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Improving Math Fact Fluency in Students

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Improving Math Fact Fluency in Students

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Capstone Project: A School Improvement Plan

Northwestern College, Orange City, Iowa

Abstract

Developing a solid math foundation is crucial for all students to ensure success. One of the foundational skills that students need to develop is the ability to find, recall and answer basic math facts accurately and effortlessly. Research has shown that students need to master their basic math facts to be successful in their math progression. Tier 2 interventions, educational math games, and computer-based math games were used to instruct, provide practice, and supplement core math instruction. The purpose of this school improvement project is to increase the proficiency scores of students with their basic math fact fluency. This school improvement plan will outline actions toward implementing Tier 2 instruction with students and classroom practice using educational and computer-based math games.

Keywords: math fact fluency, Tier 2 instruction, mathematics, computer-based games, educational games

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Improving Math Fact Fluency for Students

Developing a solid mathematical foundation is essential for every child in prekindergarten through second grade for them to be successful. Mathematical skills are crucial and essential for every student to learn and it is fundamental to the success of students as they move through their educational careers and into the future (Baker & Cuevas, 2018). For students to develop math fluency they need to develop strong number sense and computational fluency in basic addition and subtraction facts. As students progress with their number sense and computational fluency, it will continue to foster their growth as a mathematician. The National Assessment of Educational Progress (2023) reports that in 2022 the average scores for fourth-grade students and eighth-grade students declined for most states/jurisdictions as well for most participating urban districts compared to 2019. The problem is that when students are not proficient and fluent in their basic math facts, they struggle when it comes to other math problems that involve adding and subtracting.

There are four components of fluency for basic math facts; flexibility, appropriate choice of strategy, efficiency, and accuracy. The goal for students, when they receive fact fluency instruction, is for students to be able to recall basic addition and subtraction facts within 20 automatically. Hawkins, Collins, Flowers, & Hernan (2017) and Multi-Rao & Plati (2015), describe fluency as the ability to find, recall, and answer facts quickly and effortlessly. When students are fluent in math they can answer math questions quickly because it is memorized or because they have developed efficient strategies for calculating the answer. Students struggle with their overall math performance when they are not able to become fluent in their basic math facts by developing automatic responses or by developing efficient strategies (Hawkins et al., 2017).

Today math curriculums that school districts use vary in the amount of time students are provided with math fact fluency focus. Teachers need to find ways that are going to provide students with activities that are engaging and motivating to help build students' math fact fluency. Research proves that if students are provided with engaging ways to learn and practice regularly on their basic math skills, they will be more likely to build their number sense and mathematical thinking and understanding than if they were just asked to memorize the basic facts (Boaler & Williams, 2015). When teachers can incorporate simple strategies, interventions, and engaging activities into the classroom all students will be able to build and increase their math fact fluency.

The purpose of this school improvement plan is to implement basic addition and subtraction math fact fluency activities as well as a targeted intervention time for kindergarten through second-grade students at Woodrow Wilson Elementary School. Students will have the opportunity Tuesday through Friday to develop basic math fact fluency through targeted math fact fluency instruction and activities for thirty minutes. It is the goal of this school improvement plan to show that when students are provided with targeted math fact fluency interventions and basic math fact fluency activities that students will be able to increase their basic addition and subtraction fact fluency and demonstrate proficiency with this skill.

Research for this school improvement plan's literature review was conducted using peer-reviewed journal articles that were within the last 10 years and they were relevant to the educational classroom setting. These articles were available through the DeWitt Library at Northwestern. The author focused on articles about Tier 2 interventions and fact fluency activities for elementary students. The research found was used to evaluate whether providing students with targeted interventions and engaging activities to increase basic addition and

subtraction math fact fluency would increase proficiency levels in students. The scope of this research allows for targeted interventions and basic fact fluency activities to be considered and highlights the importance of basic fact fluency in all students to improve proficiency levels in mathematics.

The belief is that when students are provided with targeted interventions and basic addition and subtraction fluency activities and teachers use data-based decision-making to help drive instruction and fluency activities that students need, all students will make gains in their basic addition and subtraction fact fluency. Teachers will be using evidence research-based practices and student data to support building basic math fluency to make this change happen. Teachers will be using the data collected on each student to make decisions and adjust instruction and activities as needed. As all Kindergarten through second-grade teachers incorporate targeted instruction and basic math fluency activities into their day and use the data collected to drive instruction for the interventions and basic math fluency activities, students will become more fluent with the basic addition and subtraction math facts.

Review of the Literature

Student proficiency in math serves as a foundation for overall success in the classroom and the real world. One of the skills that help students with their mathematical proficiency is the ability to fluently solve their basic math facts (Conzad & Riccomini, 2016). Basic math fact fluency is a skill that needs to be taught to students starting at an early age. Fluency with basic facts includes the ability for students to solve problems with both accuracy and speed. The ability to develop automaticity is vital for the student's success in mathematics (Baker & Cuevas, 2018). Students who are not demonstrating mathematical proficiency struggle with becoming proficient and fluent in the four basic operations and need interventions to help develop and

promote fluency. Many students today have not yet mastered the skills necessary to be able to recall basic facts accurately and fluently which results in students having difficulty in the area of math.

Background

One of the key components of the curriculum in schools today is mathematics. However, the concept of math fact fluency is not something that is taught or given a lot of focus in many math curriculums that are used in schools today. In the United States, mathematics has been an area of concern and a need for improvement in the educational system. According to the National Mathematics Advisory Panel Final report that was published by the US Department of Education (2008), students in the United States demonstrate a mediocre achievement level compared to students worldwide (Rave & Golightly, 2014). According to Ma & Ma (2014), international comparative studies have consistently demonstrated that US students lag behind other students in developed countries in their mathematical performance. Students in other countries and nations are advancing in their mathematical skills, while students in the US are standing still and not making growth (Ma & Ma, 2014). The National Center for Educational Statistics reported that 22% of adults have not mastered enough mathematics skills past the eighth grade that are necessary for success in many jobs (Cozad & Riccomini, 2016). Students need to develop the skills necessary to be able to add and subtract fluently by the time they reach the end of third grade. Basic math skills and fluency are crucial to students progressing successfully to more complex mathematical learning in the future (McTiernan, Holloway, Healy, & Hogan, 2016).

