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## Diffusion of a Math Intervention Program within a Secondary Setting: A Mixed Methods Study

Stuart Lenz

University of Nebraska-Lincoln, stulenz@hotmail.com

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Diffusion of a Math Intervention Program within a Secondary Setting:

A Mixed Methods Study

by

Stuart N. Lenz

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Philosophy

Major: Educational Studies

Under the Supervision of Professor Marilyn Grady

Lincoln, Nebraska

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# Diffusion of a Math Intervention Program within a Secondary Setting:

A Mixed Methods Study

Stuart N. Lenz, Ph.D.

University of Nebraska, 2015

Adviser: Marilyn Grady

The purpose of this convergent mixed methods study was to understand the stages of concern and levels of use for teachers as they integrate a new math intervention program. Teachers within three high schools in a large Mid-western school district all implemented the program at the same time, and were used as the sample during the three-year study. The study searched to discover (a) what or who influences the teachers in their use of the program, (b) how the teachers change in their levels of use and stages of concern, and (c) if the success of the program changes as a result of the change in use and concern. Percentages of eligible students and teachers using the math intervention program were collected to determine the use of the program.

Quantitatively, passing rates of students within math intervention, as well as percentages of eligible student and teacher use, were collected from Spring 2011 until Spring 2014 to assess the success of the program. Passing rates and percentages of student and teacher use all showed an increase over time, indicating an increase in the success of the program. In addition, data was collected via a voluntary questionnaire (N = 49) during fall 2012 and 2013, which was adapted from the *Stages of Concern Questionnaire* that was created by George, Hall, and Stiegelbauer (2006). A paired sample t-test indicated no significant change in stages of concern for participants who completed the questionnaire both years (n = 8). The one-way ANOVA revealed significant differences between schools within personal year 2 (p = 0.015), management

year 1 ( $p = 0.044$ ), consequence year 2 ( $p = 0.002$ ), and collaboration year 2 ( $p = 0.000$ ). Schools B and C were never found to be significantly different from each other in their responses. In addition, School A was found to be significantly different in 4 out of the 7 stages of concern during year 2.

Qualitatively, voluntary semi-structured interviews regarding concerns, use and feelings towards the program were conducted with eligible math teachers each semester ( $N = 27$ ). Factors that led to teacher use of the program were knowledge, experience, comfort, communication, direct influence, and seeing results.

Both the quantitative and qualitative results were then converged to create a theory on the levels of use and stages of concern similar to the Concerns Based Adoption Model (CBAM), created by Gene Hall (2006) and colleagues, as well as themes of influential factors. Levels of use that resulted from the study were Non-use/Ineligible, Exploratory, Over-use, Comfortable, and Customized. Stages of concerns that resulted from the study were Teacher Impact and Student Impact.

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## **CHAPTER 1**

### **Introduction**

Schools and teachers are consistently being asked, and mandated, to change their practices and curriculum by trying new programs or resources in order to increase student learning and performance. Creating change is a process, requiring time as well as being highly complex, multivariate, and dynamic (Hall & Hord, 2011). Change involves so many different people and variables, that it can be understood and perhaps led, but it cannot be controlled or managed (Fullan, 2001). One of the biggest problems facing education today is the large number of change efforts that are being placed upon schools by external sources (Hall & Hord, 2011). Instead of the schools being able to plan and implement their own change initiatives, over the last several decades state and federal policymakers, courts, and various experts have been setting the change agenda (Hall & Hord, 2011). But, the success of a change effort depends less on whether it was an internal vs. external decision than it does on the culture of the organization being open and ready to consider what is being done and looking for new ways to improve upon it (Hall & Hord, 2011). The purpose of this study was to determine how teachers responded to the change of a new math intervention program, examining how their use and concerns changed over time and determining what the influencing factors were for their continual use.

### **Research Problem**

With the increases in high stakes testing and No Child Left Behind (NCLB), the need for high quality and effective math education has never been more important. Ever since formal policy and research became a prominent part of finding a solution – from 1965 onward – the United States has declined from being number one in the world in

educational attainment to about 24<sup>th</sup> despite having tripled its per-pupil expenditures in real dollars over the same time period (Goldin & Katz, 2008; Cohen & Moffitt, 2009). According to the U.S. Department of Education, schools that receive Title 1 money and either a) fall within the lowest 5% of performance based on state assessments, or b) secondary schools that have graduation rates below 60% for a number of years, are now being labeled as persistently low achieving schools, or PLAS. If these schools do not improve their academic performance and/or graduation rate, then they must implement a turnaround model. These turnaround models can consist of replacing the principal of the school, screening and rehiring no more than 50% of the staff, or even a complete staff replacement. This has created greater pressure for schools and administrators to make sure that students are achieving at the highest possible levels, which means providing additional resources and support when needed. Thus, discovering what influences and aids teachers in their acceptance of new programs will help future leaders within education make those changes more quickly and effectively for everyone, and thus avoid future consequences.

Math intervention programs are one of the ways that schools and administrators can provide additional resources and support to students that are in need of help when dealing with mathematics. This can come from the regular education teacher, or from a trained and/or math educated interventionist. Math intervention programs have been used for years in the elementary and middle levels of education, but have not been frequently utilized within the secondary levels. Part of the difficulties of providing a math intervention program at the secondary level is due to students having so many required courses that there is often no additional time to schedule an extra class or help within the normal school day. Students at the secondary level often work at jobs and are involved in

extracurricular activities that require additional demands on their time outside of the normal school day. This causes conflicts for students who should be able to come in before or after school for additional support from their teachers. Also, students are not with the same teacher all day, as they would be at the elementary levels, and thus cannot adjust their daily activities to try to work in extra help during the day. In order to work with students at the secondary level, students will either need to have a set time scheduled within their regular day or will have to be pulled out of other courses in order to receive additional help. Neither one of these options are easy to accomplish or convenient.

The math intervention program that was the subject of this study is a pullout program. This means that the regular math teachers recommend students within their classes that they feel are in need of additional math intervention support. Then, a separate math educated and trained interventionist pulls that student from other classes during the school day to work individually or in a small group setting. The interventionist could meet with the student for one session to just re-teach a single concept or check for understanding; or, the student could work repeatedly over an extended period of time in order to continually provide support and instruction. Reasons for students to be placed in math intervention could vary from attendance issues, learning disabilities, gaps in understanding and knowledge, or retention issues. This program focuses specifically on increasing the passing rates within courses required for graduation with the intention of increasing graduation rates. The program that is the subject of the study works with students strictly in Algebra 1 or Geometry semester 1 since these are courses required for graduation in the setting under investigation.

The three high schools in the study are located in the Midwest and have all been identified as PLAS, with math assessment scores being one of the reasons for this

classification. In response, the district decided to provide each school with a math intervention program in order to help remedy this issue. The School District applied for a grant and put a plan into effect that would increase student performance with a goal of increasing graduation rates within the three-targeted schools. On January 2011, as part of this plan, a math interventionist and math coach were hired and placed at each school to help increase the passing rates.

During the fall semester of the 2010-2011 school year, just before the math intervention program was put into place, the failure rates from each school for the courses that would be eligible for math intervention support were;

*Table 1.1 – 2010-2011 Failure Rates*

<b>Fall 2010</b>	School A	School B	School C
Alg Block S1	31.4%	38.5%	18.5%
Alg Ext 2 S1	N/A	N/A	37.2%
Alg S1	24.9%	29.8%	26.1%
Alg S2 (off)	31.3%	56.8%	55.3%
Geo Ext 1 S1	13.1%	13.0%	16.9%
Geo Ext 1 S2	16.2%	10.6%	30.9%
Geo S1	10.5%	15.9%	15.0%

Every course for each school had a failure rate of 10% or higher. This means that at the minimum, 1 out of every 10 students taking Algebra 1 or Geometry semester 1 were failing and thus not meeting vital graduation requirements. Failure rates were the highest in the Algebra semester 2 off courses, which means that students were taking the second semester of Algebra during the first semester either due to previously failing or transferring to the school at that level. The majority of these students have already failed a math class and missed out on meeting graduation requirements. Now 1 out of 3, or even 1 out of 2, students retaking Algebra semester 2 are failing the course a second time. Once again these students are not meeting a graduation requirement. Students at this point begin losing hope in themselves and their abilities in achieving success in math.

They may get “stuck in a rut” that they cannot escape. The hope is that the math intervention program can provide these students with the support and confidence they need to “get out of their rut” and back on track for graduation.

At the time of the study I worked as a high school math interventionist. My job was to provide additional support to struggling students with Algebra and Geometry, as well as to inform teachers of the importance of the math intervention program and help them identify which students would be best suited for it. In addition to the math interventionist, each school received a math coach whose job was to aid and support the math teachers in their instructional strategies and classroom management. Other people at each building who are part of, or are effected by, the program are the principal, math department chair, general math teachers and non-math teachers, as well as co-teachers.

Some teachers may view recommending a student for math intervention as a sign that they are admitting they cannot help their own student and are thus admitting failure as a teacher. Hopefully teachers will view math intervention as a collaborative effort between the teacher and the interventionist that allows for much-needed additional individualized support that some of their students need and the teachers know they do not have the time to provide themselves. So, how do we get every teacher to view math intervention as a supportive and valuable program that is an additional resource to support the students most in need, and not as an admission of failure?

New programs, such as math intervention, are never easy to implement within an already structured and established culture such as a school. People are reluctant when it comes to change, especially when it is mandated. As Michael Fullan (2001) stated; you cannot bulldoze change. Often we want to wait for others to “test things” before we commit to a new idea or concept; while others love trying new things and cherish the

opportunity to “be the first”. In addition, most people do not want to be told that they need to change, but instead would prefer to make changes as they feel comfortable and ready. But, when changes and results need to be demonstrated immediately, waiting for everyone to be comfortable with the change may risk delaying results until it is too late. This study contributes to a greater understanding of new program implementation and the change process. The findings of the study may discover what influences and aids teachers in their acceptance of new programs.

**Audience**

The findings of the study may help educational leaders and teachers who are faced with implementing and using new programs. Leaders have an interest in understanding how teachers’ concerns and use of newly implemented programs change over time. Teachers are responsible for implementation of new programs. These individuals have an interest in knowing what will help them use the programs effectively.

**Purpose Statement**

The purpose of this convergent mixed methods study was to understand the stages of concern and levels of use for teachers as they integrate a new math intervention program. Teacher perceptions of the diffusion of a newly integrated math intervention program within three high schools in a large Midwestern school district during a three-year period were examined. The questions included (a) what or who influences teachers in their use of the program, (b) how teachers change in their concerns and use of the program, and (c) how the success of the program changes as a result of the change in concerns and use. An evaluation design was used in which teacher interviews and questionnaires were merged within a convergent design. The quantitative data was collected through percentages of eligible students and teachers using the math

intervention program, passing rates of students within math intervention, and a voluntary questionnaire. Quantitative data then plotted and analyzed using descriptive statistics. Questionnaire results were analyzed using a paired sample t-test and a one-way ANOVA in order to determine if the concerns of teachers varied between years and/or schools. Voluntary teacher interviews were conducted each semester during the three-year study in order to identify levels of use and stages of concerns for the teachers using the math intervention program. Based on teacher responses in the interviews, codes, themes and categories were identified and levels of use and stages of concerns, as well as themes of influential factors were reported. The results of the questionnaires and interviews were compared in order to identify similarities and differences of teacher concerns within a side-by-side joint display. A joint display is “a figure or table in which the researcher arrays both quantitative and qualitative data so that the two sources of data can be directly compared. In effect, the display merges the two forms of data” (Creswell & Plano Clark, 2011, p. 412). Quantitative and qualitative data was collected in order to gain a more complete understanding of the program and teachers’ perspectives in order to merge the sets and develop a theory on levels of teacher use and stages of concern when using a newly implemented program.

### **Research Questions**

Qualitative: How did math teachers’ knowledge, concerns, and use of the math intervention program change over time?

- Why did teachers use the math intervention program?

Quantitative: What were the most influential factors that contributed to the use of the math intervention program?



- What percentages of eligible teachers and students were using the math intervention program?
- How did the percentages of eligible teachers and students using the math intervention program change during the three-year period?
- How did teachers' concerns profiles changes over time?
- How did the concern profiles compare among the three schools?
- Did the diffusion of the math intervention program follow the S-shaped diffusion curve proposed by Everett Rogers?

Mixed Methods: In what ways did the interview and questionnaire results agree or disagree?

- What levels of use did teachers progress through?
- What stages of concern did teachers progress through?

### **Definition of Terms**

*Alg Block SI* – Algebra Block Semester 1. This course taught the same content as a Algebra course, but as a block class students had two periods of math instead of one. This was to allow struggling students additional time to learn and practice math concepts.

*Alg Ext 2 SI* – Algebra Extended 2 Semester 1. Algebra extended was a course that took the math concepts that were traditionally taught within one year and divided it into two years. This provided struggling students with fewer concepts per semester to learn, allowing for a slower pace of instruction and learning. Extended 2 means that it was the second year, and semester 1 means it was the first half of the content for that year.

*Alg SI* – Algebra Semester 1. This was a traditional Algebra class, which taught the concepts from the first half of the course.

*Alg S2 (off)* – Algebra Semester 2 Off. This course taught the concepts from the second half of Algebra, but during the first semester.

*Geo Ext 1 S1* – Geometry Extended 1 Semester 1. Geometry extended was a course that took the math concepts that were traditionally taught within one year and divided it into two years. This provided struggling students with fewer concepts per semester to learn, allowing for a slower pace of instruction and learning. Extended 1 means it was the first year, and semester 1 means it was the first half of the content for that year.

*Geo Ext 1 S2* – Geometry Extended 1 Semester 2. Geometry extended was a course that took the math concepts that were traditionally taught within one year and divided it into two years. This provided struggling students with fewer concepts per semester to learn, allowing for a slower pace of instruction and learning. Extended 1 means it was the first year, and semester 2 means it was the second half of the content for that year.

