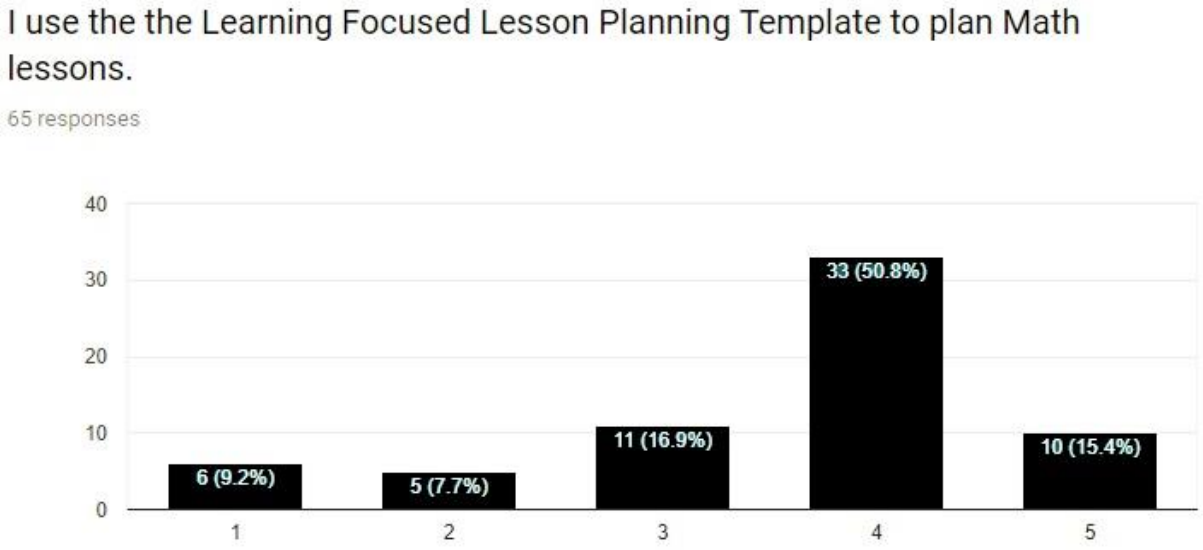


Figure 5. Bar graph of Teacher Survey question 4 results.

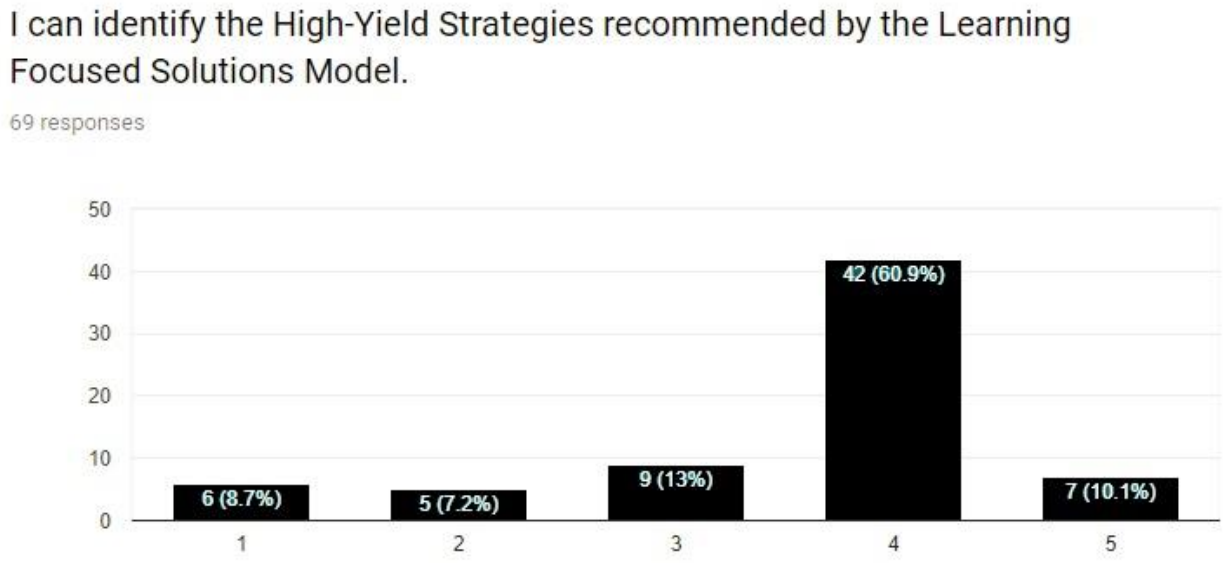


Figure 6. Bar graph of Teacher Survey question 5 results.

(13%), and five chose “strongly agree” (7.2%). According to this survey item, most of the respondents do not use the Learning Focused PLC Website as a resource (see Figure 7).

The survey statement: *I understand the Learning Focused District Coach is a resource I can contact for support,* received an average rating of 3.45. One respondent chose “strongly disagree” (1.4%), thirteen respondents chose “disagree” (18.8%), nineteen chose “neither disagree nor agree” (27.5%), twenty-six chose “agree” (37.7%) and 10 chose “highly agree” (14.5%). According to this survey data, most of the participants understand they can contact the Learning Focused District Coach for support (see Figure 8).

The survey statement: *The Learning focused District Coach provided support to our school during the 2016-2017 School Year,* received an average score of 3.46. Seven participants chose “strongly disagree” (10.1%), five chose “disagree” (7.2%), thirteen participants chose “neither disagree nor agree” (18.8%), thirty-two respondents chose “agree” (46.4%), and twelve chose “strongly agree” (17.4%). The results of this survey item suggests most of the participants agree the Learning Focused District Coach provided support to their school during the 2016-2017 School Year (see Figure 9).

The survey statement: *I feel I have implemented the Learning Focused Solutions Model with fidelity in my math class,* received an average score of 3.12. Seven respondents chose “strongly disagree” (10.9%), ten chose “disagree” (15.6%), twenty respondents chose “neither disagree nor agree” (31.3%), twenty-two chose “agree” (34.4%), and 5 respondents chose “strongly agree” (7.8%). According to this survey data, there is a slight agreement the participants feel they have implemented the Learning Focused Solutions Model with fidelity in math class (see Figure 10).

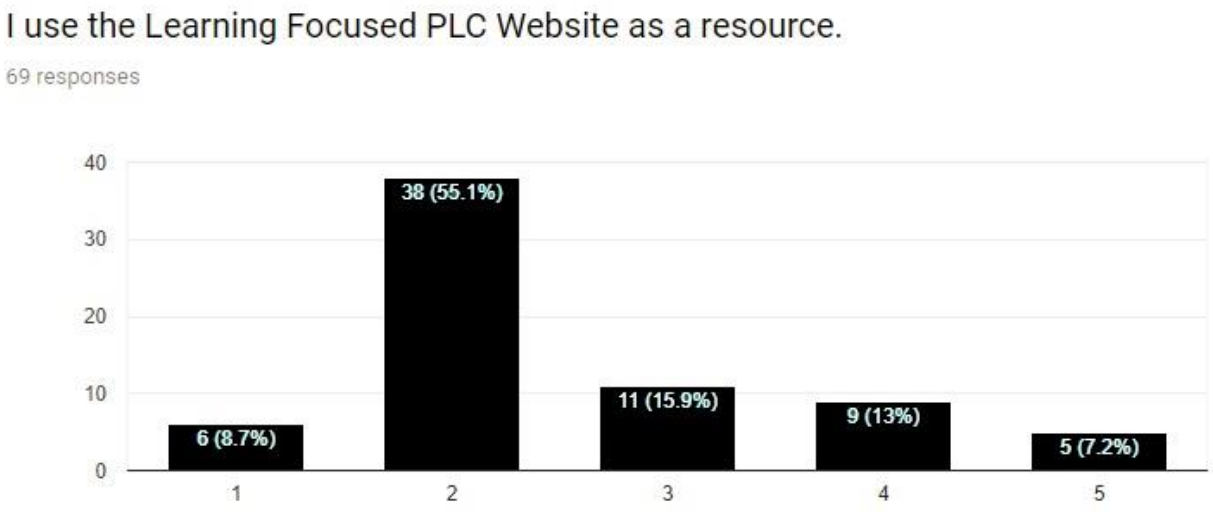


Figure 7. Bar graph of Teacher Survey question 6 results.

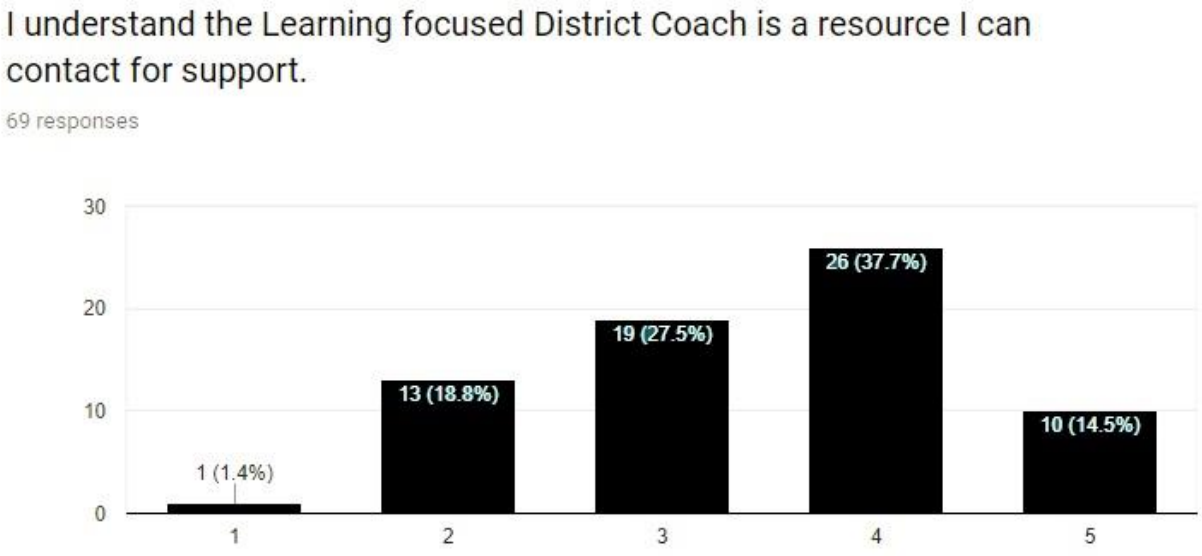


Figure 8. Bar graph of Teacher Survey question 7 results.