Fluency is described as the ability to find, recall, and answer basic math facts quickly, accurately, and effortlessly (Hawkins, Collins, Flowers, & Hernan (2017); Multi-Rao & Plati

(2015). Research shows the importance and overall need of teaching math fact fluency to students at the elementary level so that they can develop a strong foundation that they will need to be able to transfer skills to other settings and formats, as well as assist students with the completion of more complicated and varied math tasks (Musti-Rao, Lynch, & Plati, 2015; McTiernan, Holloway, Healy, & Hogan, 2016). A randomized control trial conducted by McTiernan, Holloway, Healy, & Hogan, (2016), evaluated the impact of a frequency-building curriculum to increase fluency with 28 males that were ages nine to eleven. McTiernan et al., (2016) reported that there is a correlation between student's fluency performance and their overall mathematical abilities. Students' mathematical ability was assessed before and after the intervention period. Results from the study found that there was a link between students' fluency scores on single-digit addition and subtraction math problems and their mathematical ability on mathematical assessments (McTiernan, Holloway, Healy, & Hogan, 2016). The majority of the students that were involved in this study demonstrated increased performance on critical fluency outcomes and also transferred those skills to standardized math assessments. These findings stress the importance of building math fluency skills.

In 2022, average scores in mathematics declined across many of the selected student groups in the US. Data shows that the average score for students aged 9, in 2022 declined by 7 points in mathematics compared to 2020. This decline is the first-ever decline in mathematics (The Nation's Report Card, 2023). The National Mathematics Advisory Panel believes that "Computational proficiency with whole number operations is dependent on sufficient and appropriate practice to develop automatic recall of addition and related subtraction facts, and of multiplication and related division facts" (The Final Report of the National Mathematics Advisory Panel - Ed, 2008, p. xix). This requires students to become fluent with algorithms for

addition, subtraction, multiplication, and division. When students develop a fluent use of algorithms, it builds on the development of the recall automaticity of basic math facts and supports the reinforcement of them.

Researchers have come to a consensus that basic math fluency is a crucial skill in elementary grades (Musti-Rao & Plati, 2015). According to NMAP (2008), very few curricula that schools and districts are using, include the necessary amount of targeted instruction and fluency practice necessary for students to build basic math fluency at the lower elementary level. (Berrett & Carter, 2018, Musti-Rao & Plati, 2015). If the curricula that teachers are using do not provide students with adequate practice to reach mastery of basic math fluency, it limits the opportunities for students to become fluent in their math facts (Berrett & Carter, 2018). Berrett & Carter (2018), conducted a study using educational computer-aided instruction programs with 63 students in third grade who were put into three study groups. All three groups of students demonstrated improved fact fluency skills compared to their baseline line. They continued demonstrating learning during the follow-up phase. Evidence from the study showed that when teachers use math curriculum along with the use of educational computer-assisted games it effectively helps develop and build math fact fluency in the classroom.

Math curricula used in elementary schools, especially those that are used in the upper grades, assume that students have developed fluency with their basic math facts and no longer need to have time built in to focus on basic math fluency. When students reach the upper grades, the focus of math moves away from basic math fluency, even if they have not hit proficiency, to instruction focused on more complex math concepts. Baker & Cuevas (2018) conducted a qualitative research study with 3rd, 5th, and 8th-grade students that focused on automaticity with basic math facts. The interview contained fourteen questions and half of them were time and

needed to produce answers for single-digit multiplication problems, and the other half of the problems asked the students to provide answers that were based on their interpretation of the problem. Results from the study show that students are continuing to struggle with single-digit multiplication problems. The data from this study also suggests that there is a strong link between the automaticity of basic math facts and the ability to achieve fluency when given more complex problems (Baker & Cuevas, 2018).

With the lack of basic math fact fluency in math curricula today, it is essential that teachers look for ways to supplement and build in time for fluency practice with targeted interventions and engaging activities. Many techniques and strategies can be used to help students build fluency. This can be done through rote memorization, flashcards, computer-assisted instruction, and educational math games. Drill and practice activities such as flashcards and rote memorization have been criticized for not being engaging or motivating to students. Drill and practice activities and rote memorization have also been said to be less effective than computer-assisted instruction and educational math games (Hawkins et al. 2017). Burns et al., (2012) conducted a study with 216 third and fourth-grade students who were at risk for having math difficulties. The intervention used a computer-based software program to practice math facts three times a week for eight to 15 weeks. The results indicated that those students who participated in the intervention had significant overall gains in their math scores than those students who didn't participate in the intervention. Burns et al., (2012) suggest that using computer-aided instruction has a positive effect on student's math fact fluency when it is used in addition to strong core math instruction. Students are more likely to be successful with developing basic math fact fluency when they are actively engaged and motivated to learn.

Spangenberg & Roberts (2020) state that it is essential to ensure that students are motivated to learn mathematics and stay motivated.

Computer-Based Games and Instruction

Teachers can supplement their math curriculum with quick, easy, motivating, and engaging activities for students (Hawkins et al., 2016). Computer-assisted instruction is a way to provide students with an engaging and motivating for students to learn their basic facts. Computers have become an integral piece of technology in today's classrooms for practicing skills and implementing academic intervention (Rich et al., 2017). Computer-based instruction programs have become a popular and effective way for teachers to support students with basic math fact fluency. According to Berrett & Carter (2017), as younger students increase their use of technology, the traditional paper methods may become less appealing, therefore teachers need to look for education technology as a way to increase motivation and engagement.

Computer-based games and computer-based instruction have evolved over the years from drill and practice activities that are engaging and motivating to students. According to Rich et al., (2017) & Vanbevelaere et al., (2019) computer-aided instruction and computer-based adaptive games are considered to be excellent tools to build fluency because they are engaging and motivating.

Rich et al., (2016) conducted a research study looking at the effectiveness of multiple stimulus exemplars of computer-based math practice to paper-pencil performance. A group of 57 second-grade students completed fluency tests on the computer, a mixture of computer and pencil-paper, or only paper-pencil. The current study shows the importance of considering the different modality components when using and developing computer-based interventions. When

making considerations it is especially important when teachers are using computer-based intervention and progress monitoring tools when making decisions for students. The results indicate that within-modality practice is effective at showing significant growth in digit correct per minute, but the student performance across modalities did not generalize when the computer-based practice was the only tool that was used (Rich et al., 2017). Rich et al., (2017) recommend that teachers incorporate traditional paper-pencil strategies along with computer-based interventions to support all students and increase math fact fluency. When both forms are used the data collected showed that students were able to make generalizations across the different modalities.