*Geo S1* – Geometry Semester 1. This was a traditional Geometry class, which taught the concepts from the first half of the course.

*Eligible Students* – Students who were enrolled in Algebra I or first semester Geometry.

*Eligible Teachers* – Teachers who were teaching Algebra I or first semester Geometry.

*Math Intervention* – Math intervention was defined as individual or small group math instruction from a designated math interventionist. Students who were in danger of, or were, failing math were recommended for math intervention by their regular math teacher. Meetings with a student varied depending on the needs of the student.

*Change or Adoption Agents* – Change or adoption agents were any person, thing, or factor that influenced teachers to further use the math intervention program.

Diffusion of Innovations Categories of Users (Rogers, 2003):

Everett Rogers is a Distinguished Professor in the Department of Communication and Journalism at the University of New Mexico, where he teaches and conducts research on the diffusion of innovations (Rogers, 2003). His research includes such things as prevention of drunk driving, sustainability of public health, and bridging the digital divide (Rogers, 2003). His introduction to diffusion of innovations occurred in 1954 with his interest in diffusion of agricultural innovations in Iowa (Rogers, 2003). Through his review of literature and personal research he developed a hypothesis that the diffusion of innovations was a universal process of social change (Rogers, 2003). His argument for a generalized diffusion model led to the first edition of *Diffusion of Innovations*, which was published in 1962 and is currently in the fifth revision (Rogers, 2003). Rogers has conducted diffusion research in multiple countries, including the United States, Europe, Latin America, Africa and Asia (Rogers, 2003). Through his research studies he developed an S-Shaped diffusion curve, as well as adopter categories, which are listed below (Rogers, 2003).

*Innovator* – Innovators are the gatekeepers in the flow of new ideas into a social system. The innovator imports the innovation from outside the system, allowing others to see and witness the innovation for the first time. Some of the characteristics that Rogers discussed are; venturesomeness, outside of a local circle of peer networks, more social relationships and clique friendships with other innovators, control of financial resources, able to understand and apply complex technical knowledge, and able to cope with a high degree of uncertainty. Innovators are approximately the first 2.5% of innovation users.

*Early Adopters* – Early adopters have the highest degree of respect and opinion leadership within most social systems. Early adopters are an integrated part of the social

system. Many of the members of the system view early adopters as the person who must clear the innovation before adopting it as a new idea. Change agents often seek out early adopters as a “local missionary” who can aid in speeding up the diffusion process. By serving as a role model for others in the system, once an early adopter accepts an innovation it usually triggers a critical mass of additional adopters. Early adopters are considered the individuals that put their “stamp of approval” on an innovation by adopting it. This category of users composes approximately 13.5% of users.

*Early Majority* – Early majority users are deliberate. They may take some time deliberating about a new innovation before completely adopting it. Still, the early majority does accept an innovation before the average member of the system. Early majority users frequently interact with peers, but seldom hold positions of opinion leadership. Rogers provided a quote that best describes the thinking of the early majority; “Be not the first by which the new is tried, nor the last to lay the old aside” (p. 284). They are deliberately willing to adopt an innovation, but very seldom the leaders of it. Early majority users make up approximately one-third of the system, or about 34% of users.

*Late Majority* – Late majority users do not accept an innovation until most of the others within the social system have already adopted it. Peer pressure and economic necessities usually push late majority users into adoption of an innovation. Late majority users must have most of the uncertainty removed before they are willing to and feel safe to adopt an innovation. These users are usually more skeptical and cautious. This category of users also makes up about one-third of the system, or about 34%.

*Laggards* – Laggards are extremely cautious in their adoption process. Often laggards must be certain that the new innovation will not fail before they will adopt it. They are

the last in the social system to adopt an innovation, usually due to their traditional values and high level of suspicion towards the innovation and the change agents. Most laggards make decisions based on what has been done in the past. Many are often isolated from the social system and tend to socialize with other laggards. Laggards compose approximately the last 16% of users to adopt an innovation.

CBAM Levels of Use (LoU) (Hall & Hord, 2011):

Gene Hall works at the University of Nevada, Las Vegas, and has been a full professor at four universities (Hall & Hord, 2011). He is internationally recognized for his focus on developing new understandings regarding the change process in organizational settings (Hall & Hord, 2011). Shirley Hord works at the Southwest Educational Development Laboratory (Hall & Hord, 2011). Her research includes school-based professional development, school change and improvement, and professional learning communities (Hall & Hord, 2011). She serves as an educational consultant in countries such as Asia, Europe, Australia, and Africa (Hall & Hord, 2011). The Concerns Based Adoption Model (CBAM) and its diagnostic dimensions were first developed in the 1970s by the Research and Development Center for Teacher Education at the University of Texas (George, Hall, & Stiegelbauer, 2006). Today, CBAM is used to measure the implementation of a new practice or innovation in a school setting (George, Hall, & Stiegelbauer, 2006). Within the model there are three parts, (a) Stages of Concern, (b) Levels of Use, and (c) Innovation Configurations (George, Hall, & Stiegelbauer, 2006). The levels of use are listed below.

*Nonuse* – Nonuse level is a state in which the user has little or no knowledge of the innovation, no involvement with the innovation, and is doing nothing toward becoming involved (p. 94).

*Orientation* – Orientation level is a state in which the user has recently acquired or is acquiring information about the innovation and/or has recently explored or is exploring its value orientation and its demands upon user and user system (p. 94).

*Preparation* – Preparation level is a state in which the user is preparing for the first use of the innovation (p. 94).

*Mechanical Use* – Mechanical Use level is a state in which the user focuses most effort on the short-term, day-to-day use of the innovation with little time for reflection.

Changes in use are made more to meet user needs than client needs. The user is primarily engaged in a stepwise attempt to master the tasks required to use the innovation, often resulting in disjointed and superficial use (p. 94).

*Routine* – Routine level is a state in which the use of the innovation is stabilized. Few if any changes are being made in ongoing use. Little preparation or thought is being given to improving innovation use or its consequences (p. 94).

*Refinement* – Refinement level is a state in which the user varies the use of the innovation to increase impact on clients within immediate sphere of influence. Variations are based on knowledge of both short- and long-term consequences for clients (p. 94).

*Integration* – Integration level is a state in which the user is combining own efforts to use the innovation with related activities of colleagues to achieve a collective impact on clients within the common sphere of influence (p. 94).

*Renewal* – Renewal level is a state in which the user re-evaluates the quality of the innovation, seeks major modifications of or alternatives to present innovation to achieve increased impact on clients, examines new developments in the field, and explores new goals for self and the system (p. 94).

## **Ethical Issues**

The most prevalent ethical issue regarding this study is that I, the researcher, am also the math interventionist at one of the schools studied. For convenience and consistency, I conducted all the interviews at each location. Since I did not have a personal or working relationship with the teachers at the schools I did not work at, there should not have been any major concerns about biased responses or participation at those locations.

When interviewing subjects from the school I worked at, I needed to consider that some of their responses and participation might have been biased due to my personal and working relationship with them. I tried to alleviate this, as much as possible, by assuring them that the information gathered for the study was strictly for research and would be reported as aggregated findings of the study. The questions in the interviews were worded as direct responses to the math intervention program.

In addition to the working relationships that I had from being one of the math interventionists, I also had personal experiences and biases toward the math intervention program. I was careful not to allow my past knowledge and experiences influence the data I focused on and collected for the study. I know I must have an open mind to the results, even if they conflicted with my personal beliefs and biases towards the program.

Another ethical concern was anonymity and confidentiality. By removing all teacher, student, and school names from the interview transcriptions and data, teachers were not identified nor were the names of the schools involved.

I received approval from the University of Nebraska – Lincoln’s Institutional Review Board, as well as the School District’s Institutional Review Board. Informed consent forms, found in Appendix A and B, were signed by each participant prior to beginning the interview and questionnaire process.

## **CHAPTER 2**

### **Literature Review**

The purpose of this study was to examine the change that teachers went through, specifically within their levels of use and stages of concern, when using a newly implemented program, or innovation. Chapter 2 outlines three theories, (1) The Change Process, (2) Diffusion of Innovations, and (3) Concerns Based Adoption Model (CBAM), that were used to help understand the process of change and the levels of use and stages of concern that people go through when implementing a new innovation. Analysis of the literature gaps is presented at the end.

### **The Change Process**

A culture of change is rapid and nonlinear, but can also have great potential for creative breakthroughs (Fullan, 2001). Understanding the change process can be highly valuable for leaders and policy makers. Most people do not have the luxury of choosing when change occurs. Thus, when faced with having to make a change, knowing the process and impacts of it can help that change be as effective and efficient as possible, saving time and grief (Fullan, 2011). One of the biggest barriers to improvement in school systems is the presence of punitive accountability (Fullan, 2011). Change for the sake of improvement can be a very scary thing, especially when it is required of you and comes with punishments if not achieved. Sometimes the best way to manage change is to just let it happen (Fullan, 2001).

For change to be successful it must be led and directed by an effective leader, who develops an internal commitment within the organization in which ideas and intrinsic motivation of the vast majority of the members is activated (Fullan, 2001). Professional development consultants can also help by working directly with the teachers individually or in groups (Fullan, 2001). Effective leaders do not have to be the most intelligent



people, but they must work well with others and have a high social intelligence.

Leaders need to be the biggest learners in the group (Fullan, 2001, 2010, 2011), working with individuals in order to find out and give the users of the innovation what they need in order to successfully implement and accept the change process. The role of the leader is to enable, facilitate, and cause peers to interact in a focused manner (Fullan, 2010).

Once users have accepted the change and have been motivated by others, then they will hopefully become self-motivated and in turn help others to also change and motivate themselves. Trust is powerful and vital to any change process as well. Users must trust the leader and respect their decisions. Bryk and Schneider (2002), in their study of Chicago Schools, found that schools reporting high relational trust were three times more likely to improve in reading and mathematics. The essence of being a change leader according to Fullan (2011), is the capacity to generate energy and passion in others through action.

The focus of change needs to be on the long-term steady gains, and not on the short-term immediate boosts (Fullan, 2001). Often demands are for immediate results and improvement, but effective leaders and change efforts resist these demands and focus on long-term goals and the process to get there. Fullan (2001, 2010, 2011) discussed what he calls an “implementation dip” (see Figure 2.1), which is a dip in performance and confidence as one encounters an innovation that requires new skills and understanding.

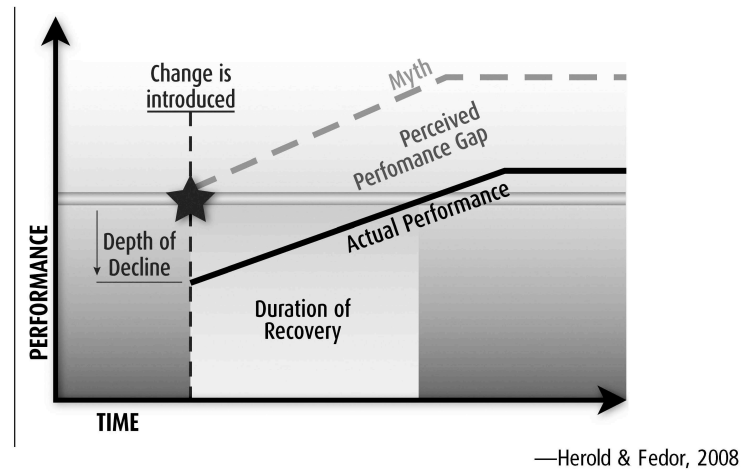


Figure 2.1 – Implementation Dip

This “implementation dip” will be even greater if high aspirations precede it, and must be acknowledged and recognized for what it is, not ignored or viewed as a failure of the innovation (Fullan, 2011). Fullan (2001) noted that this dip is due mainly because of the social-psychological fear of change, as well as the lack of technical know-how or skills to make the change work. There is a natural learning curve when dealing with new skills and understandings (Fullan, 2010, 2011). By providing the users with adequate training, providing knowledge and skills for the use of the innovation, before the innovation is implemented then these fears and causes of the “implementation dip” may be diverted. But one must not spend too much time before the innovation is implemented, because communication in the absence of action means almost nothing (Fullan, 2010, 2011). Communication is most effective when it is close to the action in time and place and is frequently reinforced (Fullan, 2011).

Fullan (2010, 2011) suggested that when dealing with change, less is more. Leaders should get to action sooner, and treat the initial stages of innovation use as a learning period (Fullan, 2010). Day-to-day practice and deliberately doing is the core learning method for effective leaders and the only experience that can engage and

reshape the brain (Fullan, 2011). The actual experience of being more effective is what truly motivates people to do more as well as spurs them to repeat and build on that behavior (Fullan, 2011).

The problem is not the absence of innovations and change within the schools but the presence of too many disconnected, episodic, piecemeal, superficially adorned projects raining down on them from hierarchical bureaucracies causing additional burdens (Fullan, 2001). Reeves (2010) called this “the law of innovation fatigue” – a constant stream of initiatives, each of which might make sense in its own right but that collectively add up to a fragmented system where nothing gets accomplished. Theory and strategy (abstract concepts) dominate practice and implementation (grounded concepts) (Fullan, 2011). Leaders must be given the time they need to learn within the context of the change. By learning within the context of implementation, this allows for reflexivity to occur, which is more important than answers from books or theory (Fullan, 2011). Some things cannot be predicted or learned before they are experienced. Effective change cannot be accomplished overnight, but effective change agents can accomplish quality implementation with high impact in remarkable short time frames (Fullan 2010).

Fullan (2001) provided seven organizing principles of the reform strategy; (1) it is about instruction and only instruction; (2) instruction improvement is a long, multistage process involving awareness, planning, implementation, and reflection; (3) shared expertise is the driver of instructional change; (4) the focus is on systemwide improvement; (5) good ideas come from talented people working together; (6) set clear expectations, then decentralize; (7) collegiality, caring, and respect are paramount. These

seven principles, when present and followed, allow for a greater, more effective change process.