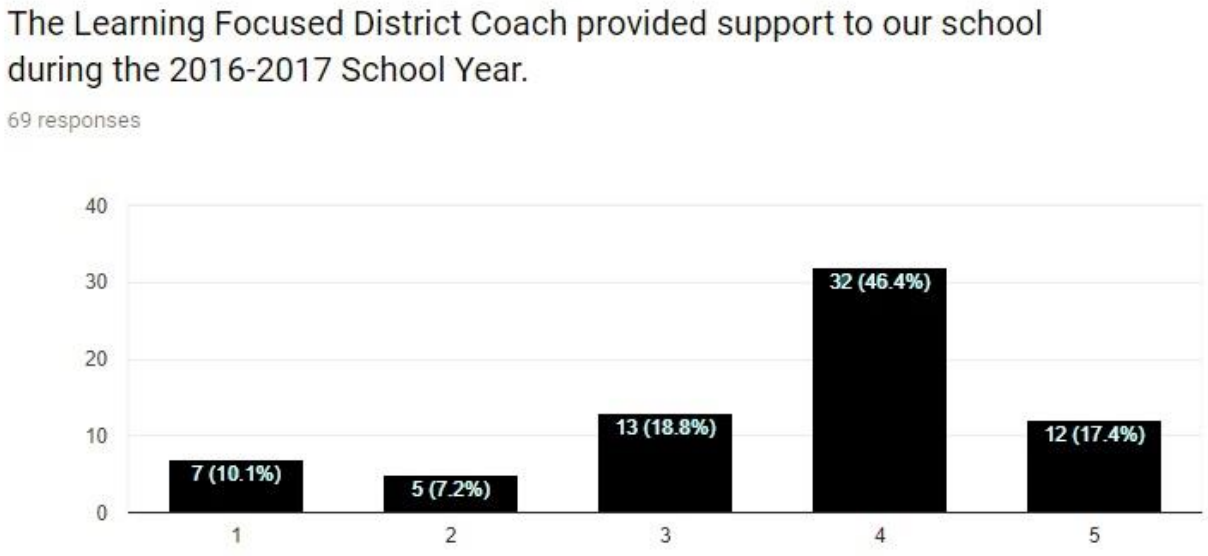


Figure 9. Bar graph of Teacher Survey question 8 results.

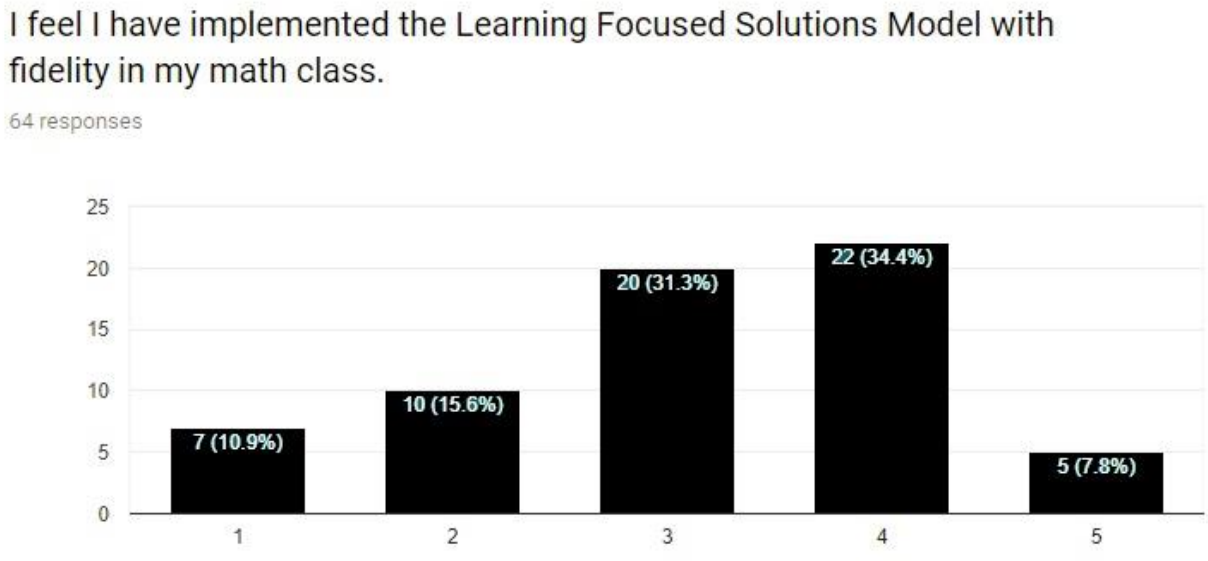


Figure 10. Bar graph of Teacher Survey question 9 results.

The survey statement: *I feel the Learning Focused Solutions Model has helped my students achieve proficiency in Math,* received an average score of 2.55. Fourteen participants chose "strongly disagree" (21.5%), seventeen chose "disagree" (26.2%), twenty-one respondents chose "neither disagree nor agree" (32.3%), ten chose "agree" (15.4%), and three chose "strongly agree" (4.6%). According to this survey data, most of the survey participants do not feel the Learning Focused Solutions Model has helped their students achieve proficiency in Math (see Figure 11).

Twenty-three survey respondents offered a comment to the open-ended question of: *a chance to state a reason you feel you have or have not effectively implemented the Learning Focused Model, in regards to math*. In nine of these comments the response was good teachers would use the high-yield strategies even if they did not use the Learning Focused Planning Template. Five of the comments shared the participants did not feel they were adequately trained in the Learning Focused Model. Five participants stated the Learning Focused Lesson Plan Template forces them to spend too much time on planning which takes away from teaching time. Two respondents felt the Learning Focused Model is not intended for math and two others wrote they felt they had implemented it well and the model did help improve proficiency in math.

Summary of Teacher Survey Results

According to the survey results most survey participants agree they have received training and the lesson plan book to use during planning. However most do not use the planning book during planning and most do not use the Learning Focused Website as a resource. Most of the participants understand they can receive support from the district coach and most agree the coach has provided support during the 2016-2017 School year. Most of the participants agree they can identify the high-yield strategies recommended by Learning Focused, while there is a

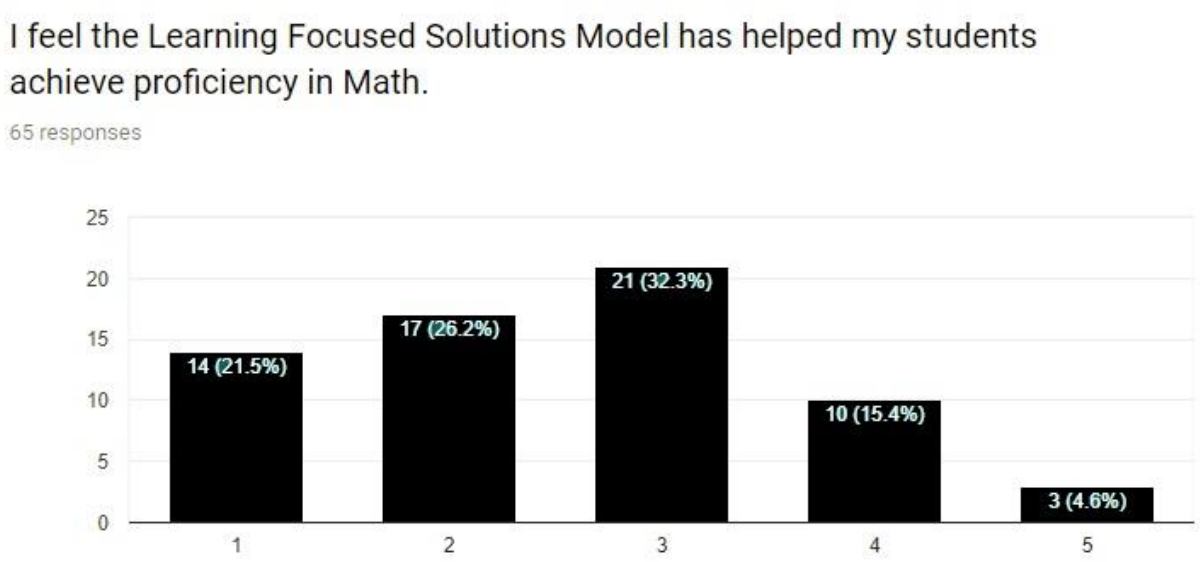


Figure 11. Bar graph of Teacher Survey question 10 results.

slight agreement from the participants of a feeling they have implemented the Learning Focused Model with fidelity. The survey showed the participants do not feel the Learning Focused Model has helped their students achieve proficiency in math.

In the open-ended response portion of the survey, two over-arching themes emerged. Nine teachers reported they would use the high-yield strategies recommended by Learning Focused whether they used the planning template or not. Five teachers reported a concern about using the Learning Focused Planning Template because it took too much time and five other respondents felt they need more training in the use of the model.

The survey statement: *My teachers have been provided professional development on the Lesson Plan Template*, received an average score of 4.07. One respondent chose "disagree" (7.7%), two respondents chose "neither disagree nor agree" (15.4%), five respondents chose "agree" (38.5%), and five respondents chose "strongly agree" (38.5%). According to the survey data most of the participants agree the teachers at their school received professional development on the Learning Focused Lesson Plan Template (see Figure 12).

The survey statement: *My teachers received the Learning Focused Lesson Plan book during training*, received an average score of 3.84. Two respondents chose "disagree" (15.4%), two respondents chose "neither disagree nor agree" (15.4%), five respondents chose "agree" (38.5%), and four respondents chose "highly agree" (30.8%). According to the survey data most of the administrators participating in the survey agree the teachers in their building received a Learning Focused Lesson Plan book during training (see Figure 13).