Crawford, Higgins, Huscroft-D'Angelo, & Hall (2016) conducted a study with students in the third, fourth, and fifth grades looking at their math reasoning skills before and after using one component of computer-based learning, electronic support tools(ESTs). Crawford et al., (2019), concluded that ESTs enhance student performance in math because they can individualize the technology program to meet the needs of the individual student. Students also showed improvement in their reasoning skills during the program, which is also due to the EST tool use. Adaptive games are thought to be considered an excellent tool for students because they are always assessing the student's performance and adapting the tasks to meet the student's individual needs.

Research, Valle-Lisboa, et al., (2017) conducted a qualitative research study to see if a one-month game-based intervention can help mediate the effects of SES on elementary formal math learning. Valle-Lisboa, et al., (2017) selected schools to participate in this study that all had different socioeconomic strata based Uruguayan National Public Education Administration classification. There were a total of 454 first-grade girls that participated. The finding of this

study found that the SES level of the school does have an effect on formal mathematical achievement and that there is a relationship between cognitive variables and SES. It also found that the intervention of games led to an increase in scores especially those students who had a low SES status. The effect of this intervention had a positive impact on student math learning and achievement.

Carver (2016), explored research around K-12 teachers' perceptions of the benefits and barriers of educational technology when used by teachers or students in K-12 instruction. The data was collected using an open-ended qualitative survey format from a group of teachers who were enrolled in online classes in the graduate studies in the education department. Results from this study indicated that teachers chose to use technology because they felt that it resulted in increased student engagement and understanding.

Implementing computer-based games and instruction in the classrooms is a way to supplement the core math curriculum and provide individualized learning to meet the needs of all students. Technology is another way that can enhance students' mathematical procedural and conceptual reasoning, which is important for overall math proficiency (Crawford et al., 2016).

Educational Math Games

Educational math games are another motivating, engaging, and effective way for students to learn and practice basic math facts. An effective way to approach teaching basic math facts is to provide students with meaningful practice to help them master their basic math facts. Bay-Williams & Kling, (2014), state that meaningful practice can come in different forms including, using story problems, ten frames, and games. When working with first and second-grade students, Bay-William & Kling (2014) found that students did not want to stop playing games

when it was time to quit. Educational math games may be designed for targeted fact practice which may be based on a particular group of facts, or general practice of facts. While students are playing math games, observations and interviews can be done with students to monitor their progress with their facts (Bay-Williams & Kling, 2014).

Mass & Nyamsuren (2016) analyzed the cognitive strategies underlying performance in a Number task, a Math game where students are required to have math fluency and mathematical creativity. The Number game is one of the 18 games in the Math Garden that was designed to study and improve the student's mathematical reasoning skills. The focus of this study was on one Math Garden game, the Number Game. The game requires both math fluency and creative thinking. The effectiveness of advancing math thinking is still limited as it was not the focus of analysis in this study. Mass & Nyamsuren (2016), see a bright future of educational games for both educational and scientific purposes as a method of study in cognitive development.

Research, (Skarr et al., 2014), conducted a quantitative research study to determine if a typical third-grade boy, and fifth-grade girl, and a boy with learning disabilities could benefit from the use of direct instruction flashcard procedure and math racetrack procedure in an after-school program. The results of this study found that there is a functional relationship between the use of direct instruction flashcard procedure and a math racetrack game procedure and the mastery of basic math facts. The combined effect of both tools proved to be highly effective for each of the students (Skarr et., al., 2014). Each of the students mastered all math facts across all three sets for at least three sessions.

Developing strong mathematical learners requires teachers to think outside the box and provide students with other activities to build fluency other than just paper-pencil and drill and practice. Educational games provide students with opportunities to build basic math fluency

through hands-on and interactive activities. According to Rai & Worcester (2012), games not only enhance learning but can hold the potential for improvement of cognitive learning as well. Rai & Beck (2012), developed an experimental framework for determining the effect of game-like elements using a mixed-method approach. Rai & Beck (2012) were looking to see the benefits of enhancing engagement and learning, and their costs such as distraction, and working memory overload. The study had 297 students who were randomly assigned to four groups. In the research conducted by Rai & Beck (2012), the qualitative data supported that students generally favored game-like aspects when learning. The data collected on learning gains resulted in no conclusive results or patterns due likely to the fact that the intervention was brief and involved many different skills (Rai & Beck, 2017).

Students today all learn differently and have a variety of different learning needs. By incorporating educational games and activities, students will be motivated to learn and practice their basic math fluency facts. Games that are provided for students to engage in that meet their educational learning needs, are going to increase their motivation to learn and reach fluency with their basic math facts.

Tier 2 Intervention

The persistent low performance of students in math today, shows that actions need to be taken to close the math learning gaps in students. One approach that can be done to promote mathematical learning and competence in all students is to provide them with interventions using the Response to Intervention (RTI) model, also known as the Multi-Tier System of Supports (MTSS) (Dennis, 2015). The Response to Intervention is a three-tiered problem-solving, student-centered, framework that entails high-quality classroom instructions, universal screening, research-based interventions, and contrast progress monitoring (DeFouw et al., 2018). The

MTSS model is made up of tiered instruction and interventions where the intensity and individualization instruction of the intervention increases as students enter higher levels of tire intervention (Dennis, 2015).

Tier 1 instruction is where teachers provide the standards-aligned, evidence-based core to all students. Tier 1 is expected to bring at least 80% of students to expected proficiency levels. If students show difficulties in Tier 1, the student moves to Tier 2 instruction. Tier 2 interventions focus on providing students with an evidence-based supplemental intervention, small group instruction, and continued and frequent monitoring of student progress. Students who do not respond to a Tier 2 intervention, move to a Tier 3 intervention, which is where more intensive services are provided.

Current research on the effectiveness of the MTSS model is limited. Bryant et al (2011) conducted two studies that showed the effectiveness of Tier 2, supplemental intervention with first graders. The first study that was conducted used a quasi-experimental study where the students receive a 20-minute intervention booster lesson that focused on number and operation skills and concepts for 23 weeks. Results from this study showed that students made progress and successfully closed the learning gaps with their typical peers. Bryant et al, (2011), conducted a second study using a randomized control trial to compare those students who participated in a remedial mathematics program. For this group of students, the intervention included a systematic approach, visual representation of math concepts, purposeful and meaningful practice, and frequency of progress monitoring. The finding of this study showed that the experimental group outperformed students in the other group on both the progress monitoring measures of mathematics performance and the measures that were focused on whole-number computation (Bryant et al, 2011).