Most all of the principles are focused on one thing, communication and collaboration. Collaboration can create strong teacher communities and be highly powerful when focused on the right things, but can also be powerfully wrong when focused on the wrong things (Fullan, 2001). When teachers focus on the negative, or reinforce others' bad or ineffective practices, their collaboration can actually produce negative results. Hansen (2009) wrote that bad collaboration is worse than no collaboration. Leaders and members of the community/organization must then make sure that they are preventing negative collaborations from occurring, as well as educating themselves and others on what the best practices are so as to not support ineffective ones. When quality ideas, knowledge and information are available the leader must create a culture that is conducive to learning, and sharing that learning with the others (Fullan, 2001). Information only becomes valuable when it enters a social context (Fullan, 2001). Privacy of practice produces isolation; isolation is the enemy of improvement (Elmore, 2000).

When collaborating, users must commit to the whole system. Teachers cannot view students as *my* student or *your* student, but instead as *our* student. When teachers view the whole school and every student as their commitment, Fullan (2010) calls this a *we-we commitment*. If someone is struggling with a student or the use of an innovation within their classroom, the culture of the school should be conducive and open to allow for ideas and help from all teachers to come together through collaboration and communication. Collective engagement in the work will also create greater meaningfulness as well (Fullan, 2011).

Along with collaboration, competition is another component that Fullan (2011) suggested was a requirement for ongoing success. Schools compete with other schools within their own district, motivating themselves to rise above the others. Internationally, schools compete and become ranked on performance, causing motivation within the collective nation to become better. Schools motivate themselves to do better than last year, constantly raising their own bar and standards.

Opposition and resistance to change is not always a bad thing. Resistance is usually due to what is viewed as good reasons. Users who resist change may see alternatives that were never thought of by the original developers of the innovation. What looks like resistance may simply be a lack of clarity. Successful organizations embrace differences and deliberately build them into their structure (Fullan, 2001). We are more likely to learn from people who disagree with us than we are from people who agree (Fullan, 2001). By working together to get through the oppositions and resistances, this can actually cause a greater and more powerful coherence (Fullan, 2001).

Even when a change seems very simple, when placed in multiple settings it can become very complex (Fullan, 2010). Many changes and innovations do not occur in one isolated setting. Often when an innovation is introduced, many schools within a district, state, or country will be implementing it at the same time. Therefore, even if the developers and leaders of the innovation feel that they have thoroughly planned and prepared for its implementation, each setting will require different demands and attention, creating complexities that could never have been accounted for in the beginning. Time, information, and learning are the only remedies to these complexities. The key to change is to unclutter it – to strip away the fat to a very small number of gems that have the virtue of being simultaneously simple and powerful (Fullan, 2010).

## Diffusion of Innovations

Everett Rogers (2003) published a book titled, *Diffusion of Innovations*. Within the book Rogers discussed how the introduction of a new innovation diffuses among the users over time. He studied how innovations progress from their introduction stage to the acceptance and adoption stage. Rogers defined diffusion as: “the process in which an innovation is communicated through certain channels over time among the members of a social system” (2003, p. 5). By interviewing subjects who use certain innovations, Rogers was able to identify what caused diffusion to occur, hindered diffusion, and what different types of users there were. One of the leading factors that he identified as hindering the diffusion of an innovation was uncertainty. “Uncertainty implies a lack of predictability, of structure, of information. Information is a means of reducing uncertainty” (2003, p. 6). In order to get people to accept an innovation they first must gain information regarding the innovation in order to reduce their level of uncertainty about it. One of the theories that Rogers presented was the S-Shaped diffusion curve, shown in Figure 2.2, which charts the percent of adoption vs. time.

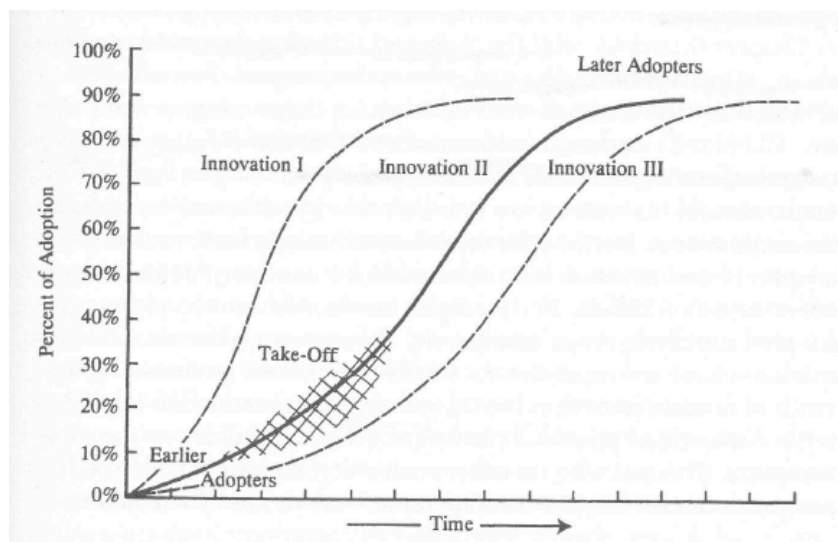


Figure 2.2 – S-Shaped Diffusion Curve (Rogers 2003, p. 11)

Rogers suggested that early in the diffusion process very few people adopt the innovation. The people that do accept it right away he identified as Innovators and Early Adopters. As the innovation has been around for a while, people begin gathering information about it and their uncertainties began to dissipate. Therefore, there is a rush of new users, Early and Late Majority, during the middle of the curve, and then it tapers off as there are fewer and fewer users left to adopt the innovation towards the end, Laggards. Overall, Rogers identified five categories of users: 1) Innovators, 2) Early Adopters, 3) Early Majority, 4) Late Majority, and 5) Laggards.

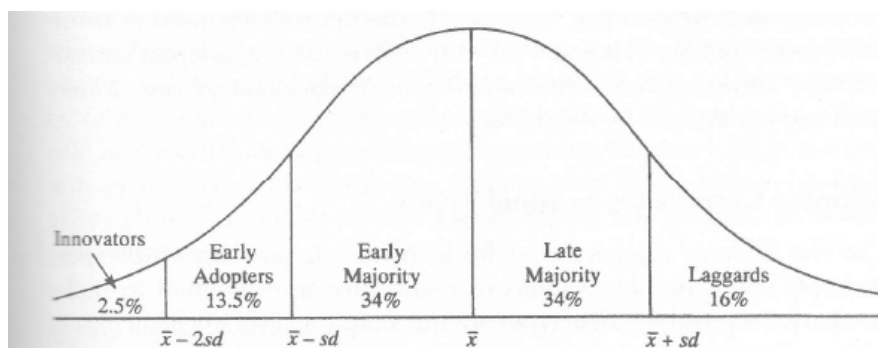


Figure 2.3 – Normal Distribution of User Categories (Rogers 2003, p. 281)

Rogers also discussed a “change agent,” which he defined as; “an individual who influences clients’ innovation-decisions in a direction deemed desirable by a change agency” (2003, p. 27). These change agents are the people who introduce the innovation to the users, providing the users with the knowledge that is necessary to decrease the users levels of uncertainty and progress them along their adoption process.

### **Concerns Based Adoption Model (CBAM)**

Hall and associates developed another theory, the Concerns Based Adoption Model (CBAM), which Hall said was developed to; “represent the highly complex process entailed when educational institutions become involved in adopting innovations” (1974, p. 1). CBAM characterizes the change process in three ways: 1) Stages of

Concern (SoC), 2) Levels of Use (LoU), and 3) Innovation Configurations (IC) (Hall & Hord, 2011; Horsley, 1998).

SoC are used to look at the thinking and feelings involved in and about the change process. Hall's original list of the stages were; unaware, awareness, exploration, early trial, limited impact, maximum benefit, and renewal (1974). These stages were later updated to: unconcerned, informational, personal, management, consequence, collaboration, and refocusing (Hall & Hord, 2011). These stages are then grouped into categories of concerns.

*Unrelated Concern: user is not involved with or knowledgeable of innovation*

Unconcerned

*Self-Concerns: concerns focused on the user*

Informational and Personal

*Task-Concern: concerns focused mostly on the process and task of using the innovation*

Management

*Impact-Concerns: concerns focused on how the innovation is affecting the clients*

Consequence, Collaboration and Refocusing

(Hall & Hord, 2011).

If the innovation is appropriate and initiated carefully and thoughtfully, Hall and Hord (2011) said that the user should progress from the self to task concerns within the first years of use, and then to the impact concerns after three to five years. The impact concerns level is considered the goal for all users. Users can have concerns in more than one area at a time.

LoU has to do with behaviors, and portrays how people are acting with respect to the change (Hall & Hord, 2011). Hall's original levels of use were; non-use, orientation,



initial training, mechanical, independent, integrated, and renewing (1974). These levels were later modified to: nonuse, orientation, preparation, mechanical, routine, refinement, integration, and renewal (Hall & Hord, 2011). Through studies conducted since the original levels were created, it was determined that two separate levels, routine and refinement, should actually represent the independent level of use. Nonuse, orientation and preparation are all levels of nonusers. At these levels the user is just gaining information and preparing to use the innovation, but have not actually begun the initial use of it yet. Mechanical use is the first level when the user begins using the innovation. Renewal is considered the optimal level of use. Levels of use can be determined through long-term observation and/or interviews with the users.

Horsley (1998) said that innovation configurations recognize the importance of identifying the specific parts of a change, and provide staff developers with hands-on tools for making those identifications. When teachers use a new innovation, their use of it may not agree with what the original creators had in mind. This may be a result of the users not knowing or understanding the innovation enough to properly implement it, or a choice that the user simply makes on their own. Innovation configurations are thus the idealized images of a change created by a developer as well as the various operational forms of the change that can be observed in classrooms (Hall & Hord, 2011). Hall and Hord (2011) described an IC map as “word picture” descriptions of the different operational forms of an innovation or change. This is to be used as a guide so that users can determine whether what they are doing falls within the ideal, acceptable, or unacceptable ranges. An IC map is another way to provide users with increased knowledge of the innovation, which will in turn hopefully increase their use of the innovation using the ideal method.

Using these stages of concerns and levels of use, we can describe how teachers progress through the process of first learning about an innovation until they are fully integrating it within their lessons and finding new ways to improve upon it. Every person within the social system plays a specific role in facilitating this process. Hall wrote; “each individual in his role, whether it be as an administrator, faculty member or student, must develop the skills and finesse in using the innovation that will optimize the effects of its use” (1974, p. 4). This is comparable to how Rogers described users need of higher levels of knowledge in order to eliminate the uncertainty of an innovation.

Hall described another vital component to the CBAM process, which he called “adoption agents”, and described them as; “(specialists in the use of the innovation and effective catalysts for facilitating change) work with people in the user system both individually and in groups” (1974, p. 4). These adoption agents are very similar to the people that Rogers defined as change agents within the Diffusion of Innovations.

### **Gap in Literature**

Very little research has been completed regarding math intervention programs at the secondary level. Most studies focus on elementary and middle levels, while others focus solely on special education interventions. Other types of programs have been studied using CBAM, such as microcomputers in schools (Cicchelli & Baecher, 1989; Heller & Martin, 1987; Whiteside & James, 1986), distance education (Kember & Mezger, 1990), competency-based vocational education (Cunningham, Hillison, & Horne, 1985), social studies curriculum (Marsh, 1987), science pedagogy (Scharmann & McLellan, 1992), aesthetics education (Evans & Hopkins, 1988), benchmark testing (Kimpston & Anderson, 1988), character education program (Hollingshead, 2009), and

implementation of a mathematics curriculum (Christou, Eliophotou-Menon, & Philippou, 2004).

Therefore, there is an apparent gap in the literature and knowledge pertaining to the use of math intervention programs at the secondary level, that are used by all students, not just special education. In addition, the math intervention program being studied does not occur within the classroom setting, and is not implemented by the math teacher. Past research studies have focused on programs that are implemented within the actual classroom setting and by the classroom teacher.

All of these theories suggested that individuals go through a complicated, multivariate, and time-consuming process of change and acceptance when introduced to a new innovation. There are levels and rates of acceptance, use, and concerns, as well as people who influence the introduction and spread of the innovation. Individuals can go through these levels for different reasons. But, influential factors and individuals can aid in speeding up and progressing people along these levels, and decreasing the effect and length of the “implementation dip.” This study examined these components and placed them within the context of a newly introduced innovation (a math intervention program) within a social system (three high schools) to discover what levels and progressions of acceptance, use, and concerns the teachers within this context went through, as well as what change or adoption agents were influencing the teachers use and concerns of the innovation.

## CHAPTER 3

### Methods

The purpose of this study was to examine the change that teachers went through, specifically within their levels of use and stages of concerns, when using a newly implemented program, or innovation. Chapter 3 focuses on the research methods used to address the given purpose. Rational for the design of the study and sampling procedures are provided. Methods for both qualitative and quantitative data collection are addressed, as well as the procedures for data analysis for each. Finally, methods for mixing the qualitative and quantitative data are provided.

### Rationale

Mixed methods research is defined as research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry (Tashakkori & Creswell, 2007). A mixed methods convergent design was used, which is defined as research conducted concurrently in which the researcher analyzes the information separately and then merges the two databases (Creswell & Plano Clark, 2011).

For this convergent mixed method evaluation study both quantitative and qualitative data on the use, concerns, and success of the math intervention program was collected for a three-year period. Individual theories and conclusions were developed from the quantitative and qualitative data sets, as well as a comparison in order to try to discover any common themes or connections between the two (see Figure 3.1, p. 30).

Methodological issues that may arise during the study from a convergent design were the time constraints and demands of collecting both qualitative and quantitative data concurrently. Also, being able to keep the data sets independent of each other until they

were both analyzed was a challenge. Another issue was making sure that both data sets were collecting the same type of results so that they could be merged. In addition, making sure that I did not over emphasize one method (quantitative or qualitative) over the other, and trying to put equal weight on both methods were concerns.