The survey statement: *My teachers use the Learning Focused Lesson Plan Template for planning math*, received an average score of 3.76. Three administrators chose "disagree" (23.1%), two chose "neither disagree nor agree" (15.4%), three chose "agree" (23.1%) and five

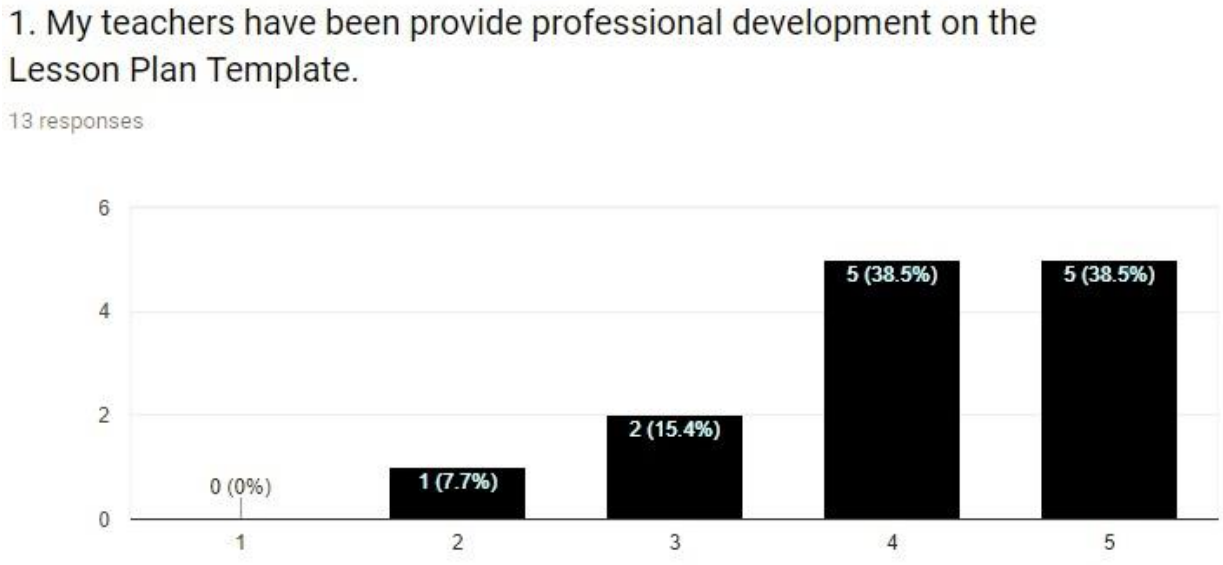


Figure 12. Bar graph of Administrator Survey question 1 results.

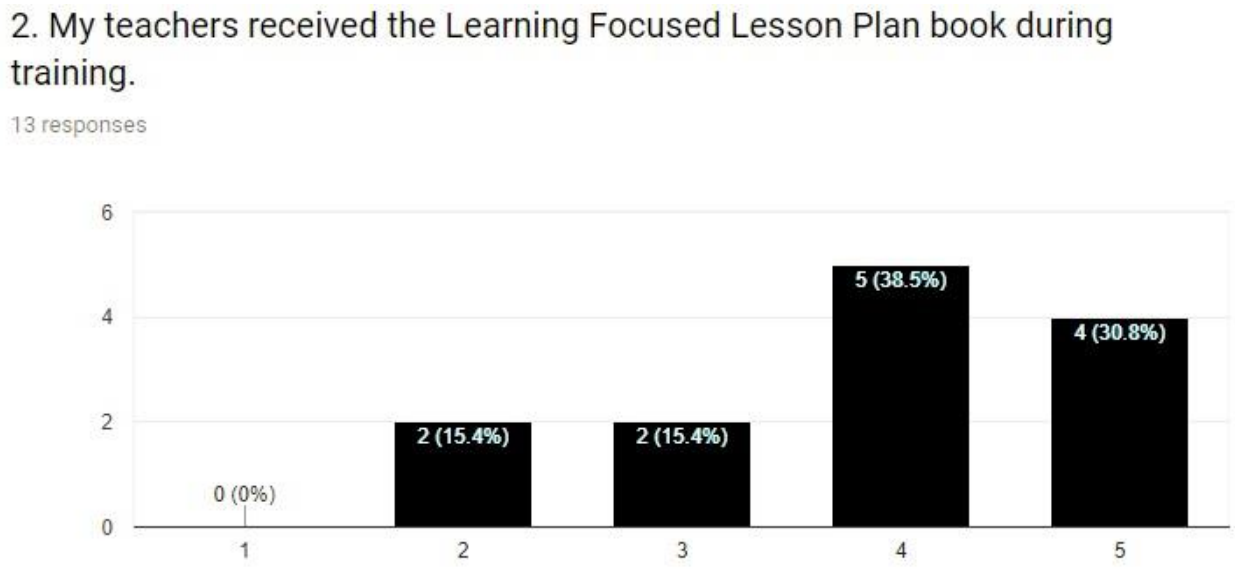


Figure 13. Bar graph of Administrator Survey question 2 results.

chose “strongly agree” (38.5%). According to the survey data most participants agree their teachers use the Learning Focused Lesson Plan Template for planning math lessons (see Figure 14).

The survey statement: *My teachers’ lesson plans demonstrate an understanding of the high-yield strategies in math lessons,* received an average score of 3.92. One respondent chose “disagree” (77%), nine respondents chose “neither disagree nor agree” (69.2%), and three respondents chose “agree” (23.1%). The survey results suggest most administrators feel their teachers’ lesson plans demonstrate an understanding of the high-yield strategies (see Figure 15).

The survey statement: *I understand the Learning Focused District Coach is a resource I can contact for support*, received an average score of 4.30. Two respondents chose “neither disagree nor agree” (15.4%), five respondents chose “agree” (38.5%) and six respondents chose “strongly agree” (46.2%). According to the survey data most administrators understand the Learning Focused District Coach is a resource they can contact for support (see Figure 16).

The survey statement: *The Learning Focused District Coach provided support to our school during the 2016-2017 School Year,* received an average score of 4.0. One participant chose “strongly disagree” (7.7%), two respondents chose “neither disagree nor agree” (15.4%), five chose “agree” (38.5%) and five participants chose “strongly agree” (38.5%). According to the survey data most all participants agree the Learning Focused District Coach provided support to their school during the 2016-2017 School Year (see Figure 17).

The survey statement: *I used the walkthrough template during the 2016-2017 School Year*, received an average score of 4.0. One respondent chose “disagree” (7.7%), two respondents chose “neither disagree nor agree” (15.4%), six respondents chose “agree” (46.2%), and four respondents chose “strongly agree” (30.8%). According to the survey data most survey

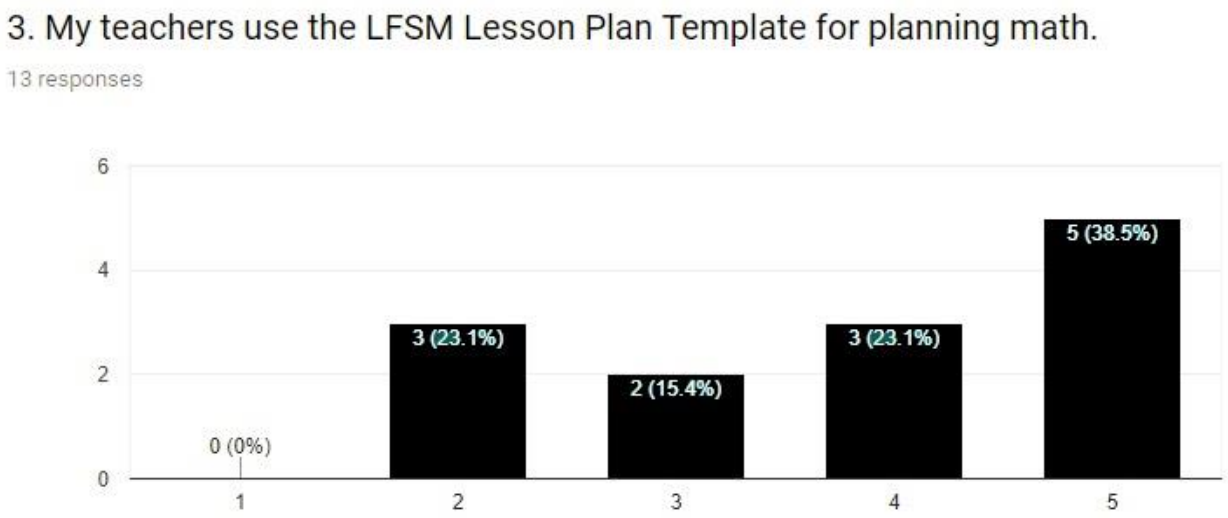


Figure 14. Bar graph of Administrator Survey question 3 results.

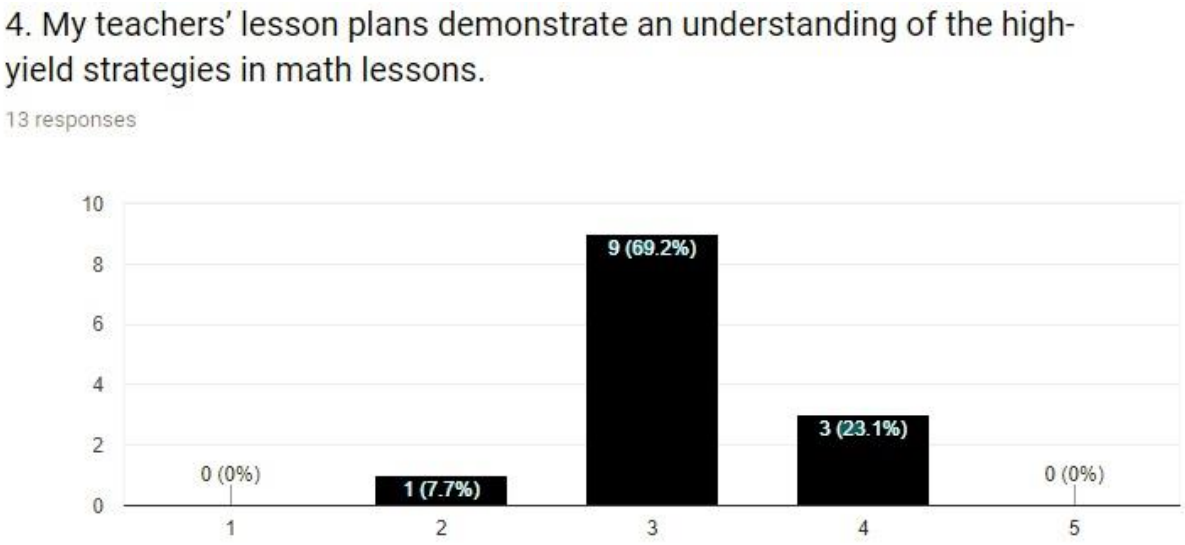


Figure 15. Bar graph of Administrator Survey question 4 results.