Research (Dennis, 2015) conducted two similar replicated studies of Bryant et al. (2015), that looked to explore the effects of Tier 2 intervention on second-grade students, but the work was extended further with follow-up data that looked at the sustained effects up to five months after the intervention. In study two conducted by Dennis (2015) students who did not make adequate progress and respond adequately to the Tier 2 intervention in Study 1, received an intensified Tier 3 intervention. Participants in Study 1 were nine second-grade students who were assigned into three groups. Students were selected for this study based on the following: score below the 25th percentile on the AIMSWeb computation CBM probe, teacher and principal recommendations based on documented math difficulties, parent permission and student assent, and having English as their first language (Dennis, 2015). The results of this study showed that six out of nine students demonstrated substantial improvement and growth by the end of the intervention and were no longer considered to be at risk. Research from this study showed that Tier 2 interventions not only provide growth in students but also help in the retention of skills over some time.

Similarly, students in Kindergarten are seeing benefits from being involved in Tier 2 Intervention groups. Research, (Clarke et al., 2016), conducted a research study with twenty-nine kindergarten classrooms. Classrooms were randomly assigned to a treatment or a control group. Students that were chosen to be in the treatment group received instruction from the ROOTS curriculum three times a week in addition to their daily whole-group instruction. The results of this study showed that the gains made by the intervention students exceeded the gains made by students who did not receive the ROOTS instruction. In addition, students in the ROOTS Tier 2 intervention reduced the achievement gap between themselves and their non-at-risk peers (Clarke et al., 2016).

Another study done by Pool et al., (2013), studied the impact of Tier 2 interventions on 10 third-grade students who were identified as needing additional support with a secondary intervention after completing a math screening test. These students received small group instruction four times a week for 30 minutes. Students that participated in the Tier 2 intervention were monitored and when the data showed that students had mastered the skills they were excited. When students were exited from the intervention, other students were able to fill the open spots. The finding showed that when students are provided with evidenced base best practice interventions it alleviates the learning challenges and growth is made.

Each of these studies showed the importance of Tier 2 interventions for students who have learning gaps that need to be addressed because core instruction is not enough. Tier 2 instruction will give a boost that students need in knowledge or skills so that they can be successful in Tier 1 core instructions once Tier 2 supports have been removed (Clark et al., 2017). Meeting the needs of all students is the responsibility of teachers and schools to ensure all students are successful in learning. All classrooms should have a time in their day where Tier 2 interventions can be implemented and regularly assessed to ensure they are working and meeting the needs of the students.

School Profile

School District Characteristics

The Newton Community School District is located in Central Iowa and has a population of approximately 15,000. It is home to 2,748 students in grades preschool through 12th grade. The district employs roughly 450 employees. The district comprises four elementary schools, one middle school, and one high school (Iowa Department of Education). The school district also has one alternative school. The student population consists of 82.7% white, 7.3% Hispanic,

0.3% Native American, 5.1% Multi-Racial, 3.7% Black/African American, 0.1% Hawaiian/Pacific Islander, and 0.7% Asian. The subgroups consist of 45.3% Low Socioeconomic (Free or Reduced) status, 15.4% Special Education services, and 2.9% English Learners (Iowa Department of Education, 2022). The graduation rate for the Newton Community School district is 91.59%, with the dropout rate being 2.73%. Newton has a staff retention rate of 82.9% (Iowa Department of Education, 2022).

The Every Student Succeeds Act was passed on December 10, 2015, and was signed by President Obama. The Every Student Succeeds Act included provisions that would help ensure success for every school and student. The law's previous version was called the No Child Left Behind Act, enacted in 2002. Schools today are giving a rating of Exceptional, High Performing, Commendable, Acceptable, Needs Improvement, and Priority. The school report card is an overall view of the school's performance.

In 2022 new school index scores and rating categories were calculated on the Iowa School Performance website. In the Newton Community School district, Newton Senior High School and Woodrow Wilson Elementary received a Commendable overall performance rating. Aurora Heights Elementary and Thomas Jefferson Elementary received an Acceptable overall performance rating. A Needs Improvement overall performance rating was given to Emerson Hough Elementary and Berg Middle School. West Academy received a Priority overall rating performance (Iowa Department of Education, 2022).

In grades third through 11th the Newton Community School District received a proficiency percentage of 63.61% in English Language Arts, which was lower than the state's average of 70.84%. In Mathematics, the Newton Community School District received a

proficiency score of 60.7%, which is also lower than the state's average of 64.97% (Iowa Department of Education, 2022).

District Mission and Vision

The Newton Community School District has a mission to “empower every learner to achieve a lifetime of personal success” (Newton Community School Homepage 2023). The Newton Community School District Vision states “We are a collaborative and cohesive team that inspires and supports all learners in a culture of safety and acceptance” (Newton Community School Homepage 2023) This mission and vision statement make it clear that the Newton Community School District recognizes the different needs of all students and that each student is valued and looked at as an individual.

Woodrow Wilson Elementary School Characteristics

Woodrow Wilson Elementary is one of the four elementary buildings in the Newton Community School District. Woodrow Wilson Elementary is a Kindergarten through fourth-grade building that enrolls 261 students. Woodrow Wilson Elementary has three sections at each grade level. Demographically, 87.7% of students are Caucasian, 1.5% African American, 4.2% Hispanic, 0.8% Native American, 1.5% Asian, 1.1% English Language Learners, and 4.2% Mutli-Racial. Of these students, 14.9% of them have an Individualized Educational Plan(IEP) (Iowa Department of Education,2022). The average daily attendance is 94.8%, which is higher than the state average of 92.8% (Iowa Department of Education 2022. Woodrow Wilson Elementary has a 42.9% low socioeconomic status. Lastly, Woodrow Wilson Elementary has an overall performance rating of 59.37, which is Commendable.

School Student Performance

Student data is collected using the ISASP (Iowa Statewide Assessment for Student Progress) and reported to the Iowa Department of Education. Woodrow Wilson has an overall performance score of 59.37, which is a Commendable Status. Woodrow Wilson Elementary has an English Language Arts proficiency score of 76.24%, which is higher than the state average of 70.84%. The Mathematics proficiency score for Woodrow Wilson Elementary is 78.22, and the state average has a proficiency score of 64.97. The Conditions of Learning composite score for Woodrow Wilson Elementary is 50.57% with the state average Conditions of Learning Composite score of 49.27% (Iowa Department of Education, 2022).