I received approval from the University of Nebraska – Lincoln’s Institutional Review Board, as well as the School District’s Institutional Review Board. An informed consent form for the interview (see Appendix A) was signed by each participant prior to beginning the initial interview process. An informed consent form for the questionnaire (see Appendix B) which both detailed the purpose of the study, any benefits or dangers to participation, time involved, as well as notifying the participant that participation within the study was voluntary and could be rescinded at any time without damaging their relationship with the researcher, university, school system, or employer was signed by each participant. There were no known risks and/or discomforts associated with this study.

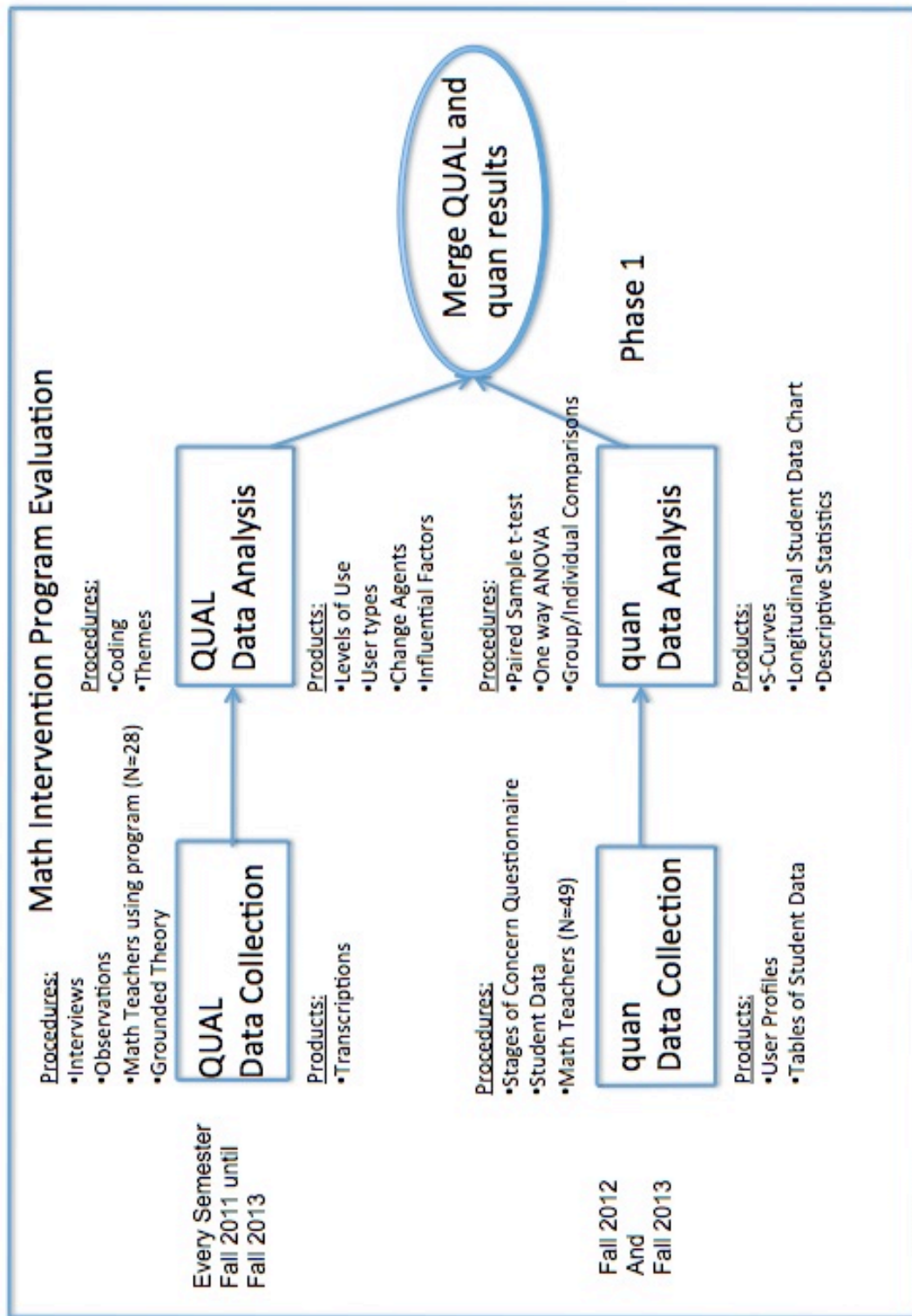


Figure 3.1 – A Convergent Program Evaluation Mixed Methods Design of a Math Intervention Program

Figure 3.1 – A Convergent Program Evaluation Mixed Methods Design of a Math Intervention Program

### Sample Selection

Purposeful sample selection was used to gain the richest and highest quality data pertaining to the phenomenon, the math intervention program. Each school was part of the same school district, which for this study will just be called The School District. The schools selected for this study were identified based on their participation in a math intervention program implemented by the School District. All of the schools were considered similar in demographics in that they are viewed as high diversity and low socioeconomic. Schools A and C both have English Language Learner (ELL) programs, thus their minority percentages were higher.

Demographic data for the 2009-2010 school year was collected from the National Center for Education Statistics (NCES) website, and can be seen in Table 3.1.

*Table 3.1 – School Demographics*

<b>2009 – 2010 School Year</b>	School A	School B	School C
Enrollment	1816	1433	1658
Minority (non-white) Student Percentage	33.36%	21.01%	39.87%
Student/Teacher Ratio	15.16	14.61	14.63

**Questionnaire Sampling.** Every math teacher at each school was given the opportunity to complete the Stages of Concerns (SoC) Questionnaire, even if they had never used the math intervention program. Teachers were allowed to complete the questionnaire anonymously, as well choose to provide their name if they wanted. During the course of the study 49 teachers completed the SoC Questionnaire (see Table 3.2), 28 provided their names and 21 filled it out anonymously. Only 9 teachers identified themselves during both years of data collection.

*Table 3.2 - Number of Teachers who completed the SoC Questionnaire*

	<b>Fall 2012</b>	<b>Fall 2013</b>
<b>School A</b>	12 out of 16	14 out of 15
<b>School B</b>	0 out of 15	11 out of 15
<b>School C</b>	11 out of 13	11 out of 12

**Interview Sampling.** Math teachers who had used the math intervention program in the past, or were currently using it, were eligible to participate in the interviews. At the beginning of each semester, starting Fall 2011, teacher names were collected from the individual math interventionists at each location. Contact information for each teacher was available through the individual school websites. There were 28 teachers who were interviewed during the course of the study. Table 3.3 shows the number of teachers from each school that interviewed. From the 28 teachers who interviewed, there were 57 interviews conducted during the study.

*Table 3.3 - Number of Teachers who were Interviewed by School*

School A	School B	School C
17	4	7

A full list of participants can be found in Appendix C. At the time of their initial interview half of the teachers who were interviewed had spent their entire teaching career at their current building, 14 out of the 28. The average years of experience as a math teacher was 6.87, and the average years experience at the current school was 5.15. Over a third of the teachers interviewed had taught for 3 or fewer years, 10 out of the 28. There were only 7 teachers out of the 28 who had more than 10 years of teaching experience. Thus, many of the teachers who participated in the study were younger teachers who had only taught at their current buildings.



## **Qualitative**

**Rationale.** A grounded theory study was determined the best method of qualitative design for the study because I focused on the aspect of the process of a newly integrated math intervention program and the change that teacher's experience, while trying to discover what or who is causing this change to occur. Creswell stated that; "the intent of a grounded theory study is to move beyond description and to generate or discover a theory" (2007, p. 62). When discussing the purpose of grounded theory, Merriam wrote; "Grounded theory is particularly useful for addressing questions about process, that is, how something changes over time" (2009, p. 30). Once I have collected the experiences of the participants, my goal will be to create a theory about how the participants went through the change process by creating categories and themes in the form of levels of use and stages of concern similar to Rogers and CBAM.

**Sample Selection.** The sample was math teachers who all worked closely together within a social structure. Starks and Trinidad said; "Grounded theory originates from sociology, specifically from symbolic interactionism, which posits that meaning is negotiated and understood through interactions with others in social process" (2007, p. 1374). One of the main focuses of the study was on who or what part of the social process and structure is influencing the math teachers to use the intervention program. Starks and Trinidad stated that; "typical grounded theory studies report sample sizes ranging from 10 to 60 persons" (2007, p. 1375). I interviewed 28 math teachers during the course of three years, for a total of 57 interviews, allowing for saturation of the data and experiences in order to develop a theory. I believe that meaning and change occur within the social interactions of the math teachers, framing a symbolic interactionism perspective that is consistent with grounded theory.

Qualitative data was collected through voluntary interviews conducted with eligible teachers during each semester for the three-year study. Each round of interview questions and protocol can be found in Appendix D. Interviews focused on gathering information regarding teacher perspectives towards the math intervention program, influences on teacher use of the program, as well as knowledge and comfort levels with the program. As long as a math teacher was eligible, multiple interviews were conducted with the same subject, up to five times. Questions on each progressive interview were developed based on previous interview responses from that subject in order to accommodate the stage of concern and level of use of each subject. I completed the transcriptions, coding and theming. Teacher names and schools were changed from the transcriptions and results.

Through the teacher responses, categories of user types were developed similar to the categories developed by Hall (CBAM) and Rogers. Teacher progression through the levels of use and stages of concern as they worked with the program for an extended period of time were developed in order to better understand rates of adoption and use. Themes regarding influential factors were developed in order to discover any possible change or adoption agents.

I scheduled a time two to three weeks in advance of the interview date at each school, based on the department's ability to include me in their meeting schedule, to personally talk with the math departments about the interviews and invite them to participate. A Personal Invitation Script was used when I talked with each department, found in Appendix E. After I personally met with the math departments from each school I sent out a personal email invitation, see Appendix F, again inviting eligible teachers to participate. Teachers replied with the time and location that was most

convenient for them, and then I replied confirming that time and location or discussing alternate times if there was a conflict. I spent a day at each school conducting the interviews with the teachers who signed up.

During the fall semesters I conducted interviews during the first two weeks of November, and during the spring semesters I conducted interviews during the last two weeks of March. Table 3.4 shows the scheduled interview dates. Each interview lasted approximately 30 minutes. Each participant was given an informed consent (see Appendix A) prior to each interview and, if the participant agreed, each interview was audio taped.

*Table 3.4 – Schedule of Interview Dates*

<b>Schedule of Interview Dates</b>	
<u>First two weeks of November</u>	<u>Last two weeks of March</u>
Fall 2011	Spring 2012
Fall 2012	Spring 2013
Fall 2013	

**Data Analysis.** Corbin and Strauss (2007) suggest a three phase coding method for data analysis when conducting a grounded theory study. The three phases are open, axial, and selective coding. Open coding is looking for any relevant unit of data that is applicable to the study and research questions. Next, the researcher uses axial coding to refine the categories/units found in open coding, and finding one that represents the central phenomenon of interest. Finally, the researcher using selective coding creates the hypotheses and propositions, which generates the theory (Merriam, 2009; Creswell, 2007). Merriam stated; “A grounded theory consists of categories, properties, and

hypotheses that are the conceptual links between and among the categories and properties” (2009, p. 199).

I used Corbin and Strauss’s coding method to perform the qualitative data analysis. After the initial set of interviews I personally transcribed each one and began identifying themes, categories, and key words that consistently showed up in the data. From these themes and categories I identified units and a core phenomenon through axial coding. Lincoln and Guba (1985) described two criteria for unit analysis: 1) units should be heuristic – should reveal information relevant to the study and stimulate the reader to think beyond the particular bit of information, 2) units must be interpretable in the absence of any additional information other than a broad understanding of the context in which the inquiry is carried out.

Using the themes and core phenomenon, I developed the second round of interview questions in order to seek deeper and richer information within these themes. Once the second round of interviews was completed I recoded the themes and core phenomenon as needed and began developing the theory, as well as developed the third round of interview questions to again gain deeper and more thorough data. This process continued five times.

Since this was a three-year study, and I conducted interviews after each semester, I conducted five rounds of interviews with the participants, as long as they remained eligible and willing. This allowed for a tremendous amount of constant comparative analysis, which was suggested by Glaser and Strauss (1967), and was considered vital to any grounded theory study. Being able to consistently recode my themes and theory, I was better able to refine my theory and strengthen its validity. Stake wrote; “during research, analysis and synthesis are ongoing, interactive, habituated inquiry processes”

(2010, p. 137). Also, by conducting five rounds of interviews, I was able to increase levels of data saturation.

### **Quantitative**

**Rationale.** Quantitative data on the use of the program was collected through the percentages of eligible students who were recommended for the math intervention program, as well as the percentage of the eligible math teachers who used the math intervention program. Percentages were used due to the fact that total numbers of eligible students varied with each semester and year, and thus actual numbers of students and teachers could not be compared over time. These percentages were assessed to see if the use of the math intervention program increased, decreased, or remained consistent during the three-year study. Also, dates for recommendations were charted vs. total students recommended for math intervention, in order to see if it followed the S-Shaped diffusion curve that was proposed by Rogers (2003) (see Figure 2.2). No names of teachers, students, or schools were used in any of the charts or data collected.

According to the School District, success of the math intervention program was evaluated according to the passing rates of students within the program. Quantitative data on the success of the program consisted of comparing passing rates of students within the math intervention program at each school for each semester during the three-year study. If the passing rates maintained a high percentage during the three-year study, and possibly increased, then this could help determine the success of the program. These were also compared with teacher use to see if an increase or decrease in one could be related to an increase or decrease in the other.

Voluntary questionnaires, which were adapted from the *Stages of Concern (SoC) Questionnaire* that was created by George, Hall, and Stiegelbauer (2006) at the

Southwest Educational Development Laboratory in Austin, Texas, were administered to all math teachers at each of the three schools during the fall semesters of 2012 and 2013 (see Appendix G for the questionnaire). The questionnaires were designed to measure what a teacher or user is feeling about an innovation (George, Hall, & Stiegelbauer, 2006). I collected data from 38 math teachers in total.