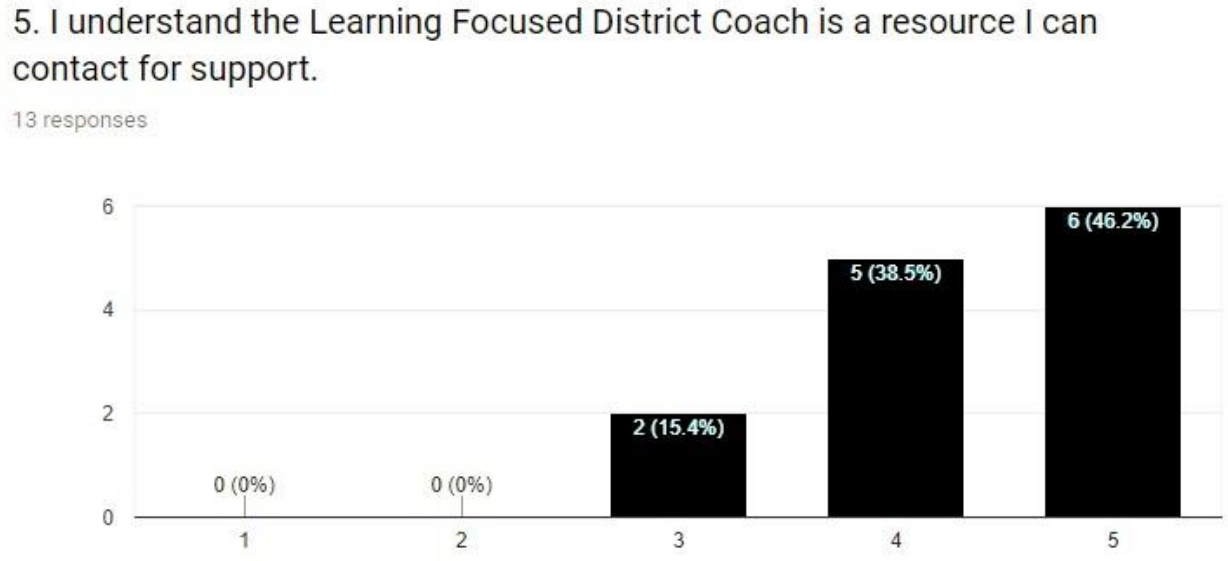


Figure 16. Bar graph of Administrator Survey question 5 results.

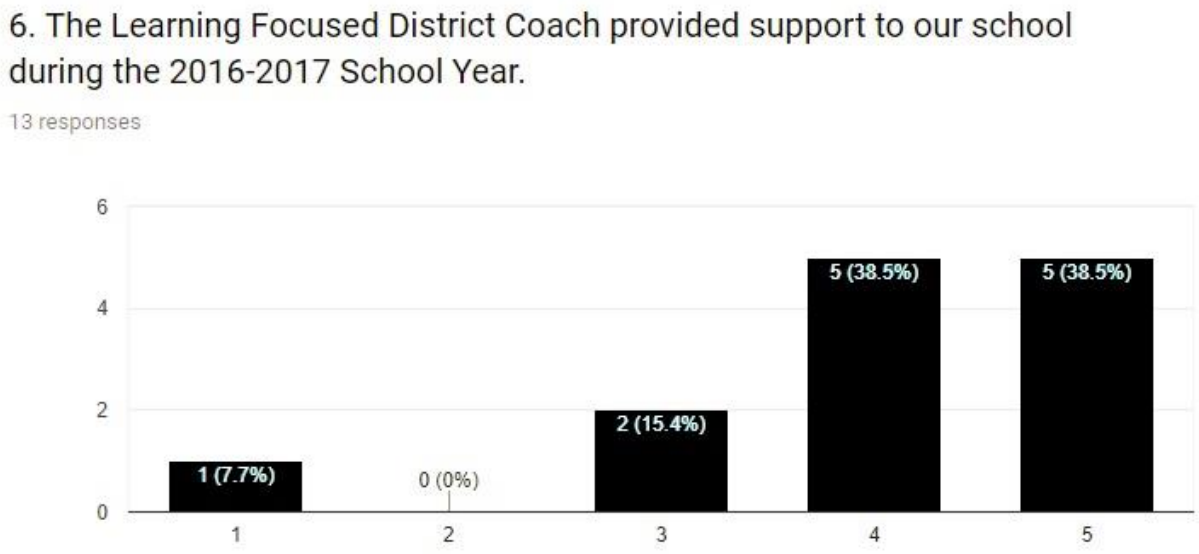


Figure 17. Bar graph of Administrator Survey question 6 results.

participants agree they used the walkthrough template during the 2016-2017 school year (see Figure 18).

The survey statement*: I feel the walkthrough template provides good information about the fidelity of high-yield strategy use*, of 4.0. One respondent chose "disagree" (7.7%), two respondents chose "neither disagree nor agree" (15.4%), six respondents chose "agree" (46.2%), and four respondents chose "strongly agree" (30.8%). According to the survey data most of the respondents agree the walkthrough template provides good information about the fidelity of high-yield strategy use (see Figure 19).

The survey statement*: I feel my teachers have implemented the Learning Focused Model with fidelity in Math,* received an average score of 3.0. One respondent chose "strongly disagree" (7.7%), three respondents chose "disagree" (23.1%), four chose "neither disagree nor agree" (30.8%), and five respondents chose "agree" (38.5%). According to the survey data the participating administrators do not disagree nor agree that their staff has implemented the Learning Focused Model with fidelity (see Figure 20).

The survey statement: *I feel the Learning Focused Model helped my student achieve math proficiency*, received an average score of 2.84. Two respondents chose "strongly disagree" (15.4%), two respondents chose "disagree" (15.4%), and six respondents chose "neither disagree nor agree" (46.2%), and three respondents chose "agree" (23.1%). According to the survey data most of the administrative participants are unsure if the Learning Focused Model helped the students achieve math proficiency (see Figure 21).

The open-ended question found in the survey provided the participants: *a chance to state a reason you feel the school has or has not effectively implemented the LFSM in regards to math.* Six of the respondents provided a reply to the open-ended question. Two of the responses stated

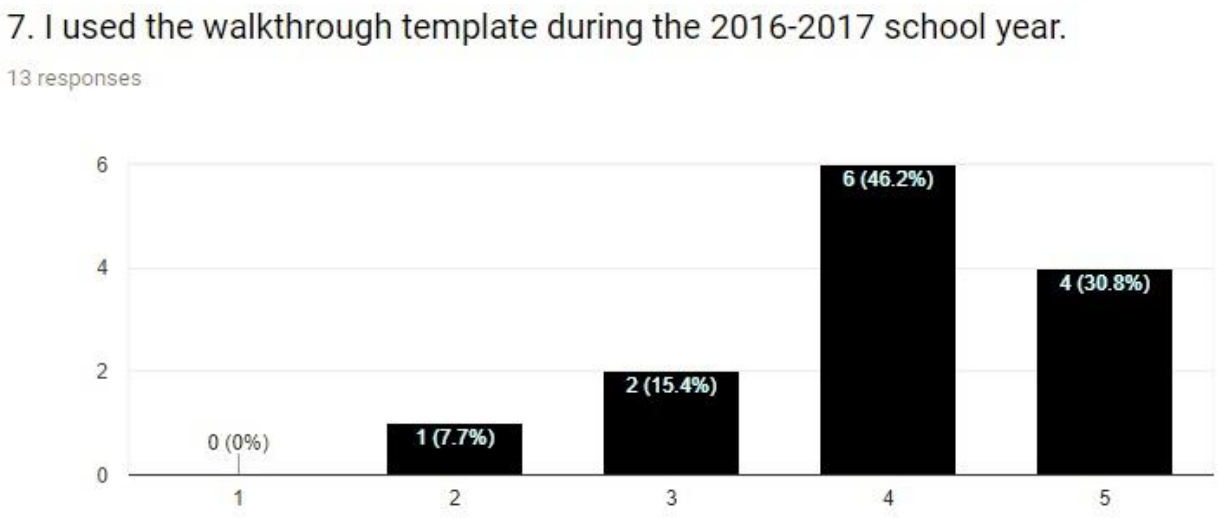


Figure 18. Bar graph of Administrator Survey question 7 results.

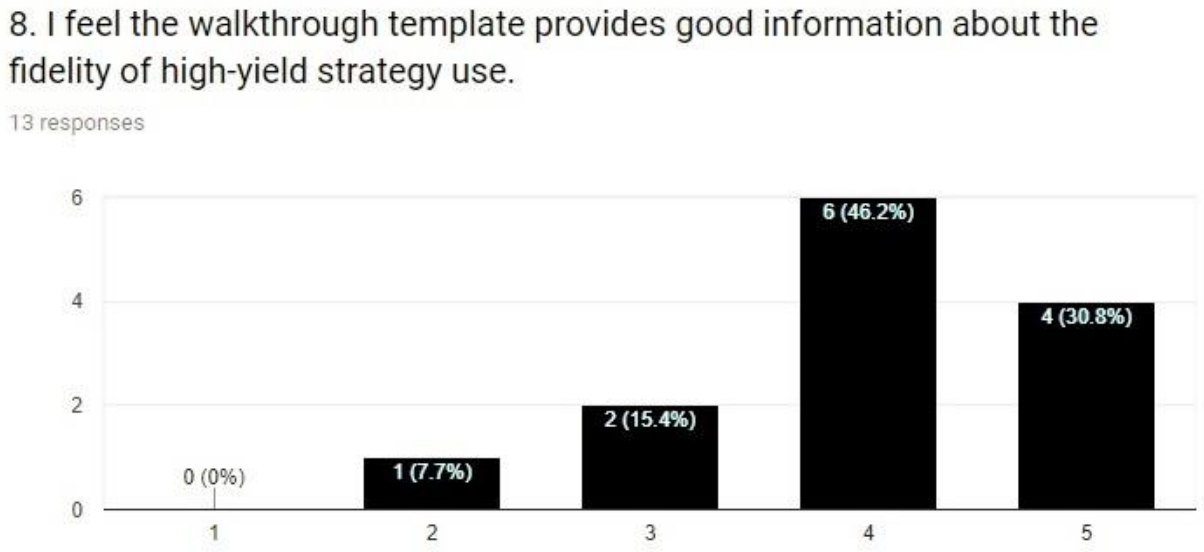


Figure 19. Bar graph of Administrator Survey question 8 results.

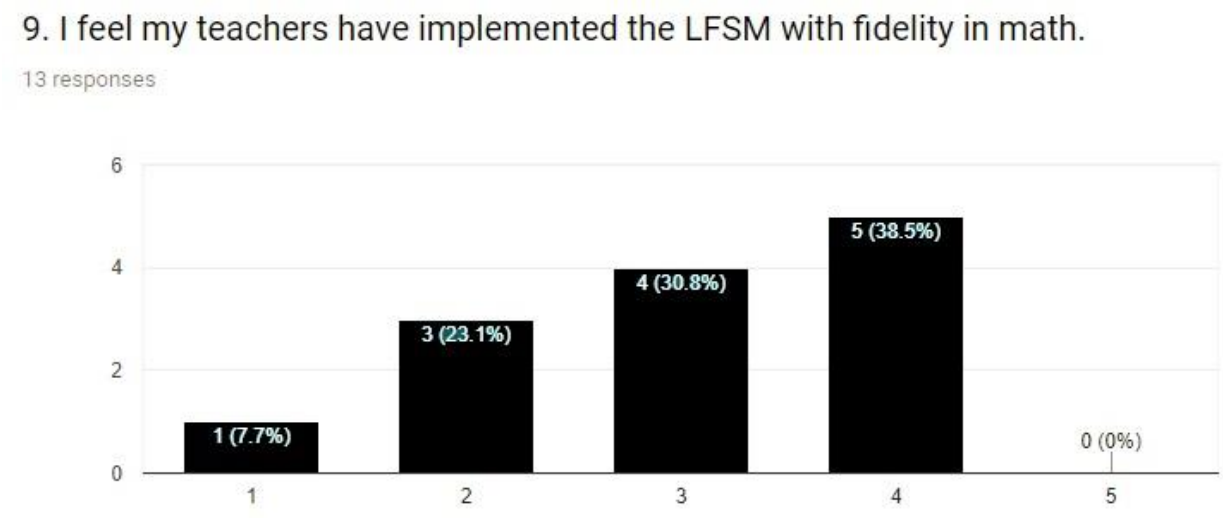


Figure 20. Bar graph of Administrator Survey question 9 results.