The Newton Community School District also collects proficiency data for 2nd-4th grade students on NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) for reading and math. The MAP Reading and MAP Math assessment is given three times a year, fall, winter, and spring. In the fall of 2022, 72% of 2nd-grade students were proficient, 74% of 3rd-grade students were proficient, and 75% of 4th-grade students were proficient in MAP Reading. In the winter of 2023, Woodrow Wilson had the following MAP Reading proficiency scores; 80% of 2nd-grade students, 84% of 3rd-grade students, and 79% of fourth-grade. Spring of 2023, students at Woodrow Wilson has MAP reading proficiency scores of; 2nd grade 85%, 3rd grade 75%, and 4th grade 74%. At the end of the 2023 school year, Woodrow Wilson had an overall building proficiency score of 76%.

Math proficiency data is also collected using MAP (Measures of Academic Progress) for students in grades 1st through 4th grade. In the fall of 2022, 1st-grade 75%, 2nd-grade 78%, 3rd-grade 73%, and 83% of 4th-grade students were proficient in MAP Math. In the winter of 2023, Woodrow Wilson had the following MAP Math proficiency scores; 1st grade 68%, 2nd

grade 78%, 3rd-grade 79%, and 83% fourth grade. In the Spring of 2023, students at Woodrow Wilson had MAP Math proficiency scores of; 1st grade 83%, 2nd grade 87%, 3rd grade 80%, and 4th grade 77%. At the end of the 2023 school year, Woodrow Wilson had an overall building proficiency score of 82%.

Parental Involvement

In the Newton Community School District, parents have many ways that they can stay informed about their child's progress and opportunities to be involved in their child's education. The school district uses Infinite Campus to provide access to students' grades, attendance, and communication. All schools in the district have their own Facebook page that is updated regularly as well as a district Facebook page. Parents receive report cards two times a year as well as have the opportunity to attend partner teacher conferences two times a year. Parents can volunteer throughout the school year in a group setting and field trips. Parents are required to fill out background checks if they will be working one on one with students. Each school has a PTA that parents are always welcome to join and attend meetings. Schools are always keeping parents informed through newsletters, flyers, social media outlets, and teacher email communication.

Student Learning Goals

As a building, Woodrow Wilson Elementary participates in state testing throughout the school year. This includes ISASAP (Iowa Statewide Assessment of Student Progress). For the 2022-2023 school year, Woodrow Wilson Elementary's proficiency goal was for students to be greater than the 50th percentile for growth. Woodrow Wilson was successful in making their goal of growth by receiving a 58th percentile in English Language Art and by receiving a 59th

percentile in Mathematics. Students at each grade level have an RIT (Rasch Unit Scale) band scale score that needs to be met when taking the NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress).

Woodrow Wilson uses Standards-Based Grading to assess students on Iowa Core Standards and is reported to parents on report cards. Using a scale of 1-4 a 3 is considered a student being proficient. Each grade level looks at student data during PLC (Professional Learning Community) to create grade-level learning goals specific to their students.

Curriculum

The Newton Community School District has adopted Eureka Math and Amplify CKLA reading. Eureka Math is a hands-on curriculum that focuses on the Common Core standards. “Eureka Math exhibits unparalleled rigor throughout the grades. Students develop conceptual understanding and practice procedural skills and fluency” (Eureka math®)

The school district has adopted Amplify CKLA (Core Knowledge Language Arts) for reading starting in the fall of 2023. Teachers in the district piloted this curriculum during the 2022-2023 school year. Amplify CKLA “is a unique core curriculum for grades PreK–5 ELA that’s grounded in the Science of Reading and combines rich, diverse content knowledge in history, science, literature, and the arts with systematic research-based foundational skills instruction” (Amplify CKLA 2023). The Newton Community School District has adopted the Marzano Framework and Proficiency Scales. The district uses ISASP (Iowa Statewide Assessment for Student Progress), (Northwest Evaluation Association) MAP (Measure of Academic Progress) along with summative and formative assessments that align with the reading and math curriculum.

Professional Development

Professional development for the teachers in the Newton Community School District is provided on the last Monday of every month. Teachers are given different session options to attend in the morning around curriculum programs, technology, and behavior instructional approaches. In the afternoon teachers return to their building to work with their grade-level PLC (Professional Learning Community) team. The focus in the afternoon is on grade level and school-wide data and instruction.

Needs Assessment

Although the Newton Community School District and Woodrow Wilson Elementary have strong curriculums, the school could improve their math fact fluency skills in students. Woodrow Wilson Elementary is currently using Eureka Math for its core math curriculum. Eureka Math is based on the core math standards. In each Eureka lesson, there is some form of fluency practice to start the lesson. The fluency component in each lesson may not always focus on basic math fact fluency, which is why there is a need for basic math fact practice to be built into each classroom every day. “The concept of automaticity is critical for the general success of students in mathematics” (Baker & Cuevas, 2018, p. 13). Studies have shown that a student’s math fact automaticity is a predictor of their performance on general mathematics tests (Stickney et al., 2012).

The Iowa Department of Education (Iowa DOE) math standards include “recommendations for curriculum, instruction, and assessment, well as standards for mathematical content and mathematical practices” (Iowa Department of Education, 2022). The Iowa Core Mathematics is built upon Iowa Core’s Characteristics of Effective Instruction and Common Core State Standards for Mathematics. Under the Domain, Operational and Algebraic

Thinking, basic math fact fluency is built upon starting in Kindergarten. For example, under the Domain, Operational and Algebraic Thinking for Kindergarten, students will be able to “Fluently Add and Subtract within 5” (Iowa Department of Education, 2010, p. 13). In 1st grade, under the Domain, Operational, and Algebraic Thinking, first-grade students will be able to "Add and subtract within 20, demonstrating fluency for addition and subtraction within 10" 1. OA. C (Iowa Department of Education, 2010, p. 17). Finally, under the Domain, Operational, and Algebraic Thinking in 2nd grade, students will “Fluently add and subtract within 20 using mental strategies. [1] By the end of Grade 2, know from memory all sums of two one-digit numbers” 2.OA.B.2 (Iowa Department of Education, 2010, p. 21). Students need to build automaticity and master their math facts starting in kindergarten so that when students start progressing through other math concepts their brains will not have to process two things at once (Baker & Cuevas, 2018).