**Data Analysis.** Math intervention stages of concern questionnaires were analyzed using the quick scoring device provided by George, Hall and Stiegelbauer (2006). Using the quick scoring device I developed user profiles for each individual as well as each school. To develop the profiles for each school I averaged the scores from the individuals at each location. The scores were then compared between years as well as locations to see if there were any significant differences in concerns. Most of the analysis was descriptive, looking for trends in the data. The data was also given to the NEAR Center for analysis. A paired samples t-test was done in order to determine if teachers concerns significantly changed from the first year to the second. An ANOVA test was performed in order to compare schools and see if there were any significant differences between the concerns at each school. In addition, a reliability test was completed on each stage of concern.

### **Mixed Method**

A comparison of the quantitative and qualitative data was done to see if the changes in math intervention use could be explained by the changes in teacher perceptions and experiences with the program. As teachers increase their knowledgeable and comfort with the math intervention program, is this coupled with an increase in the actual use or success of the program? A side-by-side joint display was then created to

show teacher concerns found within the SoC Questionnaire compared to interviews (see Appendix L).

Profiles and transcriptions were compared in order to try to find any correlations between the use of the program and the experiences/responses of the participants. This comparison helped develop a theory on levels of use and stages of concern.

During the study I also made a memo of my own thoughts and experiences in order to help develop and support the theory. Stake stated; “qualitative researchers find much meaning coming from their own experiences, as well as experiences with people they interview, and as learned about from documents” (2010, p. 150). As a math interventionist for one of the programs I was studying, I have many experiences and observations that I was able to incorporate into the study in order to aid in the coding and theory development process.

All of these data collection methods (interviews, charts, observations, memo) allowed for a stronger triangulation and validity of the findings. Denzin (1978) suggested four types of triangulation; 1) multiple methods, 2) multiple sources of data, 3) multiple investigators, and 4) multiple theories. I have discussed the multiple data collection methods used. Multiple sources occurred from the comparison of participant responses from different schools. A secondary researcher was involved in the study thus providing “multiple investigators.” Fullan’s Change Theory, Roger’s Diffusion Theory, as well as the CBAM theory were used to confirm the emerging findings.

## CHAPTER 4

### Results

Originally, each school was designed to have very similar programs, but also given liberty from the school district to adapt programs to fit their needs. Schools A and C had very similar referral processes, using an online referral form that teachers completed when referring a student to the math interventionist. School B did not have this same referral form, instead teachers simply emailed the math interventionist with names of students who needed the assistance of the math interventionist. Also, schools A and C both used strictly a pullout system, sending passes for students to come and work with the interventionists during one of the student's non-math classes. School B also pulled out some of the intervention students, but mostly used a period during the day when students would be available to receive additional support. This allowed School B much greater access and convenience when working with students, leading to higher numbers of students in the program.

At the beginning of the study School A had 14 math teachers. During the last semester of the study, only 8 of those teachers were still at the school. During the seven semesters of the study, School A had a total of 25 math teachers who worked at the school at some point. This was the highest number of teacher changes of all of the schools in the study.

School B had 15 of the 16 original teachers at the school by the end of the study. One teacher retired and another was hired. This was the most consistent teacher retention of all of the schools.



School C had 11 of the original 12 teachers at the school during the final semester of the study. But, School C had 4 other math teachers who were not at the school when the study began.

## **Quantitative**

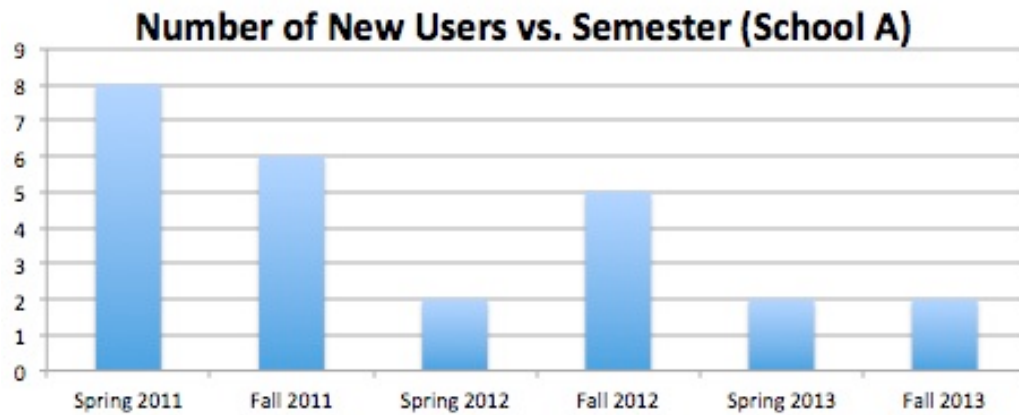
### **Use of the Math Intervention Program**

Rogers (2003) suggested that there are different rates at which people will accept and use a newly implemented innovation. When these rates are graphed it looks like an S-shape. People tend to be slow initially at accepting and using a new innovation, but eventually an influx of users adopt the innovation, causing a sharp rise in use, and then eventually leveling off after most people have accepted it.

### **Math Intervention Teacher Use**

When looking at teacher use of the math intervention program, according to Rogers (2003) there should be few initial users (innovators and early adopters), then a sharp increase in the middle (early and late majority), and then flatten out at the end (laggards).

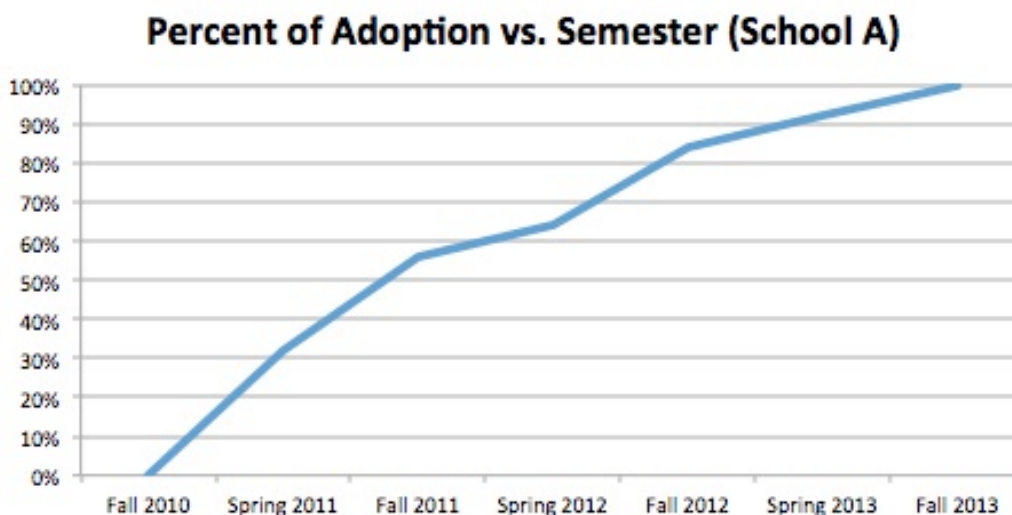
New and total teachers using the math intervention program during each semester of the study were recorded for each school and overall. Also, new users' use of the program, based on their number of semesters of eligibility, was charted for each school and overall.

**School A**

*Figure 4.1* – Number of New Users (School A)

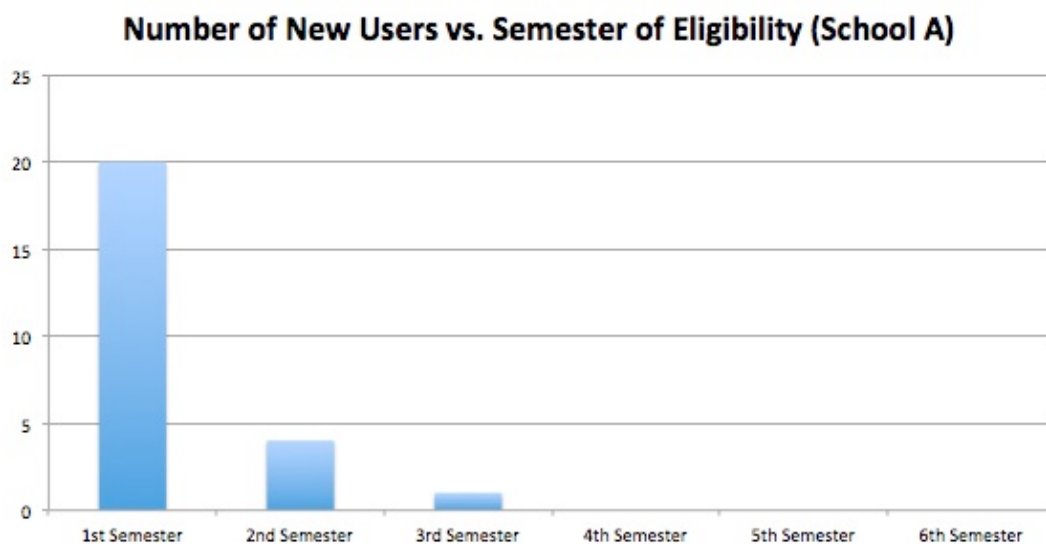
Reasons for new users each semester were:

- Fall 2011: 2 new hires, 1 was not teaching courses that used the program during the Spring 2011 semester, and 3 were teachers who chose not to use the program before but then decided to use it for the first time.
- Spring 2012: both teachers were always eligible to use the program, but choose to use it for the first time.
- Fall 2012: 5 new hires.
- Spring 2013: 1 new hire, 1 teacher was not teaching courses that used the program until Spring 2013.
- Fall 2013: 2 new hires.



*Figure 4.2 – Percent of Teacher Adoption (School A)*

According to Figures 4.1 and 4.2, School A had the largest number of new users during the first semester of use (Spring 2011). With a total of 25 users during the study, School A had 14, or 56%, of the users begin their use of the math intervention program during the first two semesters. This does not match with Rogers' (2003) theory that 16% of users (innovators and early adopters) would begin using the innovation during the early stages. During the middle two semesters there were 7 new users, or 28% of the users. Rogers (2003) would suggest that early and late majority users would account for 68% of the users. Finally, during the last two semester there were 4 new users, or 16% of the users. This matches exactly with Rogers (2003) who suggested that laggards would account for 16% of the users. Figure 4.2 does not match the S-Shaped diffusion curve proposed by Rogers (2003) (see Figure 2.2).

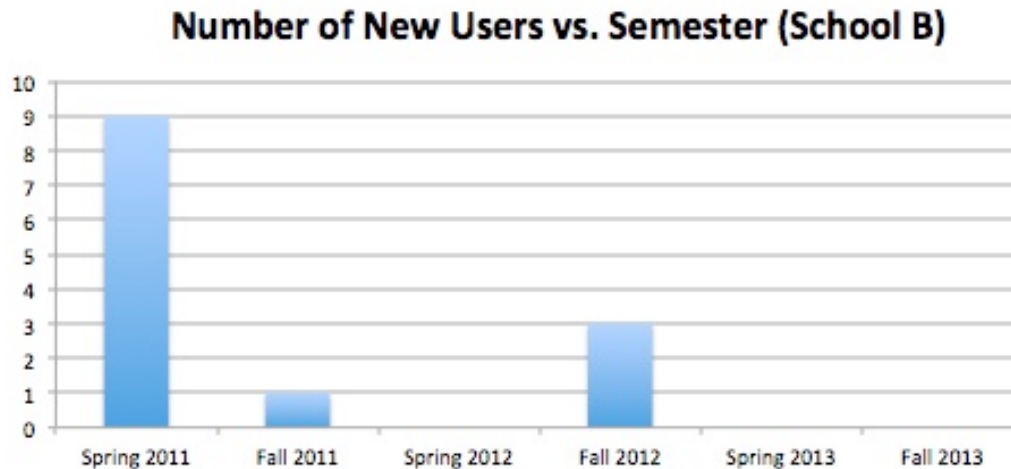


*Figure 4.3 – Semester of Eligibility that Teachers First Used Program (School A)*

Since not all 25 teachers began using the program at the same time, a chart was created of the number of new users based on the number of semesters it took them to use the program once they were able to (see Figure 4.3). When looking at the initial non-users, which were 17 teachers, 10 were not hired at School A during Spring 2011 and two of them were not able to use the program. Therefore, even though they used the program for the first time during a later semester, they still used the program during the first semester they were able to. This means that 20 of the 25, or 80%, of new users were teachers who chose to use the program during the first semester they taught courses that were able to use the math intervention program. Only 5 of the new users, or 20%, were teachers who were able to use the program at some point before their first semester of use, initially choosing to not use the program. Of those 5, 4 teachers used it during the second semester they were able to and 1 started using the program during the third. According to Rogers (2003) levels of use, this means that 80% of the users would be innovators and early adoptors, 16% would be early and late majority, and 4% would be

laggards. This does not agree with the normal distribution of users suggested by Rogers (2003) seen in Figure 2.3.