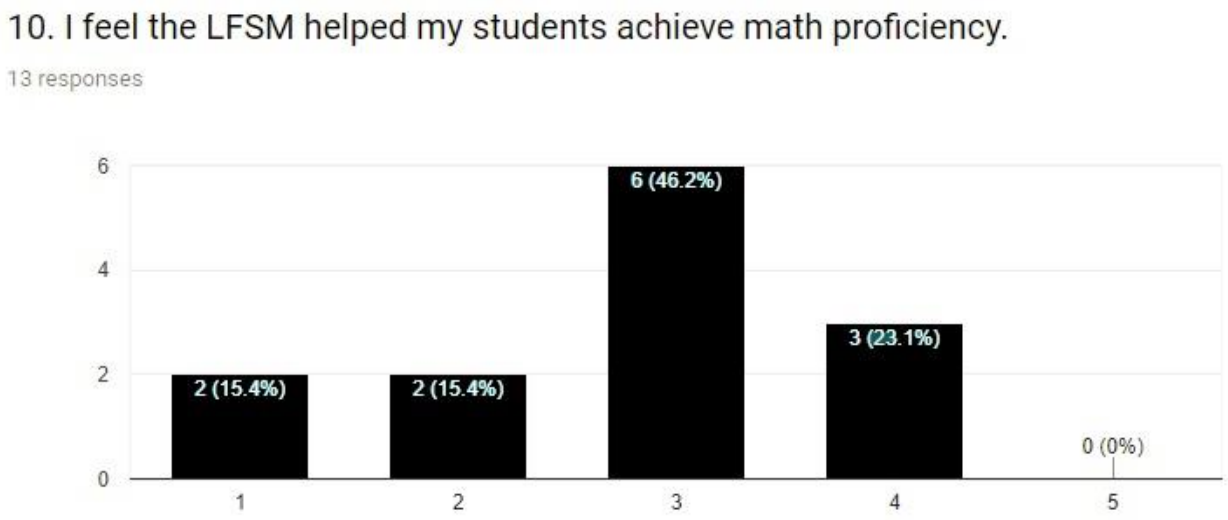


Figure 21. Bar graph of Administrator Survey question 10 results.

a feeling the Learning Focused Planning Template does not provide teaching resources and teachers spend a lot of time finding resources and planning. The other four comments stated the school as a whole had not spent as much time using the Learning Focused Model with math as they had with reading.

Summary of Administrative Survey Results

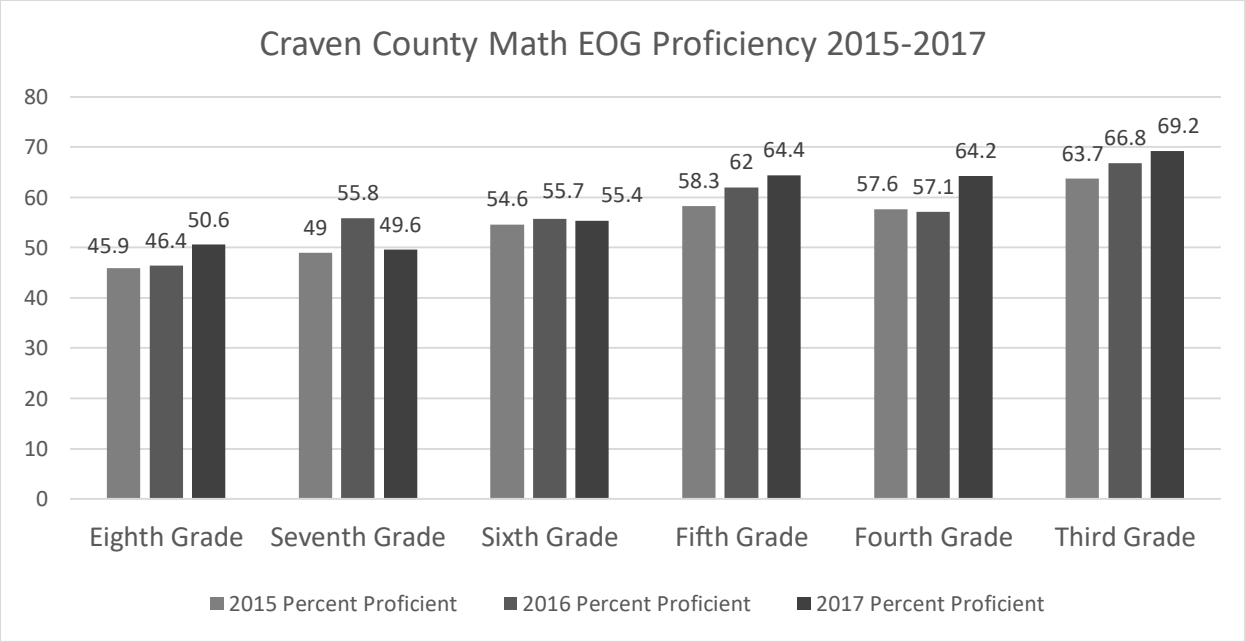
According to the Administrative Survey results most of the survey participants agree their staff has received training in the Learning Focused Lesson Plan Template and received a Learning Focused Lesson Plan book. Most agree their teachers use the Learning Focused Lesson Plan Template to plan Math lessons and there is a slight agreement most teachers demonstrate an understanding of the high-yield strategies in math lesson. Most administrators understand they can receive support from the district-level Learning Focused Coach and most received support from the coach during the 2016-2017 School Year. Most administrators participating in the survey used the Learning Focused Walkthrough Template during the 2016-2017 School Year and most feel the walkthrough template provides good information about the fidelity of high-yield strategy use. Most of the administrator survey participants are unsure if their teachers have implemented the Learning Focused Model with fidelity in math and most do not feel the Learning Focused Model helped their students achieve math proficiency.

The open-ended question from the survey yielded six responses. Two of these shared a feeling the Learning Focused Planning Template does not provide teaching resources and teachers spend a lot of time finding resources and planning. The other four comments stated the school as a whole had not spent as much time using the Learning Focused Model with math as they had with reading.

Analysis of End of Grade Math Testing Results

A product questions of the CIPP program evaluation is concerned with the proficiency scores for students in grades 3 – 8 on the North Carolina Math End of Grade Test. Craven County third grade students have shown an increase in math proficiency each year for the last three years. In 2015 the third grade students achieved a 63.7% proficient. In 2016 the third grade achieved a 66.8% proficient, while in 2017 the percent proficient for third grade was 69.2. The Craven County fourth grade students achieved a 57.6% proficient in 2015, a 57.1% proficient in 2016 and a 64.2% proficient in 2017. Fifth grade students achieved a 58.3% proficient in 2015, 62% proficient in 2016 and a 64.4% proficient in 2017. With the exception of fourth grade in 2016, grades 3-5 have shown an increase in proficiency for the last three years.

Craven County sixth grade students achieved a 54.6% proficient on the End of Grade Math Test in 2015. In 2016 the sixth grade students achieved a 55.7% proficient and in 2017 the sixth grade achieved a 55.4% proficient on the End of Grade Math Test. The seventh grade students achieved a 49% proficient on the End of Grade Math Test in 2015, a 55.8% proficient in 2016 and a 49.6% proficient in 2017. Craven County eighth grade students achieved a 45.9% proficient on the End of Grade Math Test in 2015, a 46.4% proficient in 2016 and in 2017 a 50.6% proficient. Eighth grade has increased in proficiency for the last three years, while grades six and seven showed a slight increase in 2016, but dropped in proficiency in 2017. The percentage of math proficiency for grades 3 – 8 for the years 2015-2017 is presented (see Figure 22).



Note. (Craven County Schools, 2017).

Figure 22. Craven County Schools math EOG proficiency for grades 3-8 for 2015-2017.

Summary of End of Grade Math Testing Data Analysis

The data presented for grades 3 – 8 shows an increase in Math EOG Proficiency Scores each year for Third Grade, Fifth Grade, and Eighth Grade. Both Seventh and Sixth grade showed an increase in 2016, however both experienced a decrease in proficiency in 2017. Interestingly Fourth Grade experienced a decrease in 2016, but had the highest increase in proficiency of all the grade levels in 2017. When averaged together grades 3 – 8 in Craven County experienced an overall 3.78 increase in proficiency on the End of Grade Math Test.

Analysis of Learning Focused Walkthrough Data

Craven County school administrators use a Learning Focused Walkthrough tool to measure the fidelity of the high-yield strategies recommended by the Learning Focused Model. Unfortunately there isn't a statistical monitoring tool for the Craven County Learning Focused Walkthrough Monitoring Tool. When conducting a walkthrough administrators mark the strategy being observed with a 1-5 score. A score of a 1 equals not complying and a score of a 5 represents implementation of the high-yield strategy with fidelity. The high-yield strategies have been assigned a score that is calculated by averaging the items that make up the strategy. The number of walkthroughs recorded for each item is give and the average score per item is presented. Finally for each high-yield strategy a score is given.

Summary of Learning Focused Walkthrough Data

The high-yield strategies that received the most walkthrough observations are the use of an Essential Question and Student Collaboration. The other high-yield strategies were documented and observed, but they did not have as much evidence as the use of an Essential Question and Student Collaboration. Essential Question was looked for 1277 times, Student

Collaboration was looked for 1098 times, Higher Order Thinking received 410 walkthrough observations, Nonverbal Representation received 323, Vocabulary Focus received 223, and Summarization was looked for during 199 walkthroughs. The average score of all the high-yield strategies is 3.33.