To enhance basic math fact fluency abilities in students, it is important to incorporate activities and instruction opportunities to help students master their basic math fact fluency skills. This can be done through targeted instruction and an early intervention approach for these foundation math skills. Having quality math fact education and instruction in the classroom is needed for students to be able to be successful in math in the future. Basic math facts are a foundational skill that all students need to master because it affects the student’s progression in mathematics.

Data Analysis

Data Collection

Data at Woodrow Wilson Elementary School is collected through a variety of assessments during the school 2022-2023 school year. The data collected includes yearly data,

historical data, and comparative data. This data included NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) and formative math assessments collected throughout each Eureka math module, and also fact fluency assessment collected at progress report card times.

The first data that was collected contains comparative data from all four elementary buildings in the Newton Community School District (Figure 1). This table looks at grade level percentages of students that made NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) proficiency. The goal is for each grade level to be at or above 80%. The table below also shows the overall building proficiency percentage.

Figure 1: MAP Math 2022-2023 Building/Grade Level Proficient MAP

	AH Fall	EH Fall	TJ Fall	WW Fall	AH Winter	EH Winter	TJ Winter	WW Winter	AH Spring	EH Spring	TJ Spring	WW Spring
1st	72%	49%	67%	75%	68%	71%	72%	68%	71%	71%		83%
2nd	80%	57%	86%	78%	78%	77%	90%	78%	72%	69%	88%	87%
3rd	80%	64%	75%	75%	80%	71%	71%	79%	80%	63%	80%	80%
4th	77%	51%	76%	83%	75%	63%	73%	83%	69%	62%		77%
Building	77%	51%	76%	77%	75%	70%	77%	77%	73%	66%		82%

The second form of comparative data that was collected was from students at Woodrow Wilson Elementary (Figure 2). This table looks at data from each of the first-grade classrooms at

Woodrow Wilson Elementary. The table below shows that two out of the three first-grade classes hit the 80% proficiency goal at the end of the year.

Figure 2: 1st grade MAP MATH 2022-2023

% Proficient of 1st-grade students on MAP			
	Fall	Winter	Spring
Class 1	60% 12/20	47% 9/19	75% 12/16
Class 2	83% 15/18	84% 16/19	84% 16/19
Class 3	83% 15/18	74% 14/19	89% 17/19

The third form of comparative data that was collected was from 2nd-grade students at Woodrow Wilson Elementary (Figure 3). This table looks at data from each of the 2nd-grade classrooms at Woodrow Wilson Elementary. The table below shows that all three of the 2nd-grade classes at Woodrow Wilson Elementary made the 80% proficiency goal.

Figure 3: 2nd grade MAP MATH 2022-2023

% Proficient of 2nd-grade students on MAP			
	Fall	Winter	Spring
Class 1	81% 13/16	75% 12/16	88% 14/16
Class 2	87% 13/15	80% 12/15	80% 12/15
Class 3	66% 10/15	80% 12/15	93 14/15

The last set of data comes from the school's progress reports. The schools assess students on the standards throughout the year. The goal is for students to be proficient (scoring a 3) on each of the standards during each of the two reporting periods, which are January and May. The standard that was focused on for this data was 1. OA. C "Add and subtract within 20, demonstrating fluency for addition and subtraction within 10" (Iowa Department of Education, 2010, p. 17) and 2. OA B.2 "Fluently add and subtract within 20 using mental strategies.[1] By the end of Grade 2, know from memory all sums of two one-digit numbers"2.OA.B.2 (Iowa Department of Education, 2010, p. 21). The fluency standard for first and second grade is considered an essential learning standard. The table below is broken into each grade level for the fluency standard for addition and subtraction and the number of students proficient and not proficient each semester (Figures 4 and 5).

Figure 4: 1st Grade 1. OA. C Progress Report Data

	1st Semester Proficient	1st Semester Not Proficient	2nd Semester Proficient	2nd Semester Not Proficient
Addition	20/56 37%	36/56 64%	30/56 53%	26/56 46%
Subtraction	15/56 26%	41/56 73%	20/56 37%	36/56 64%

Figure 5: 2nd Grade 2. OA. B. Progress Report Data

	1st Semester Proficient	1st Semester Not Proficient	2nd Semester Proficient	2nd Semester Not Proficient
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Addition	15/46 32%	31/46 67%	25/46 54%	21/46 45%
Subtraction	10/46 21%	36/46 78%	15/46 57%	31/46 67%

When you look at the data for first and second grade the majority of the students in both grades are not proficient with their addition and subtraction basic math facts both semesters. Although there was some growth from the first to the second semester, the 80 % proficiency goal for the grade level was not achieved in either first or second grade.

School Strengths

While looking at Figure 1, a strength that can be noted is that the Woodrow Wilson Elementary MAP data is pretty comparable to Aurora Heights Elementary and Thomas Jefferson Elementary. Woodrow Wilson Elementary's MAP data surpassed Emerson Hough's MAP data. Another strength when looking at Figure 1 was that first through third grade reached the 80% proficiency level, while fourth grade was close to reaching the 80% proficiency goal. Students at Woodrow Wilson Elementary have developed efficient strategies to help solve math problems. The Eureka math curriculum that teachers at Woodrow Wilson utilize, teaches the standards and prepares students for when they take assessments such as NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress and ISASP (Iowa Statewide Assessment for Student Progress).

School Challenges

The data shows challenges throughout Woodrow Wilson Elementary in the first and second grades. Overall it can be noted that the basic math fact fluency of many students in first and second grade is not proficient. This can be seen in Figures 4 and 5. While there is growth

that is being made from the first to second semester there is still room for improvement. When looking at Figures 4 and 5, it is evident that the majority of the students struggle with their subtraction facts over their addition facts. From the data results in Figures 4 and 5, it can be determined Woodrow Wilson Elementary needs to have a bigger focus on their basic math fact fluency to help increase proficiency scores in students. As stated above, basic math fact fluency automaticity is a foundational skill that needs to be mastered for students to be successful with their math progression. (Baker & Cuevas, 2018). It is evident that Woodrow Wilson Elementary students need additional targeted instruction and practice with their basic math facts. It will be necessary for all teachers to find a time in their day outside the Eureka Math curriculum instruction for students to have targeted instruction and practice with their basic math facts. It may also be necessary to increase the frequency of data collection, and documentation, and find other basic math fact fluency assessments to use to check students' basic math facts to ensure students are progressing throughout the school year.