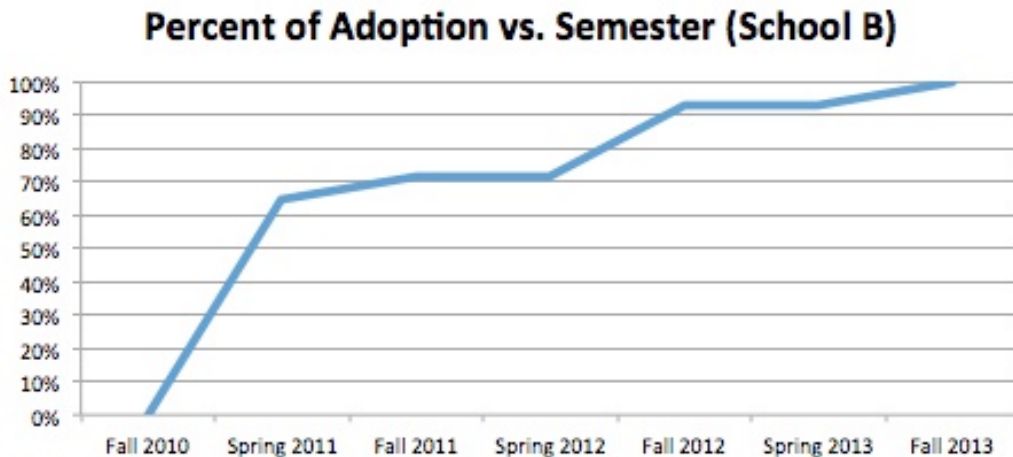
### School B



*Figure 4.4* – Number of New Users (School B)

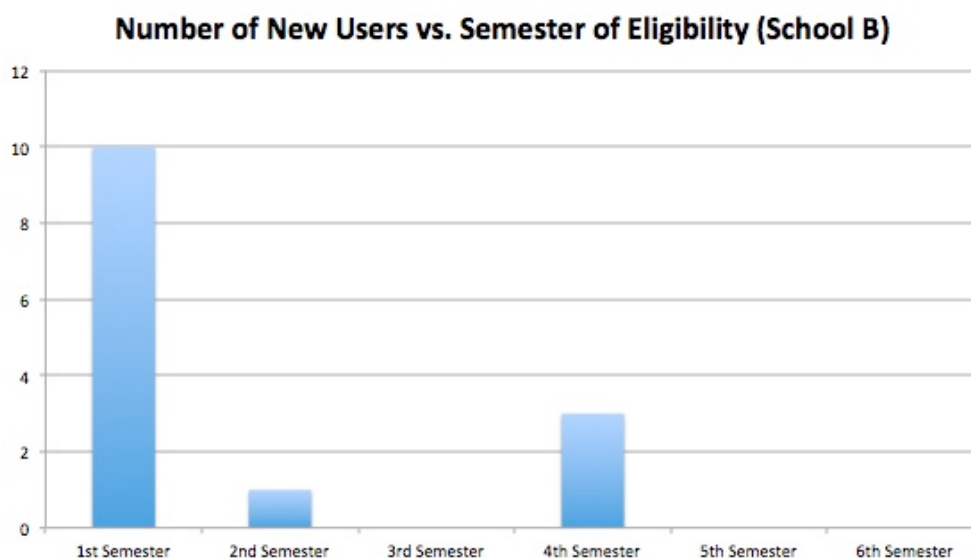
Reasons for new users each semester were:

- Fall 2011: teacher was choosing to use the program for the first time.
- Fall 2012: 3 teachers chose to use the program for the first time.
- Fall 2013: there was one new hire, Zane, but he had used the program at School C and thus was not a new user.



*Figure 4.5* – Percent of Teacher Adoption (School B)

According to Figures 4.4 and 4.5, similar to School A, School B had the majority of new users during the first semester of use (Spring 2011). But, School B only had 14 total users during the course of the study, compared to 25 from School A. This was because School B had very little turnover in math teachers during the study, keeping their numbers more consistent. During the first two semesters there were 10 new users, accounting for 71.43% of the users. This also does not match Rogers' (2003) Theory that 16% of users (innovators and early adopters) would use the program during the initial stages. The middle two semesters had 3 new users, or 21.43% of the users, again not agreeing with Rogers (2003) who would suggest 68% for early and late majority. Finally, during the last two semesters School B had no new users, indicating a lack of laggards. Figure 4.5 does not match the S-Shaped diffusion curve suggested by Rogers (2003) seen in Figure 2.2.

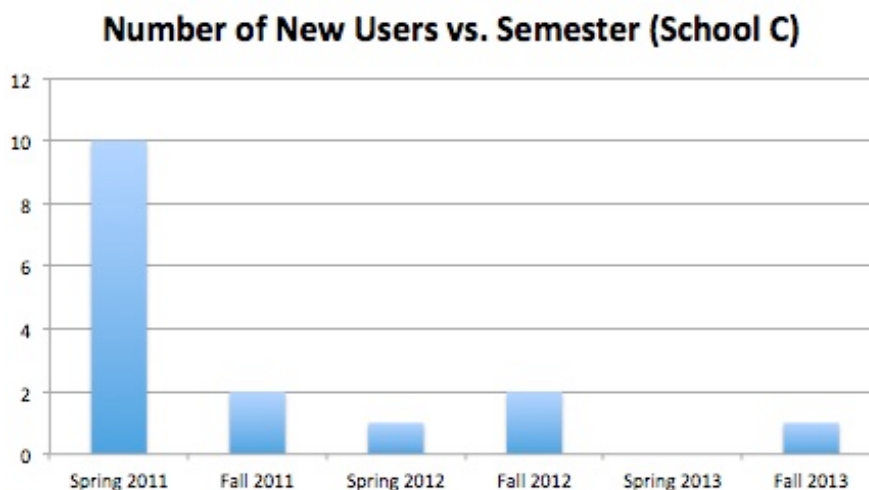


*Figure 4.6* - Semester of Eligibility that Teachers First Used Program (School B)

Again, looking strictly at initial teacher use based on the number of semesters they were able to use the program (see Figure 4.6), 10 of the 14 new users at School B were teachers who chose to use the program during the first semester they were able to.

Only 4 teachers chose to delay their use of the program at least one semester, choosing not to initially use it. Of those 4 teachers, 1 chose to wait until the second semester they were able to use math intervention, while 3 teachers waited until their fourth semester. Using the levels of use suggested by Rogers (2003), 71% of new users would be considered innovators and early adopters, 7% would be early and late majority, and 21% would be considered laggards. This does not match the normal distribution of users suggested by Rogers (2003) seen in Figure 2.3.

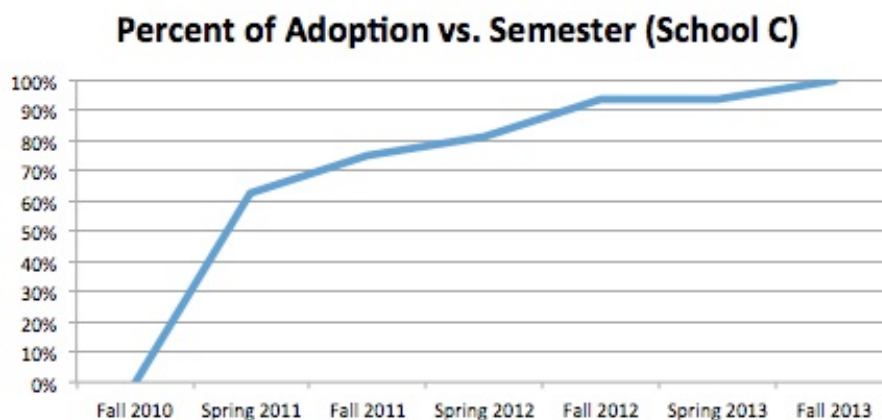
### School C



*Figure 4.7* – Number of New Users (School C)

Reasons for new users each semester were:

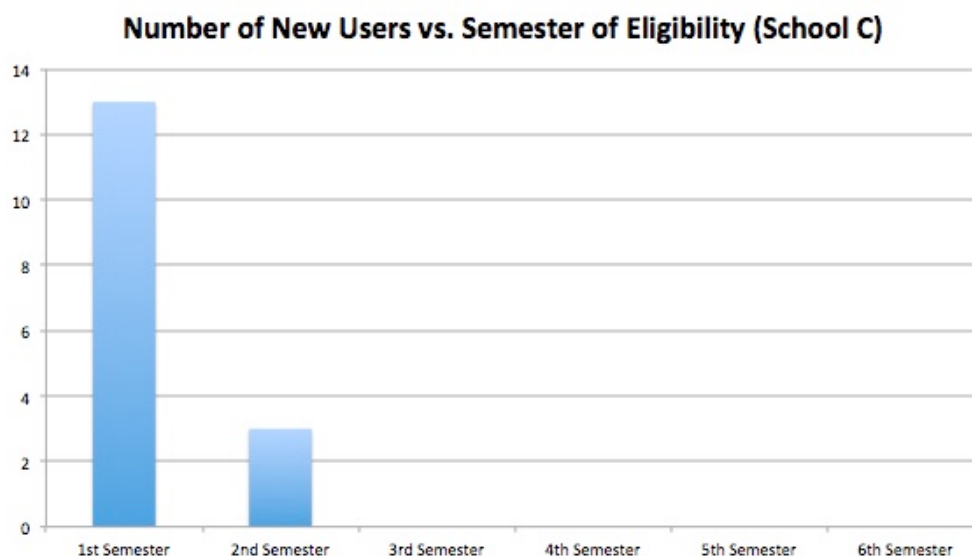
- Fall 2011: both teachers chose to use the program for the first time.
- Spring 2012: teacher was a new hire in Fall 2011, choosing to use program for first time.
- Fall 2012: 2 new hires.
- Fall 2013: 1 new hire.



*Figure 4.8 – Percent of Teacher Adoption (School C)*

According to Figures 4.7 and 4.8, in agreement with Schools A and B, School C also had the largest majority of new users of the math intervention program during the first semester of use (Spring 2011). School C also experienced very little turnover during the study, similar to School B. They had 16 total users during the study. During the first two semesters there were 12 new users, which accounted for 75% of the users. Again, similar to Schools A and B, this was in disagreement with Rogers' (2003) theory that suggested that only 16% of users (innovators and early adopters) would use the program during the initial stages. Within the middle two semesters there were 3 new users, or 18.75% of users. This is also in disagreement with Rogers' (2003) claim that 68% of users (early and late majority) should occur during the middle stages. Finally, during the last two semesters of the study there was 1 new user, or 6.25%. Rogers (2003) suggested that there would be about 16% of users (laggards) during the final stages. Figure 4.8 does not agree with the S-Shaped diffusion curve suggested by Rogers (2003), seen in Figure 2.2.



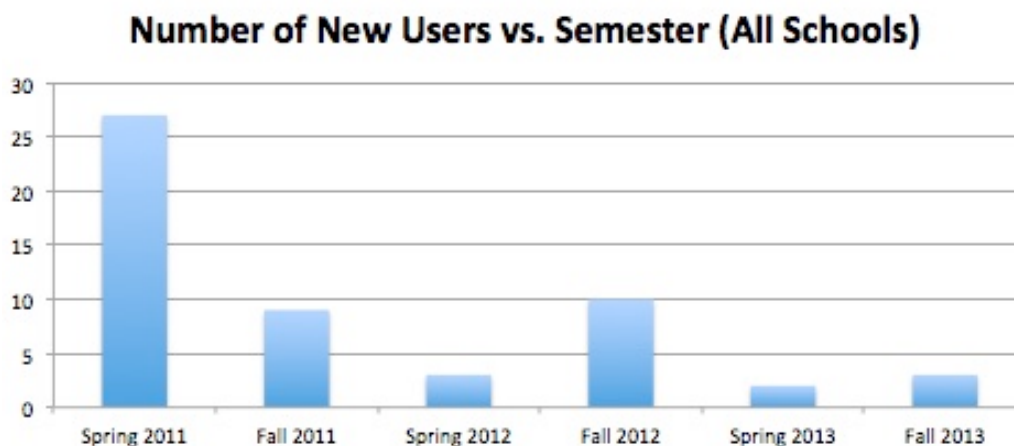


*Figure 4.9 - Semester of Eligibility that Teachers First Used Program (School C)*

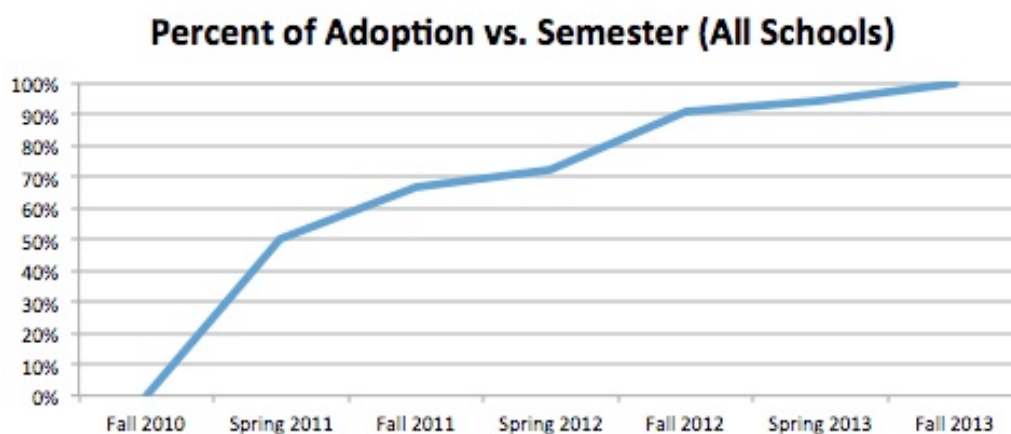
Looking at teacher use based on the number of semesters able to use the program (see Figure 4.9), 13 of the 16 total users used the program during the first semester they were able to. This means that only 3 teachers of the 16 total users chose to delay their use of the math intervention program. All 3 of those teachers choose to wait until the second semester they were able to use the program. No users at School C waited longer than two semesters to use the math intervention program once they were able to.

According to the levels of use suggested by Rogers (2003), 81% of the users would be considered innovators and early adopters, with 19% as early and late majority, and 0% laggards. This does not agree with the normal distribution of users suggested by Rogers (2003), seen in Figure 2.3.