CHAPTER 5: DISCUSSION

This program evaluation focuses on the impact of the LFSM on math proficiency in grades 3-8 of the Craven County School District, specifically the purpose of this program evaluation is to determine if LSFM: (a) was implemented with fidelity and consistency, (b) made a notable impact on math performance, and (c) is perceived to be successful. The Stufflebeam Program Evaluation CIPP Model was used to conduct the evaluation. The acronym CIPP denotes the four evaluation types in the model: context, input, process, and product.

The *context* of this program evaluation includes the target population and its needs. The target population of this evaluation are grades 3 – 8 in the Craven County school system and the need of grades 3 – 8 is an increase in math proficiency scores. The *inputs* of the Learning Focused Solutions Model evaluated are the Learning Focused Lesson Plan Template, the training provided on the Lesson Plan Template, the Learning Focused PLC Website, the Learning Focused Lesson Plan book, and the Learning Focused District Coach. The *process*es of the Learning Focused Model that were evaluated are the administrative walkthroughs and the use of high-yield strategies recommended by Learning Focused. The *products* that are evaluated are the End of Grade Math proficiency results and the level of fidelity of the use of the high-yield strategies.

Inputs

Each of the inputs: training on lesson planning and the use of the lesson plan template were evaluated through the use of survey questions. The data gathered from the survey reported most of those surveyed did receive training on the Lesson Plan Template and do use the template for planning math lessons. The resources that are considered inputs are: the Learning Focused PLC website, the Learning Focused Lesson Plan Book and the Learning Focused District Coach.

Most of the survey participants do not use the website and most of the survey participants do not use the Lesson Plan Book as a resource during planning. However the Learning Focused Coach did provide support in the 2016-2017 School Year to most of those surveyed. This evaluation has determined 3 of the 5 inputs to be successful.

Processes

The process portion of the evaluation is concerned with how the Learning Focused Model was monitored and the reporting of the monitoring. The model was monitored through administrative walkthroughs that rated the success of each of the recommended high-yield strategies. The high-yield strategies include: the use of an Essential Question, student collaboration, the use of Higher Order Thinking, the use of Nonverbal Representation, a focus on Vocabulary, and the use of Summarizing. All of the ratings for the high-yield strategies fell between 3.06 and 3.58, which does not represent use of the high yield strategies with fidelity in Craven County Schools. The walkthroughs were done across the district, but some of the high-yield strategies were monitored more often than others. Since there isn't a statistical monitoring tool for the walkthroughs, the evaluator feels the process portion of the evaluation does not reflect a successful monitoring process being conducted throughout the district in regards to Learning Focused.

Product

The program evaluation evaluated the End of Grade Math Proficiency results for a three year period the Learning Focused Model was used. The results of this product evaluation presented an increase in Math EOG Proficiency Scores each year for Third Grade, Fifth Grade, and Eighth Grade. Both Seventh and Sixth grade showed an increase in 2016, however both experienced a decrease in proficiency in 2017. Interestingly Fourth Grade experienced a decrease

in 2016, but had the highest increase in proficiency of all the grade levels in 2017. Overall, for the three years analyzed, the third grade experienced an increase of 5.5 percentage points in End of Grade Math Proficiency, fourth grade experienced a 6.6 percentage point increase, fifth grade experienced a 6.1 percentage increase, sixth grade experienced a .8% decrease, seventh grade experienced a .6% increase, and eighth grade experienced a 4.7% increase. When averaged together grades 3 – 8 in Craven County experienced an overall 3.78 increase in proficiency on the End of Grade Math Test. However the product evaluation using walkthrough data to determine the level of implementation fidelity did not provide a high enough average walkthrough score for this evaluator to assess the implementation at the level of fidelity. The CIPP findings are presented (see Table 11).

Implications

The survey data revealed several implications about the Learning Focused Model. Most of the teacher participants stated they do not use the Learning Focused Lesson Plan book or the Learning Focused Lesson Plan PLC website for support. Teacher comments on the survey revealed a feeling the planning template uses too much time and does not provide teaching materials. A feeling that the high-yield strategies would be used in the classroom with or without the Learning Focused Model was shared. Finally, most teacher survey participants provided data to show a slight agreement they had implemented the model with fidelity, however the data revealed the teacher survey participants do not feel the Learning Focused Model helped to improve math proficiency scores on the End of Grade Math Test.

The administrative survey revealed much of the same results as the teacher survey. The administrators shared an uncertainty of the model being implemented with fidelity in math and they also felt the Learning Focused Model did not help to improve proficiency in math. However

Table 11

The CIPP Program Evaluation Findings

Context	Input	Process	Product
What is the target population and its needs? • The target populations are the Elementary and Middle Schools in Craven County. • There is a need to improve math performance on the NC End of Grade Test.	What are the inputs and resources of the Learning Focused Solutions Model? <u>Inputs</u> 1. Lesson Plan Template: The template is used by most of the survey participants 2. Professional Development-Training was provided to most of the survey participants 3. Learning Focused PLC website: Most of the survey participants do not use the website. 4. Learning Focused Lesson Plan Book: Most of the survey participants do not use the Lesson Plan Book. 5. Learning Focused District Coach: The Learning Focused Coach did provide support in the 2016-2017 School Year to most of those surveyed.	How is the program monitored? How will the results of the monitoring be shared and tallied? • There isn't a statistical monitoring tool for the walkthroughs. • The administrative walkthroughs measuring the use of high-yield strategies were not done evenly. Some of the high-yield strategies were looked for more often.	What are the End of Grade Test results during the third year of implementation? What are the results of the walkthrough data? • EOG Math Testing Data showed an overall average increase of: 3.78%. • The walkthrough data presented an average score of 3.3. A score of 3.3 does not represent implementation with fidelity according to the Craven County Learning Focused Monitoring Tool.

the administrator survey data did provide evidence that shows confidence in an understanding of the high-yield strategies. The administrator comments on the survey expressed a desire for more teaching resources in math. The comments also presented the idea that some administrators feel the Learning Focused Model was used with reading more than math.

The walkthrough data revealed, according to Craven County's non-statistical rating scale, the Learning Focused Model has not been implemented with fidelity in math. However the End of Grade Math Proficiency scores did increase over the last three years. This raises a question as to whether or not the Learning Focused Model had any influence on the increase in scores. This evaluator does not think program evaluation provides enough evidence to state the Learning Focused Model contributed to the increase in math proficiency.

Recommendations

After the completion of the program evaluation there are several recommendations that will be provided to the leadership of the Craven County School System. These recommendations are below:

- Revisit the intended use of the Learning Focused Solutions Model.

The intended use of the Learning Focused Solutions Model needs to be re-visited because although the overall the proficiency in math went up, the survey data shows there is not a lot of confidence in the model. Teachers and administrators have stated the high-yield strategies were already used and will continue to be used with or without the Learning Focused Model. Since the series of good teaching practices that good teachers would use anyway are already in place and understood, what is the intended purpose for continuing the use of the Learning Focused Learning Solutions Model? The evaluator recommends to continue to monitor the use of high yield strategies in the classroom, but does not feel the evaluation provided enough evidence to

support continuing a district-wide requirement of the Learning Focused Solutions Model for math planning and instruction.

- Implement a statistically reliable monitoring tool for observing high yield strategies.
- The monitoring tool used for the Learning Focused Solutions Model is not statistically reliable. The evaluator recommends a walkthrough monitoring tool that is statistically reliable to monitor high-yield strategy use in classrooms. The evaluator feels this tool will be helpful in deciding future professional development needs in this area.
- Determine teacher's ability to teach math content and provide professional development to those who do not understand the content.

One cannot teach mathematics well without a thorough understanding of content and knowledge of pedagogy (Duebel, 2016). Gersten, Taylor, Keys, Rolfhus, and Newman-Gonchar (2014) attempted to find the best math content professional development through a literature review of 643 studies of professional development interventions related to math in grades K–12 in the United States. There are two math professional development approaches that were found to provide a statistically significant positive effects on student math proficiency. They are: intensive math content courses accompanied by follow-up workshops (study by Sample, McMeeking, Orsi, & Cobb, 2012) and professional development focused on linear (measurement) model of fractions (study by Perry & Lewis, 2011). The evaluator recommends determining which teachers need professional development on the content of the math they are responsible to teach, then provide it.

- Provide teaching materials for teachers to use during math instruction.

An overarching theme found in the survey data was the feeling the Learning Focused Solutions Model provided a lesson plan template and helped to clarify the understanding of high yield strategies, but did not provide any materials to use for math instruction. Many teachers expressed a desire for materials to use for math instruction. The evaluator recommends for Craven County Schools to investigate math instructional materials recommended by the What Works Clearinghouse, purchase materials for teachers and students to use, then provide professional development on the materials purchased prior to use.

Executive Summary

Purpose of Learning Focused Solutions Model Implementation

Over the last ten years, Craven County Schools has been somewhat stagnant in student performance (H. W. Beasley, personal communication, May 30, 2014). Like many other school systems Craven County Schools (CCS), seems to have been in a cycle of testing, analyzing data, determining areas of need and then working to fix low performance or stalled student growth before the next round of testing begins. Over time CCS has invested time and money into various programs in hopes of improving the stagnant student performance. During the 2014-15 school year, Craven County Schools decided to implement the Learning Focused Solutions Model (LFSM) with the goal of improving proficiency test scores (M. Lee, personal communication, June 2014).

Purpose of the Program Evaluation

This program evaluation focuses on the impact of the LFSM on math proficiency in grades 3-8 of the Craven County School District, specifically the purpose of this program evaluation is to determine if LSFM: (a) was implemented with fidelity and consistency, (b) made a notable impact on math performance, and (c) is perceived to be successful. The results of this

evaluation will be used to provide guidance to school officials for future decisions regarding the Learning Focused Solutions Model.

The CIPP Program Evaluation

Due to the nature of this work, it was determined that a program evaluation was the best method to use in determining the effectiveness of the Learning Focused Solutions Model. There is a difference in research and evaluation. Research is intended to advance knowledge, while an evaluation's purpose is to provide useful information to those who hold a stake in whatever is being evaluated, often helping them to make decisions (Fitzpatrick, 2011). This program evaluation has been conducted using the research design by Daniel Stufflebeam called Context-Input-Process-Product (CIPP), which targets program improvement. Fitzpatrick et a l. (2011) state The CIPP model has had the most staying power of any early evaluation model and its focus on serving decision-making remain solid. The four areas examined in the CIPP Evaluation are context, inputs, processes, and product.

- The *context* revealed the target population as students in grades 3-8 from Craven County. There was a need to improve math proficiency with this target group.
- The *inputs* examined during the evaluation were the training provided on the Learning Focused Model, the use of the Learning Focused Lesson Plan book, the Learning Focused PLC website use, and the support from the Learning Focused Coach.
- The *processes* evaluated were the Learning Focused Walkthrough Monitoring Tool and the results of the walkthroughs.
- The *products* evaluated were the Math End of Grade Test results and the walkthrough data results.