Action Plan

After reviewing the relevant and necessary literature on basic math fact fluency, multiple themes were identified that support or implementation of this school improvement plan to help increase students' basic math fact proficiency. These themes include targeted Tier 2 instruction and computer-based and educational games. The proposed school improvement plan seeks to help students at Woodrow Wilson Elementary to become automatic and fluent with their math facts to help increase proficiency levels. Through the implementation of targeted Tier 2 WIN (What I Need) groups using the book *Mastering the Basic Math Facts in Addition and Subtraction*, the use of computer-based fluency games, and using student data collected weekly to ensure that this school improvement plan is demonstrating effectiveness with students.

For Woodrow Wilson Elementary to implement Tier 2 interventions with students to improve their fact fluency, action steps need to take place. To begin, the staff at Woodrow Wilson Elementary needs to have a strong understanding of MTSS, especially what Tier 2 Interventions should look like. Research studies have shown that Tier 2 interventions feature evidence-based, small-group instruction, and frequent monitoring of student progress (Dennis, 2015).

All teachers implementing Tier 2 interventions should implement and teach with fidelity to help increase student proficiency with their basic math facts. In several research studies presented in the review of literature, the time frame for most Tier 2 interventions should occur ranges from 20-30 minutes, 3-4 days a week. Each grade level will have a designated Tier 2 intervention time where students will be grouped according to their basic math fact fluency levels. This intervention time will occur outside of the regular math block. Within the intervention time, the teacher will teach strategies from the *Mastering the Basic Math Facts in Addition and Subtraction* book and regularly assess the progress of students in the intervention group. Student progress will be shared with the classroom teacher. *Mastering the Basic Math Facts in Addition and Subtraction* book is the resource that teachers will use when instructing students in their groups. *Mastering the Basic Math Facts in Addition and Subtraction* resource provides teachers with clear strategies, teaching tips, and classroom activities to use with students to help master addition and subtraction for all students while also strengthening their understanding of numbers, patterns, and properties. *Mastering the Basic Math Facts in Addition and Subtraction* has extensive online resources, including customizable activities, templates, recording sheets, and teacher tools that help simplify planning and preparation.

Deciding the students that need to be in Tier 2 interventions will be based on students' needs and data. Educational and computer-based math practice will also be a crucial part of this action plan. The effectiveness of the intervention will be assessed formally each week using an agreed-upon fact fluency assessment. Students will also be formally assessed at each report card reporting period. This data will tell teachers if the Tier 2 interventions are effective in helping students improve and show growth in their basic math fact fluency. Grade-level teams will meet to look at data to decide which students should exit the Tier 2 interventions. In addition, decisions will also be made about which students enter Tier 2 interventions based on their basic math fact fluency scores. To exit and enter students, the team will use students' scores on their basic math fact fluency assessment in combination with teacher classroom observations.

Computer-based and educational games will also be implemented in the classroom. Research suggests that when teachers implement computer-based and educational games into their classrooms it can have a positive effect on students' math fact fluency when it is used as a supplement to strong core instruction (Hawkins et al., 2017). Teachers will have a designated time in their day outside their math block to have students participate in computer-based and educational math games. One computer-based program that teachers can implement in their classrooms is Xtra Math. Xtra Math is an online fact fluency program that helps students develop quick recall and automaticity with their basic math facts. Xtra math is adaptive and based on student progress. Students will complete a 10-minute session of Xtra math each day.

Educational games will also be implemented in the classroom. Games are a way to help students develop, practice, and support strategy development and increase motivation in their basic math fact fluency proficiency (Bay-Williams & Kling, 2014). Teachers will work together

to find games that they can use with their students. Teachers will have the ability to change and adjust math based on the needs of their students.

Implementation of School Improvement Plan

The subsequent hearings will address and outline how Tier 2 interventions will be implemented and also how computer-based and educational games will be addressed in classrooms. The success and failures of the programs will be monitored and tracked to see their effectiveness and if student proficiency scores are increasing.

Steps to Solve the Problem

The following steps will describe the implementation of Tier 2 interventions at each grade level, the effectiveness of computer-based and educational games in the classroom, and student data analysis. Teachers will participate in training around Tier 2 training and implementation days before the school year starts. Once the resource book *Mastering the Basic Math Facts in Addition and Subtraction* has been purchased by the administration for first and 2nd-grade teachers, the staff will participate in training over the book before the start of the school year. These steps will ensure that all teachers have clear and consistent expectations for what to expect throughout the school year to help solve the problem with basic math fact fluency in grade first and second grade at Woodrow Wilson Elementary.

1. The administration will approve and purchase the *Mastering the Basic Math Facts in Addition and Subtraction* resource book by July 1, 2023.
2. A Google Form will be sent out to first and second-grade teachers for input on which days would work best for training on Tier 2 interventions and *Mastering the Basic Math Facts in Addition and Subtraction* resource book.

3. Instructional coaches and the principal will schedule in-person training sessions for staff before the start of the school year.
4. First and second-grade teachers will participate in training. Tier 2 intervention training will include what it will look like at each grade level and how to implement it with fidelity. Teachers will also receive training from the book *Mastering the Basic Math Facts in Addition and Subtraction* resource book.
5. At the beginning of the school year, grade-level teachers will administer a basic math fact fluency assessment and data will be documented on an Excel spreadsheet.
6. The teacher will implement Tier 2 intervention using the book *Mastering the Basic Math Facts in Addition and Subtraction* four days a week for 30 minutes.
7. Teachers will implement computer-based and educational math games into their classrooms daily outside of the core math instruction block.
8. Observations
 - a. The instructional coach will come and observe classrooms randomly during Tier 2 intervention time. This will ensure that grade levels are implementing Tier 2 interventions with consistency and fidelity. The teacher will also have the opportunity to ask questions or address concerns.
 - b. This will be completed once a month
9. Staff will complete professional development throughout the school year that will focus on questions they have.
10. Students will complete weekly and monthly fact fluency assessments
11. Teachers will enter student data into the Excel spreadsheet to track growth for the school year to make sure what is being implemented is effective.

12. First-grade teachers will assess students on math standard 1.OA.C for report cards in January and May. The goal of 80% of students is to be proficient.

13. Second-grade teachers will assess students on math standard 2.OA.B for report cards in January and May. The goal of 80% of students is to be proficient.

14. Classroom teachers will also conduct NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) in fall, winter, and spring.

15. Teachers and staff will analyze data from the 2023-2024 school year. Data discussions will take place to analyze student growth with their basic math fact fluency, and challenges that occurred during the school year, and to compare data historically. The data for the 2023-2024 school year will be added to the data shown in Figures 2-5.