## All Schools

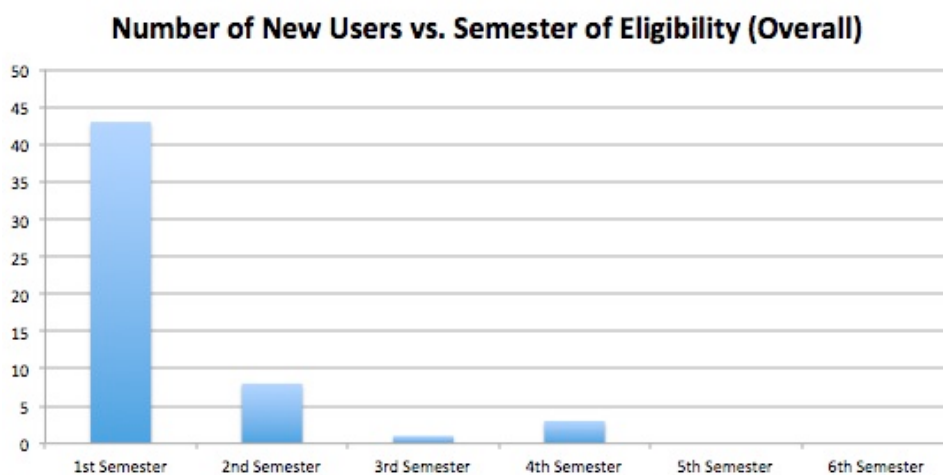


*Figure 4.10* – Number of New Users (All Schools)



*Figure 4.11* – Percent of Teacher Adoption (All Schools)

All three schools had the majority of new users during the first semester of use, Spring 2011, accounting for 50% of all users. Within the first two semester there were 36 new users, or 67% of all users. The middle two semesters only had 13 new users, which was 24.07% of all users. Finally, during the last two semester there were a total of 5 new users, or 9.26% of all users.



*Figure 4.12* - Semester of Eligibility that Teachers First Used Program (All Schools)

When looking at all three schools together, and focusing on teacher use based on semester of eligibility, 43 out of the 55 teachers that used the math intervention program used it during their first semester of eligibility. This means that 78% of the users would be considered innovators and early adopters (Rogers, 2003). There were 8 teachers that waited until their second eligible semester, which means that 15% of users would be considered early majority (Rogers, 2003). One teacher waited until the third semester of eligibility, making 2% of users late majority (Rogers, 2003). Finally, 3 teachers decided to wait until their fourth semester of eligibility before using the math intervention program, which would make 5% of users laggards (Rogers, 2003).

The only category of users that seems to match with Rogers (2003) was the final level of users, or laggards, which he predicted to be about 16% of users. Comparing the chart of teacher percent of adoption over time, Figure 4.11, and Rogers (2003) S-Shaped diffusion curve, Figure 2.2, there is a much steeper increase in users at the beginning, indicating a faster rate of acceptance and use than Rogers (2003) predicted. This would not create a normal distribution curve, such as what Rogers (2003) Diffusion Theory

would suggest (see Figure 2.3). Instead, the distribution chart for teacher use of the math intervention program was skewed to the right, or positively skewed.

### Math Intervention Student Referral Numbers

Due to the different referral and data collection procedures for each school, the math interventionist at School A was the only one who recorded math intervention referral numbers. Data was recorded every semester of the study, and can be seen in Figure 4.13.

Based on the graph presented as Figure 4.13, it can be seen that there was an increase in total number of students referred to the math intervention program each semester. This indicates an overall increase in use of the program during the study. All of the graphs show a similarity to Roger's (2003) S-shaped diffusion curve, with increased acceptance rates as time progressed.

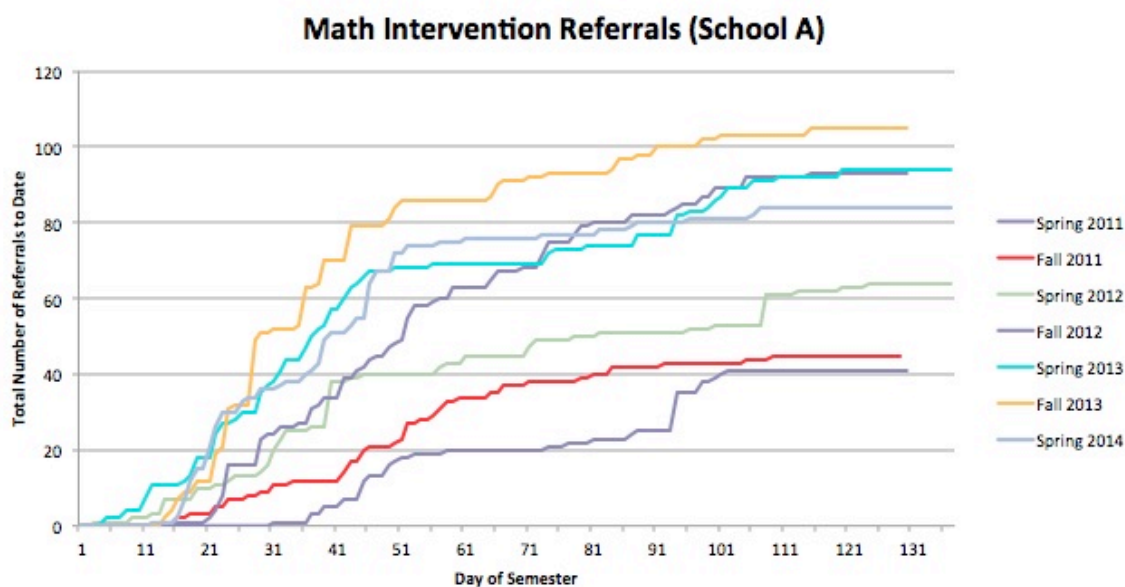


Figure 4.13 – Math Intervention Referrals for all semesters (School A)

In addition, the rate of referrals indicated a positive trend, increasing over time (see Table 4.1). The number of days before the first referral was submitted decreased

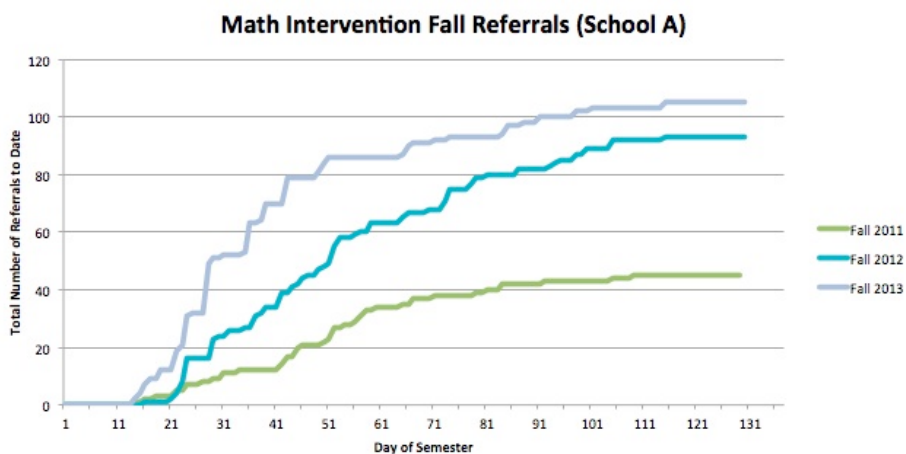
over time, especially within the first three semesters of use. This indicates that referrals were made earlier and quicker.

*Table 4.1 – Rates of Referral each Semester (School A)*

	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014
Rate of Referral (referral per day)	0.32	0.35	0.47	0.72	0.69	0.81	0.61
Number of days before first referral submitted	31	14	3	16	4	14	12

To get an accurate representation of change over time, there must be a separate focus on the spring semester data, as well as the fall semester data. Spring and fall semester data changed based on total eligible students and courses being offered, thus causing changes in the numbers.

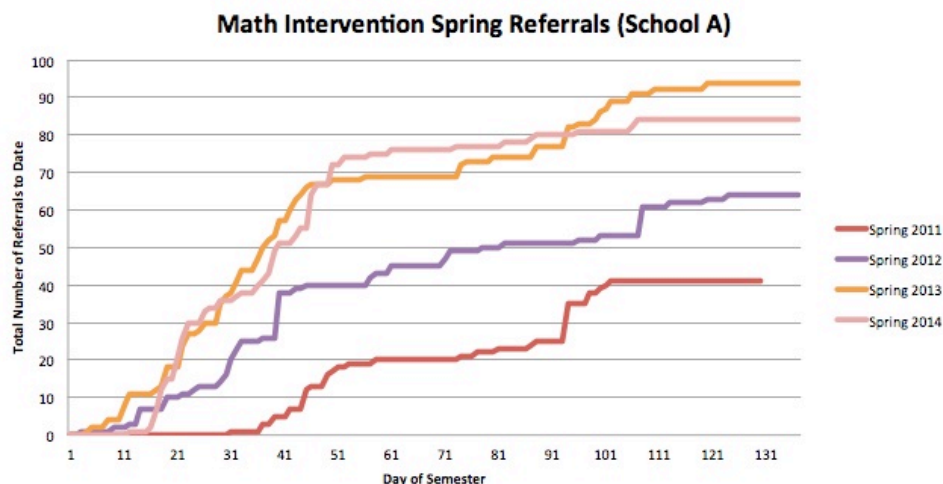
When looking at just the fall semesters (see Figure 4.14), it was evident that each year there was an increase in total number of referrals, as well as rates of referral.



*Figure 4.14 – Math Intervention Referrals for Fall semesters (School A)*

The same increase in total number and referral rate seen in the fall semesters can also be seen in the spring semesters (see Figure 4.15). When comparing spring 2013 and spring 2014 semester data they appear to be similar to each other in both rates and total

number. This indicates that the use of the math intervention program was becoming more routine and consistent. This consistency took three years to achieve, indicating that change takes time.



*Figure 4.15* – Math Intervention Referrals for Spring semesters (School A)

### **Percentages of Eligible Teachers and Students**

During each semester of the study, I collected data on the percentages of eligible teachers and students who were using the math intervention program. Data was collected from the math interventionist at each school. School B was unable to provide the total number of eligible students for the first three semesters, thus there are no percentages for those semesters. The results for School A are found in Table 4.2.

For School A there was an increase from spring 2011 to spring 2014 in percentages of both eligible teachers and students. Even though there was not a consistent increase every semester, overall there is a positive trend in the percentages. Percentages during the fall semesters tended to be lower due to a greater total value of both eligible teachers and students. This is due to the fact that Geometry semester 1 is taught mostly during the fall, with very few sections during spring semesters.

Table 4.2 – Percentages of eligible teachers and students (School A)

School A	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014
<b>Percentage of eligible teachers</b> who made recommendations to the math intervention program.	77.78% (7/9)	86.67% (13/15)	83.33% (10/12)	85.71% (12/14)	120%* (12/10)	92.86% (13/14)	120%* (12/10)
<b>Percentage of eligible students</b> who were recommended for math intervention support.	12.853% (41/319)	7.07% (46/651)	16.84% (66/392)	14.15% (92/650)	23.86% (94/394)	15.98% (105/657)	20.59% (84/408)

\*Some teachers used the math intervention program for programs not originally designed for math intervention, as well as special cases, thus creating over 100% eligible teacher use.

If you examine just spring semesters (see Table 4.2), there was a consistent increase in the percentage of eligible teachers, peaking during the spring 2013 semester, as well as increases for percentages of eligible students during the first three spring semesters (spring 2011, 2012, and 2013), again peaking during the spring 2013 semester, with a small decrease during the last spring semester between Spring 2013 and Spring 2014.

This same trend occurs when you examine the fall semesters (see Table 4.2), showing consistent increase in percentages for eligible students, peaking during the fall 2013 semester, as well as for eligible teachers a slight decrease between fall 2011 and fall 2012, but then an increase between fall 2012 and fall 2013, peaking again during the fall 2013 semester.

If you examine the number of eligible teachers and students using the program (see Table 4.2), instead of percentages, you will see a consistent increase between every semester for eligible students (41, 46, 66, 92, 94, and 105), with a small decrease during the last semester (84). Teachers increased between spring 2011 and fall 2011, from 7 to

13, nearly doubling the number of teachers using the math intervention program. This indicated that teachers may not have been comfortable using the math intervention program during the first semester, causing a smaller number of teachers to use the program, but then becoming more comfortable with it after seeing it in action for one semester and thus causing more teachers to use the program during the second semester. With that increased comfort level and number of teachers using the program, there was also an increase in number of students within the program.

Overall, there was an increase in percentages of eligible teachers and students using the math intervention program from School A during the study. Peaks for both eligible students and teachers both occurring during the same semesters later in the study, indicated that the increasing trend may continue beyond the time of the study.

*Table 4.3 – Percentages of eligible teachers and students (School B)*

School B	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014
<b>Percentage of eligible teachers</b> who made recommendations to the math intervention program.	100% (9/9)	137.5%* (11/8)	88.88% (8/9)	72.73% (8/11)	116.67%* (7/6)	81.82% (9/11)	128.57%* (9/7)
<b>Percentage of eligible students</b> who were recommended for math intervention support.	N/A (79/?)	N/A (84/?)	N/A (80/?)	22.20% (117/527)	69.6% (174/250)	43.19% (206/477)	65.20% (178/273)

\*Some teachers used the math intervention program for programs not originally designed for math intervention, as well as special cases, thus creating over 100% eligible teacher use.

The data presented in Table 4.3 indicates that school B showed more consistent use of the math interventionist. Percentages of eligible teachers were high during both spring and fall 2011 semesters. There was a dip in the percentages during the spring and fall 2012 semesters, with an increase during Spring 2013. Eligible students showed



higher percentages during the fall semesters, mainly due to the increased total number of eligible students. The highest percentage for eligible teachers occurred during fall 2011, and the highest percentage of eligible students occurred during the spring 2013 semester.

The number of eligible students (see Table 4.3) indicates an increasing trend in numbers (79, 84, 80, 117, 174, 206, and 178). The number of eligible teachers that used the math intervention program remained fairly consistent (9, 11, 8, 8, 7, 9, and 9). Again, there was a spike in teachers after the first semester, indicating a possible influx of users after they had seen the program being used for one semester.

Even though the percentages did not show a consistent upward trend, the actual numbers of students using the math intervention indicated an increase in use for School B during the study. The data showed a consistent number of teachers using the program each semester.