Findings

The program evaluation findings for the *context* include the target population of all the Elementary and Middle Schools in Craven County and the implementation of the Learning Focused Model to improve math performance on the NC End of Grade Test.

The program evaluation findings for *inputs* includes*:* (a) The Lesson Plan template is used by most of the survey participants. (b) One day-long training was provided to most of the survey participants. (c) Most of the survey participants do not use the Learning Focused PLC website. (d) Most of the survey participants do not use the Lesson Plan Book. (e) The Learning Focused Coach did provide support in the 2016-2017 School Year to most of those surveyed.

The program evaluation findings for *processes* include: (a) there isn't a statistical monitoring tool for the Learning Focused Walkthroughs. (b) The administrative walkthroughs were not done evenly. Some of the high-yield strategies were looked for more often than others so the data was not gathered for each high yield strategy equally.

The program evaluation findings for *product* include: (a) EOG Math Testing Data showed an overall average increase of: 3.78%. (b) The walkthrough data presented an average score of 3.3 and a score of 3.3 does not reflect implementation with fidelity according to the Craven County Learning Focused Monitoring Tool.

Recommendations

The evaluator does not feel the evaluation provided enough evidence to support continuing a district-wide requirement of the Learning Focused Solutions Model for math planning and instruction. However, the evaluator recommends a continuance of high yield strategy use along with a recommendation to implement a reliable monitoring tool for observing high yield strategies.

The evaluator also recommends for Craven County to determine its teacher's ability to teach math content and provide professional development to those who do not understand the content. The evaluator also recommends the universities place more focus on the pedagogy and strategies for teaching of math content.

Finally, the evaluator recommends for Craven County to seek out the best math instructional programs and then provide more instructional materials for teachers to use during math instruction.

REFERENCES

Abdulhameed, A., & Almakahleh, A. (2011). The effect of direct instruction strategy on math achievement of primary 4th and 5th grade students with learning difficulties. *International Education Studies, 4*(4), 199.

Adams, G., & Engelmann, S. (1996). *Research on direct instruction: 25 Years beyond DISTAR*. Seattle, WA: Educational Achievement Systems. (The meta-analysis was conducted by Adams alone).

Ausubel, D. P. (1960). The use of advance organizers in the learning and retention of meaningful material. *Journal of Educational Psychology, 51*, 267-272.

Banerjee, R. K. (n.d.). *Will collaborative learning benefit your students?* Retrieved from http://www.brighthubeducation.com/teaching-methods-tips/70619-benefits-and-drawbacks-to-collaborative-learning

Bearden, R. R. (2009). *A mixed methods study on the effectiveness of the theoretical frameworks embedded within the learning focused schools model* (Order No. 3355027). Available from ProQuest Dissertations & Theses Global. (305077267). Retrieved from http://search.proquest.com.jproxy.lib.ecu.edu/docview/305077267?accountid=10639

Berry, D. L., Maliski, S. L., & Ellis, W. J. (n.d.). Qualitative Research Techniques. *Clinical Research Methods for Surgeons,* 297-310. doi:10.1007/978-1-59745-230-4_17

Best Evidence Encyclopedia -- Empowering Educators with Evidence on Proven Programs. (2007). Retrieved from http://www.bestevidence.org/

Bonnerlbonner@newsobserver.com (n.d.). *Elementary and middle school math set to change.* Retrieved from http://www.newsobserver.com/news/local/education/article153660374.html

Borasi, R., Siegel, M., Fonzi, J., & Smith C. F. (1998). Using transactional reading strategies to support sense making and discussion in mathematics classrooms: An exploratory study. *Journal for Research in Mathematics Education, 29*(3), 275-305.

Borman, G. D., Hewes, G. M., Overman, L. T., & Brown, S. (2003). Comprehensive school reform and achievement: A meta-analysis. *Review of Educational Research, 73*(2), 125.

Caton, S. (2010). *Implementing the learning focused solutions (LFS) model in the Brandywine School District high schools: An evaluation* (Order No. 3432844). Available from ProQuest Central; ProQuest Dissertations & Theses Global. (822994200). Retrieved from http://search.proquest.com.jproxy.lib.ecu.edu/docview/822994200?accountie=10639

Carnine, D., Jitendra, A. K., & Silbert, J. (1997). A Descriptive Analysis of Mathematics Curricular Materials from a Pedagogical Perspective. Remedial and Special Education, 18(2), 66-81. doi:10.1177/074193259701800201

Carpenter, T. P., Blanton, M. L., Cobb, P., Franke, M. L., Kaput, J., & McClain, K. (2004). Scaling up innovative practices in mathematics and science: Research report. Madison, WI: National Center for Improving Student Learning and Achievement in Mathematics and Science. Retrieved from http://ncisla.wceruw.org/publications/reports/NCISLAReport1.pdf

Chard, D. (n.d.). *Vocabulary strategies for the mathematics classroom*. Retrieved from http://www.eduplace.com/state/pdf/author/chard_hmm05.pdf

Conference Board of the Mathematical Sciences (2012). The Mathematical Education of Teachers II. Providence RI and Washington DC: American Mathematical Society and Mathematical Association of America. Retrieved from http://www.cbmsweb.org/archive/MET2/met2.pdf

Cotton, K. (1990). *Classroom questioning*. Retrieved from http://educationnorthwest.org/sites/default/files/ClassroomQuestioning.pdf

Coughlin, C. (2011). Research on the effectiveness of direct instruction programs: An updated meta-analysis. Presented at the Annual Meetings of the Association for Behavior Analysis International.

Daugherty, D. A. (2011). *A study of the learning-focused school improvement model and its effect on third grade reading scores in a suburban, metropolitan school system* (Order No. 3480296). Available from ProQuest Central; ProQuest Dissertations & Theses Global. (899269032). Retrieved from http://search.proquest.com.jproxy.lib.ecu.edu/docview/899269032?accountid=10639

Darmer, M. (1995). Developing transfer and metacognition in educationally disadvantaged students: Effects of the Higher Order Thinking Skills (HOTS) Program. Unpublished dissertation. University of Arizona.

Deubel, P. (2016). Professional development. Retrieved from Computing Technology for Math Excellence Web site: http://www.ct4me.net/professional_development.htm

Determine Your Path To Exemplary With Learning Focused. (n.d.). Retrieved from http://achievenowpd.com/wp-content/uploads/2014/11/Learning-Focused_Framework_Brochure_June_10_2015WEB.pdf

Dewey, J., Boydston, J. A., & Hickman, L. A. (1996). *The Collected Works of John Dewey, 1882-1953 (2nd release). Electronic edition. The Later Works of John Dewey, 1925-1953. Volume 13: 1938-1939, Essays, Experience and Education, Freedom and Culture, and Theory of Valuation*. Charlottesville, VA: InteLex Corporation.

Eckman, S. (2008). Summarization in Math. Retrieved from University of Nebraska – Lincoln DigitalCommons@University of Nebraska - Lincoln http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1007&context=mathmidsummative

Englemann, S., & Carnine, D. (1975). *DISTAR arithmetic: Teacher presentation book A.* Columbus, OH: Science Research Associates.

Fielding, L., Kerr, N., & Rosier, P. (2007). Annual growth for all students, catch-up growth for those who are behind (1st ed.). Kennewick, WA: The New Foundation Press.

Fitzpatrick, J. L., Sanders, J. R., Worthen, B. R., & Worthen, B. R. (2011). Program evaluation: alternative approaches and practical guidelines. Upper Saddle River, NJ: Pearson Education.

Fitzpatrick, J. L. (2012). *Program evaluation: Alternative approaches and practical guidelines*. Boston, MA: Pearson.

Gersten, R., Taylor, M. J., Keys, T. D., Rolfhus, E., & Newman-Gonchar, R. (2014). Summary of research on the effectiveness of math professional development approaches. (REL 2014–010). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southeast. Retrieved from http://ies.ed.gov/ncee/edlabs/projects/project.asp?projectID=391

Gipe, J. P., & Arnold, R. D. (1979). Teaching Vocabulary through Familiar Associations and Contexts. Journal of Reading Behavior, 11(3), 281-285. doi:10.1080/10862967909547332

Greenberg, J., & Walsh, K. (2008). No common denominator: The preparation of elementary teachers in mathematics by America's education schools. Washington, DC: National Council on Teacher Quality. Retrieved from http://www.nctq.org/

Grelk, B. J., Kloeber, J. M., Jackson, J. A., Parnell, G. S., & Deckro, R. F. (1998). Making the CERCLA Criteria Analysis of Remedial Alternatives More Objective. Remediation Journal, 8(2), 87-105. doi:10.1002/rem.3440080209

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. London and New York: Routledge.

Hinchcliffe, K., & Dukes, T. (2017, September 07). 2016-17 *school performance results: What grade did your school receive?* Retrieved from http://www.wral.com/2016-17-school-performance-results-what-grade-did-your-school-receive-/16932100/

Hickey, E. C. (2006). *Making the AYP grade with learning -focused schools: A case study* (Order No. 3206367). Available from ProQuest Dissertations & Theses Global. (304910666).

Jensen, E. (n.d.). *Teaching with the brain in mind* (2nd ed.). New York: Association for Supervision & Curriculum Development.

Kamii, C. (1994). *Young children continue to reinvent arithmetic, 3rd grade*. New York: Teachers College Press.

Kamii, C. (1996). Piaget's theory and the teaching of arithmetic. *Prospects, 25*(1), 5.

Kay, J. F. (2012). *A case study of the impact of the learning focused schools model on culture in a middle school setting* (Order No. 3541519). Available from ProQuest Dissertations & Theses Global. (1114537447). Retrieved from http://search.proquest.com.iproxy.lib.ecu.edu/docview/1114537447?accoutid=10639

Kilpatrick, J. E., Findell, B. E., & Swafford, J. E. (2001). *Adding it up: Helping children learn mathematics*. National Academy Press.

Kirkland, M. R., & Saunders, A. P. (1991). Maximizing student performance in summary writing: Managing cognitive load. *TESOL Quarterly, 25*(1), 105-121.

Learning-Focused Instructional Framework Professional Development. (n.d.). Retrieved from http://achievenowpd.com/

Learning-Focused Lessons, Item Number 910. (2015)

Lebo, H. (2000, August 07). *Mathematical challenges of the 21st century explored at American Mathematical Society Conference at UCLA*. Retrieved from http://newsroom.ucla.edu/releases/Mathematical-Challenges-Of-The-1673

Lewis, C., Friedkin, S., Baker, E., & Perry, R. (2011). Learning from the Key Tasks of Lesson Study. Constructing Knowledge for Teaching Secondary Mathematics, 161-176. doi:10.1007/978-0-387-09812-8_10

Marzano, R., Pickering, D., & Pollock, J. (2001). *Classroom instruction that works; Research based strategies for increasing student achievement*. Alexandria, VA: McRel.