16. Teachers and the Instructional Coach will meet and create an implementation plan for the 2024-2025 school year to ensure student growth is continued in basic math fact fluency.

Even though these steps may be adjusted as the year goes on, this is a plan to start solving the problem. All of these steps will allow that first and second-grade teacher to be on the same page about where they are in terms of proficiency in students and where they want to be in terms of student success and proficiency scores on math standards 1.OA.C and 2.OA.B. The steps in this school improvement plan include Tier 2 intervention training, curriculum training, professional development, and student data analysis. However, other areas such as creating a timeline, offering resources, assigning responsibilities, and monitoring student data and the plan also need to be in place for this school improvement plan to take place and for it to be successful.

Timeline

For this school improvement plan to be effective and successful, teachers and administrations need to follow a timeline of implementation. The first thing that needs to happen is for the administration will need to approve the *Mastering the Basic Math Facts in Addition and Subtraction* resource book for first and second-grade teachers. Once they have approved the resource book, first and second-grade teachers will be sent a Google Form with dates and times of possible training sessions centered around Tier 2 interventions and *Mastering the Basic Math Facts in Addition and Subtraction* resource book with the Instructional Coach. Training sessions will take place before the school year starting in August of 2023. In the first week of September 2023, all first and second-grade teachers will administer a basic math fact fluency assessment and data will be entered into a Google Excel spreadsheet so that Tier 2 intervention groups can be created.

Teachers will be implementing targeted Tier 2 interventions using the resource book *Mastering the Basic Math Facts in Addition and Subtraction* four times a week for 30 minutes. While first and second-grade teachers are implementing targeted Tier 2 interventions, the Instructional Coach will be observing staff to make sure proper implementation of Tier 2 intervention is being demonstrated. The staff will participate in professional development throughout the school year as needed focused on Tier 2 interventions and the resource book *Mastering the Basic Math Facts in Addition and Subtraction*. The teacher implementing the Tier 2 intervention, will collect weekly fact fluency data with their intervention group. Classroom teachers will collect monthly fact fluency data. First-grade teachers will assess students on math state math standard 1.OA.C for the school's report cards in January and May. Second-grade teachers will assess students on math state standard 2.OA.B for the school's report cards in

January and May. Classroom teachers will also conduct NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) in fall, winter, and spring. Lastly, data will be collected throughout the school year and will be used to compare historically and with the growth throughout the school year.

Staff Responsibilities

Administration and Instructional Coach

The school's principal and instructional coach will be responsible for purchasing and accepting the resource book *Mastering the Basic Math Facts in Addition and Subtraction*. They will need to meet before July 1, 2023, to review and approve the school improvement plan that will be implemented during the 2023-2024 school year. Once it has been approved and accepted, they will schedule training sessions for the staff. The Instructional Coach will be responsible for providing the training session at the beginning of the year as well as professional development as needed. The Instructional Coach will also be responsible for observing classroom teachers once a month to check the fidelity of the implementation of Tier 2 interventions. Administrators and the Instructional Coach will collect data on the first and second-grade students to compare history and growth during the school year.

1st and 2nd Grade Teachers

First and second-grade teachers will be responsible for attending the training sessions on Tier 2 interventions and the resource book *Mastering the Basic Math Facts in Addition and Subtraction*. Teachers will be responsible for implementing Tier 2 interventions four times a week for 30 minutes. Teachers will also be responsible for implementing computer-based and educational math games daily outside the core math instruction block. Teachers will administer

fact fluency assessments weekly and monthly and the NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) in the fall, winter, and spring. Teachers will administer grade-level assessments for the state math standards. This will be done during the two grading periods (January and May) and will be reported to parents.

Monitoring

The effectiveness and success of the school improvement plan will be monitored through observations and fact fluency data collected by the first and second-grade teachers. This will allow the staff to ensure that what they are doing is working and that students are making progress. The effectiveness of Tier 2 interventions and the resource book *Mastering the Basic Math Facts in Addition and Subtraction* will be monitored through grade-level data. This data will be collected from fact fluency assessments and the NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress) and progress reports and this data will be added to Figures 2-5. The data that is collected will be compared historically and within the school year. If the implementation of the school improvement plan is successful, it will be assumed that there will be an increase in student proficiency scores with basic math facts and on the NWEA (Northwest Evaluation Association) MAP (Measure of Academic Progress), and state math standards. Building staff will be looking for an increase in proficiency scores compared to previous years. At the end of the school year, teachers will be asked to reflect on the school improvement plan so that changes and modifications can be made for the following school year if needed.

Barriers and Challenges

A common barrier for teachers and building staff is the change in what they are used to doing, learning new curriculum, and time. First and second-grade teachers, building administration, and the Instructional Coach will need to find time to meet before the start of the school year so that everyone fully understands and is ready to implement the Tier 2 interventions, use the *Mastering the Basic Math Facts in Addition and Subtraction* resource book, and implement computer-based and educational games daily. Another challenge that the first and second-grade teachers may face is having the Instructional Coach observe once a month during Tier 2 intervention time. This may cause teachers stress as not all teachers feel comfortable having people in their classrooms doing observations. Teachers need to be reminded that these observations are not meant to be an evaluation, but more of a way to assess the effectiveness of the school improvement plan to ensure student success. Factors that are out of teachers' and building staff's control may also be a barrier and challenge. For example; attendance of students, behaviors, inconsistency in teaching, and not implementing the school improvement plan with fidelity. Although all of these barriers and challenges may arise, the first and second-grade teacher and building staff will work together to find solutions as things come up.

Conclusion

In conclusion, this school improvement plan presented an issue that needed to be addressed at Woodrow Wilson Elementary. Through the support of all first and second-grade teachers, building administration, and the instructional coach, an increase in basic math fact fluency proficiency scores in students can be successful with a consistent plan among team members. Basic math fact fluency is a foundational skill that all students need to develop to

continue their math progression. Students who are not proficient and struggle with more advanced math skills and concepts lack the basic math fact fluency that is needed to solve more complex problems. Quality core math instruction for all students along with basic math fact fluency instruction and practice is needed for all students to be successful and thrive in the future

As we continue to move forward at Woodrow Wilson Elementary, we need to keep the needs of the students and data in mind if we want to make a change and help the students at Woodrow Wilson Elementary be successful. Constant and consistent assessment, reflection over what is working and what is not working, and the data will assure student achievement with their basic math fact fluency over time.

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