Marzano, R. J. (2003). *What works in schools: Translating research into action*. Alexandria, VA: Association for Supervision and Curriculum Development.

Macmillan, R. (2000). [no title]. The Mathematical Gazette, 84(500), 316. doi:10.1017/s0025557200208206

McREL International. (n.d.). Retrieved December 02, 2017, from http://www.bing.com/cr?IG=8DC3AF11A52649859E1BDA8A608EC549&CID=3808175D846D629E3D431CE7856B635C&rd=1&h=XVcu_DHgdSqswB9M5uYaCbxq0XQ89bsaliwEPTbIG4A&v=1&r=http%3a%2f%2fwww.mcrel.org%2f&p=DevEx,5066.1

National Institute for Direct Instruction (Producer). (2014). Siegfried Engelmann on Individual Learning Styles. (You Tube Video). Retrieved from https://www.youtube.com/watch?v=AWm3jhnshZ0

National Mathematics Advisory Panel. (2008). Foundations for success: The final report of the National Mathematics Advisory Panel. Washington, DC: U.S. Department of Education. Retrieved from http://www.ed.gov/about/bdscomm/list/mathpanel/index.html

North Carolina Public Schools. (n.d.). Retrieved October 22, 2017, from http://www.bing.com/cr?IG=56AD92A7AB784F48967BF96B7EDB004D&CID=1DEBD36B081766971115D8D1091167AE&rd=1&h=ULPkouJe56Kg0DlSrn9HOjRN9ruvsI7XsDLhwPzbkZA&v=1&r=http%3a%2f%2fwww.dpi.state.nc.us%2f&p=DevEx,5064.1

Newton, N. (2012, August 21). *What is guided math?* Retrieved November from https://guidedmath.wordpress.com/what-is-guided-math/

NIFDI - National Institute for Direct Instruction. (n.d.). Retrieved February 22, 2018, from https://www.bing.com/cr?IG=01E906B30A904479B0E2726465FAB5A5&CID=341D6173D26D65991D446AC9D36B6428&rd=1&h=JEKTGeKS_xjCIbBqj0NX4JT_Lf8Be2BZr7rh_mFFx7U&v=1&r=https%3a%2f%2fwww.nifdi.org%2f&p=DevEx,5066.1

Pearse, M., & Walton, K. M. (2011). *Teaching numeracy: 9 critical habits to ignite mathematical thinking.* Thousand Oaks, CA: Corwin.

Piaget, J., & Cook, M. (2011). The origin of intelligence in the child. New York, NY: Routledge.

Poplin, C. (2003, June). Models of professional development. T.H.E. Journal, 30(11), 38-40.

Reeves, D. B. (2000). Standards Are Not Enough: Essential Transformations for School Success. NASSP Bulletin, 84(620), 5-19. doi:10.1177/019263650008462002

Royer, W. L. (2009). *The effects of the learning -focused schools model on student achievement in math and reading and teachers' perceptions of the model* (Order No. 3364359). Available from ProQuest Dissertations & Theses Global. (304882104). Retrieved from http://search.proquest.com.jproxy.lib.ecu.edu/docview/304882104?accountid=10639

Schmidt, W. (2002). The benefit to subject-matter knowledge. In A Coherent Curriculum by W. Schmidt, R. Houang, and L. Cogan, American Educator, pp. 1-17. Retrieved from http://www.aft.org/sites/default/files/periodicals/curriculum.pdf

Simmons, R. (2013). *What are the effects of implementing learning focused strategies in Biology and Physical Science*. Retrieved from http://achievenowpd.com/wp-content/uploads/2014/12/Abstract-Implementing-Learning-Focused-in-Science1.png

Smith, A. L. (2015). *A program evaluation on implementing investigations in number, data, and Space® in three elementary schools*. Education Theses, Dissertations and Projects. Paper 126.

Slavin, R. E., & Lake, C. (2007, February). *Effective programs in elementary mathematics: A best-evidence synthesis.* Baltimore, MD: Johns Hopkins University, Center for Data-Driven Reform in Education.

Slavin, R. E., & Lake, C. (2008, September). Effective programs in elementary mathematics: A best-evidence synthesis. *Review of Educational Research, 78*(3), 427-515.

Slavin, R. E., Cheung, A., Groff, C., & Lake, C. (2008). Effective Reading Programs for Middle and High Schools: A Best-Evidence Synthesis. Reading Research Quarterly, 43(3), 290-322. doi:10.1598/rrq.43.3.4

Soled, S. W. (1990). Teaching processes to improve both higher and lower mental process achievement. *Teaching and Teacher Education, 6,* 255-265.

Stengel, B. S., Przychodzin, Marchand, & Martella. (n.d.). Progressive Education Association (PEA). Encyclopedia of Educational Reform and Dissent. doi:10.4135/9781412957403.n358

Stockard, J. (2013). Merging the accountability and scientific research requirements of the No Child Left Behind Act: Using cohort control groups. *Quality and Quantity: International Journal of Methodology, 47*, 2,225-2,257.

Strayer, T., & Strayer, B. (2012). Check-in assessments for differentiated lessons. New York: Scholastic.

Stufflebeam, D. (2011, June). *The CIPP model for evaluation*. Retrieved from http://www.scribd.com/doc/58435354/The-Cipp-Model-for-Evaluation-byDaniel-l-

Stufflebeam, D., & Shinkfield, A. J. (1985). *Systematic evaluation*. New York: KluwerNijhoff Publishing.

Stufflebeam, D., & Shinkfield, A. J. (2007). In Jossey-Bass (Ed.), *Evaluation theory*.

Thompson, M., Thompson, J., Gann, J., & Gardner, C. (2008). *Connecting extending thinking notebook*. Boone, NC: Learning-Focused Solutions.

Thompson, M. (2015). Advancing Schools: Insights from Exemplary Leaders.

Thompson, Thompson, & Thompson. (2006). Catching Kids UP: Learning-Focused Strategies for Acceleration.

Thorndike, E. L. (1927). *The psychology of arithmetic*. New York: Macmillan. doi:https://archive.org/stream/psychologyofarit00thoruoft#page/n5/mode/2up/search/mental habits of math

Turner, C. (n.d.). *NIFDI celebrates 20 year anniversary*! Retrieved from https://www.nifdi.org/

Williams, B. (2015). Retrieved from http://www.marzanocenter.com/2015/02/06/four-types-of-questions-that-increase-rigor/

Wilson, R. (2009). Recent Mathematical Stamps: 2003−2004. The Mathematical Intelligencer, 32(2), 82-82. doi:10.1007/s00283-009-9119-x

APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 ·
www.ecu.edu/ORIC/irb

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Kathy Barber
CC: Jim McDowelle
Date: 1/30/2018
Re: UMCIRB 18-000165
A PROGRAM EVALUATION OF THE LEARNING FOCUSED MODEL IN CRAVEN COUNTY

I am pleased to inform you that your research submission has been certified as exempt on 1/29/2018. This study is eligible for Exempt Certification under category #2 & 4.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: TEACHER LEARNING FOCUSED SURVEY

Anonymous Teacher Survey about Learning Focused

This survey uses the Likert rating scale of 1-5 with "1" responses indicating a Strongly Disagree, "2" representing Disagree, "3" indicating Neither Disagree nor Agree, "4" indicating Agree and "5" signaling Strongly Agree.

1. I have received training on the use of the Learning Focused Planning Template.

Mark only one oval.

1 2 3 4 5

2. I received the Learning Focused Lesson Plan book during my training.

Mark only one oval.

1 2 3 4 5

3. I use the Learning Focused Lesson Plan book as a resource during planning.

Mark only one oval.

1 2 3 4 5

4. I use the Learning Focused Lesson Planning Template to plan Math lessons.

Mark only one oval.

1 2 3 4 5

5. I can identify the High-Yield Strategies recommended by the Learning Focused Solutions Model.

Mark only one oval.

1 2 3 4 5

6. I use the Learning Focused PLC Website as a resource.

Mark only one oval.

1 2 3 4 5

6. I understand the Learning focused District Coach is a resource I can contact for support.

Mark only one oval.

1 2 3 4 5

7. The Learning Focused District Coach provided support to our school during the 2016-2017 School Year.

Mark only one oval.

1 2 3 4 5

8. I feel I have implemented the Learning Focused Solutions Model with fidelity in my math class.

Mark only one oval.

1 2 3 4 5

9. I feel the Learning Focused Solutions Model has helped my students achieve proficiency in Math.

Mark only one oval.

1 2 3 4 5

10. This is an open-ended question to give you a chance to state a reason you feel you have or have not effectively implemented the LFSM in regards to math. Please do not provide your name or the name of your school.

APPENDIX C: ADMINISTRATIVE LEARNING FOCUSED SURVEY

Anonymous Administrator Survey about Learning Focused

This survey uses the Likert rating scale of 1-5 with "1" responses indicating a Strongly Disagree, "2"representing Disagree, "3" indicating Neither Disagree nor Agree, "4" indicating Agree and "5" signaling Strongly Agree.

1. My teachers have been provide professional development on the Lesson Plan Template.

Mark only one oval.

1 2 3 4 5

2. My teachers received the Learning Focused Lesson Plan book during training.

Mark only one oval.

1 2 3 4 5

3. My teachers use the LFSM Lesson Plan Template for planning math.

Mark only one oval.

1 2 3 4 5

4. My teachers' lesson plans demonstrate an understanding of the high-yield strategies in math lessons.

Mark only one oval.

1 2 3 4 5

5. I understand the Learning Focused District Coach is a resource I can contact for support.

Mark only one oval.

1 2 3 4 5

6. The Learning Focused District Coach provided support to our school during the 2016-2017

School Year.

Mark only one oval.

1 2 3 4 5

7. I used the walkthrough template during the 2016-2017 school year.

Mark only one oval.

1 2 3 4 5

8. I feel the walkthrough template provides good information about the fidelity of high-yield strategy use.

Mark only one oval.

1 2 3 4 5

9. I feel my teachers have implemented the LFSM with fidelity in math.

Mark only one oval.

1 2 3 4 5

10. I feel the LFSM helped my students achieve math proficiency.

Mark only one oval.

1 2 3 4 5

11. This is an open-ended question to give you a chance to state a reason you feel the school has or has not effectively implemented the LFSM in regards to math. Please do not provide your name or the name of your school.