*Table 4.4 – Percentages of eligible teachers and students (School C)*

School C	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014
<b>Percentage of eligible teachers</b> who made recommendations to the math intervention program.	86.67% (13/15)	92.31% (12/13)	91.67% (11/12)	90.91% (10/11)	83.33% (10/12)	91.67% (11/12)	100% (11/11)
<b>Percentage of eligible students</b> who were recommended for math intervention support.	13.84% (71/513)	11.84% (61/515)	12.01% (68/566)	14.26% (77/540)	16.20% (64/395)	8.17% (49/600)	12.33% (63/511)

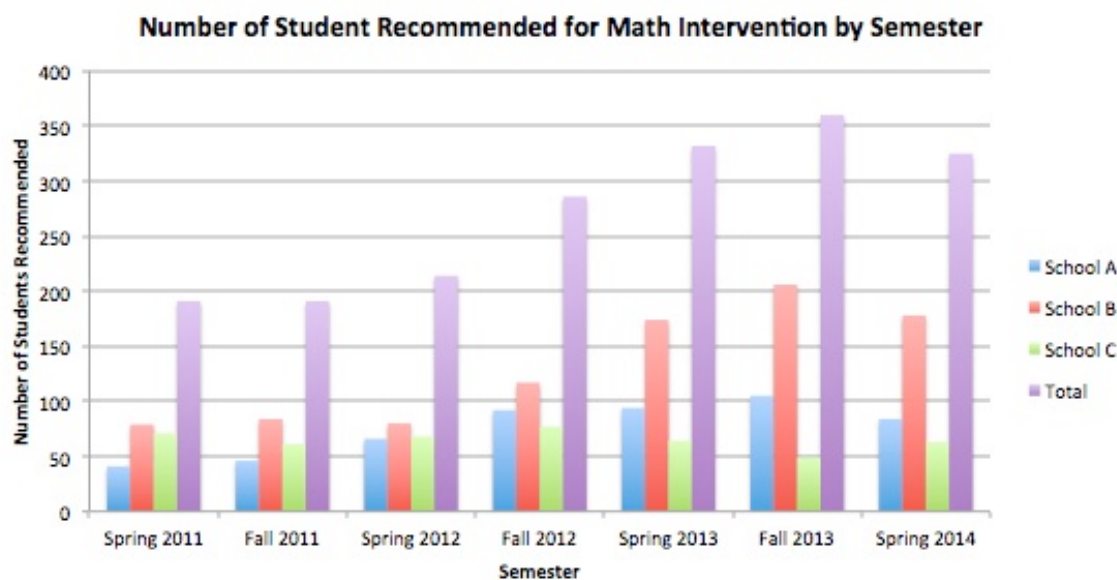
School C showed consistent use of the math interventionist according to the percentages indicated in Table 4.4. Eligible teacher percentages were consistently in the

upper 80's and 90's, with actual numbers between 10 and 13 teachers using the program each semester. Percentages for eligible students were consistent, remaining between 8% and 14%.

Every semester there were approximately 11 teachers using the program. The number of eligible students within the math intervention program was consistently close to or within the 60s.

School C was the only school that showed a decrease in numbers between the first two semesters, spring 2011 and fall 2011. Some of the highest results for both number of teachers and number of students were during the first semester, spring 2011. This could indicate that School C made a strong push at the very beginning to get teachers and students to use the program, causing an initial spike in use, and then settling down over time as teachers learned how to best use the program.

The trends indicated in Figure 4.16 may indicate a leveling off. This may indicate that the program is reaching a saturation point, or that teachers are becoming more routine in their use.



*Figure 4.16* – Number of Students Recommended for Math Intervention (All Schools)

From the bar graph above (Figure 4.16) almost every school showed an increase in numbers of students in the math intervention program during the first six semesters, peaking during the fall 2013 semester. After that semester, the numbers began to decrease slightly and appear to be leveling. This could be an indication that it took teachers approximately 3 years to understand how to use the program and use it consistently.

Some percentages for eligible teachers exceeded 100%. This was due to the fact that teachers who were not considered eligible to use the math intervention program were using it. Teachers, who taught Geometry semester 2, as well as Advanced Algebra, used the math intervention program at times. Part of the reason for this was due to the school district changing the graduation requirements during the study, increasing the required math credits from 20 to 30. This caused greater pressure on Geometry semester 2 and Advanced Algebra due to those credits being required for graduation. In addition, there were students who were part of the math intervention program during Algebra and Geometry semester 1 who still required additional support once they reached Geometry semester 2 and Advanced Algebra. Because these students had received support previously, some teachers considered it important that they continue receiving support.

Even though the percentages of students or teachers using the math intervention program decreased at times, it does not mean that the program was being used less. In fact, this may demonstrate that instead of the use of the program decreasing, the demand for the program actually increased with a greater number of reported eligible students and teachers, causing the percentages to drop.

Each school showed an increase, or consistency, in the number of teachers and students using the math intervention program during the study.

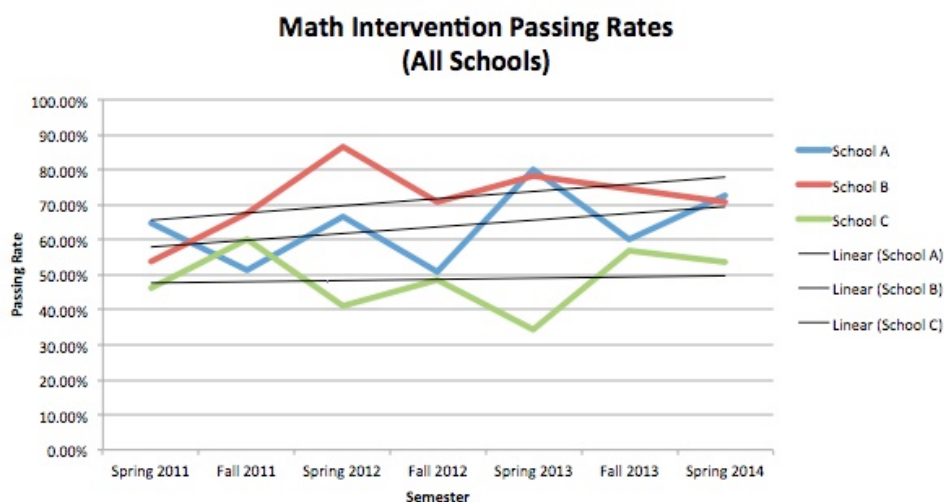
## Passing Rates

Passing rates of students within the math intervention program during the study were collected (see Table 4.5). These rates were used as a means to determine if the math intervention program was successful, and if that success changed over time. Data was collected from the math interventionist at each school.

*Table 4.5 – Math Intervention Passing Rates (All Schools)*

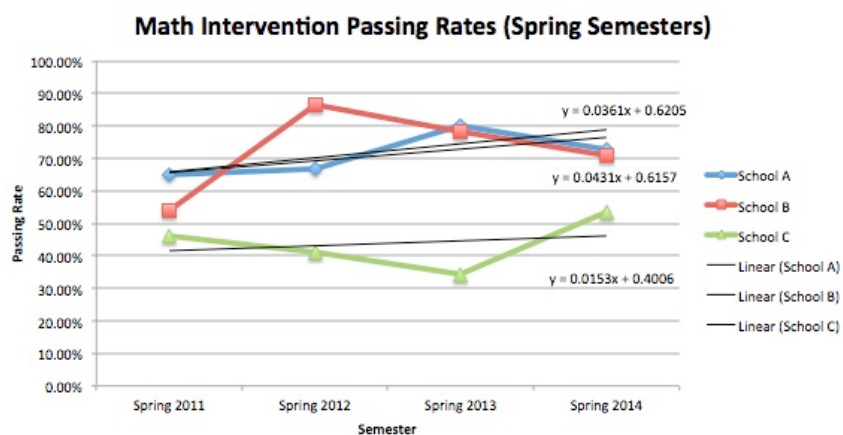
Passing Rates of Students in Math Intervention who were worked with 3 or more times							
School	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013	Fall 2013	Spring 2014
School A	65.00% (26/40)	51.22% (21/41)	66.67% (40/60)	50.70% (36/71)	80.03% (53/66)	60.00% (45/75)	72.58% (45/62)
School B	53.85% (35/65)	67.61% (48/71)	86.44% (51/59)	70.94% (83/117)	78.13% (75/96)	74.76% (77/103)	71.00% (71/100)
School C	46.30% (25/54)	60.00% (30/50)	41.18% (28/68)	48.48% (28/68)	34.38% (22/64)	57.14% (20/35)	53.66% (22/41)
<b>Overall</b>	<b>54.09%</b> <b>(86/159)</b>	<b>61.11%</b> <b>(99/162)</b>	<b>63.63%</b> <b>(119/187)</b>	<b>59.45%</b> <b>(151/254)</b>	<b>66.37%</b> <b>(150/226)</b>	<b>66.67%</b> <b>(142/213)</b>	<b>67.98%</b> <b>(138/203)</b>

Using the line graph with linear regression lines (Figure 4.17), it can be shown that every school within the study showed an increase in passing rates over the time of the study.



*Figure 4.17 – Math Intervention Passing Rates with trend lines (All Schools)*

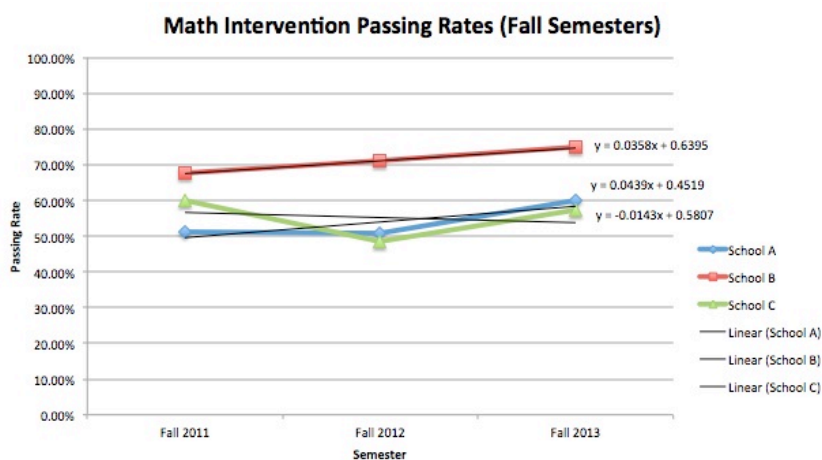
School A had a linear regression line of  $y = 0.0192x + 0.5608$ . School B had a linear regression line of  $y = 0.0205x + 0.6361$ . School C had a linear regression line of  $y = 0.0034x + 0.4737$ . This indicates that School B showed the greatest overall improvement, with School A very close, and School C showing the least amount of improvement.



*Figure. 4.18* – Math Intervention Passing Rates, Spring semesters, with trend lines (All Schools)

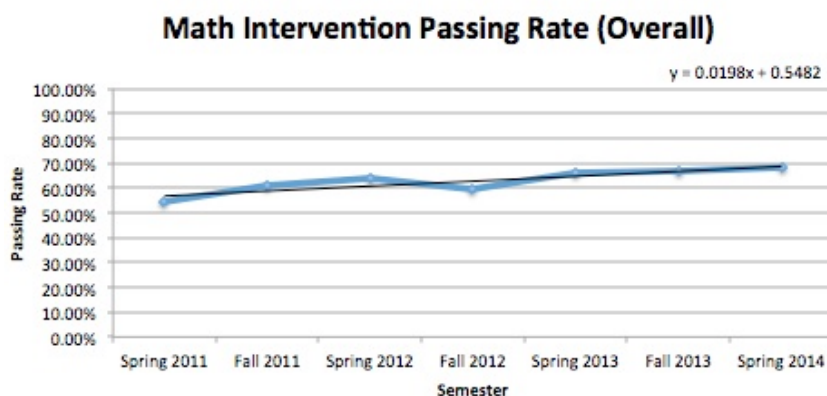
Focusing just on the spring semesters (see Figure 4.18) there is again an increasing trend for each school. School B again showed the greatest increase with a linear regression equation of  $y = 0.0431x + 0.6157$ . School A was close to School B with a linear regression equation of  $y = 0.0361x + 0.6205$ . School C had the least improvement with a linear regression equation of  $y = 0.0153x + 0.4006$ .

Regression lines for the fall semesters (see Figure 4.19) also showed an increase in passing rates for Schools A ( $y = 0.0439x + 0.4519$ ) and B ( $y = 0.0358x + 0.6395$ ), but School C had a decrease in passing rates ( $y = -0.0143x + 0.5807$ ).



*Figure 4.19* – Math Intervention Passing Rates, Fall semesters, with trend lines (All Schools)

Looking at Table 4.5, the first four semesters show an overall increase in the number of students within the math intervention program (86, 99, 119, and 151), along with an increase in overall percentages during the first three semesters (54.09, 61.11, and 63.63). The dip in percentage between spring 2012 and fall 2012 was due to an increase in total students within math intervention. Thus, there was a decrease in percentage, but an increase in the number of students who passed within the math intervention program. Percentages continue to increase after the dip, indicating an overall increase in passing rate during the study (see Figure 4.20).



*Figure 4.20* – Math Intervention Passing Rate (Overall)

Overall, this data indicates that math intervention has been successful in getting students that normally would not pass their math courses to now successfully complete, pass, and gain graduation-required credits. Not only has the program been successful, but also it increased its success over the course of the study. There is an evident increase in use of the math intervention program with increasing numbers of students and teachers using the program, along with an increase in passing rates over time. This indicates that teachers are not only increasing their use of the program, but that more students are being successful as well. Part of this increase could be attributed to the increase in eligible teacher participation, which may be due to teachers becoming more comfortable and knowledgeable with the math intervention program, the interventionist, and which students are the best possible candidates for math intervention support. Teachers are becoming more effective users of the math intervention program, thus causing passing rates and the success of the program to increase.

### **Math Intervention Stages of Concern Questionnaire**

I took the results from the Math Intervention Stages of Concern (SoC) Questionnaire to the Nebraska Evaluation and Research (NEAR) Center at the University of Nebraska – Lincoln. The NEAR Center provides consulting to university faculty and graduate students on quantitative, qualitative and mixed methods research. One of the consultants, Mike Zweifel, assisted me in analyzing my questionnaire data. The data was analyzed to determine if any significant differences could be found between subjects who took the questionnaire both year 1 and year 2, and between schools during both years 1 and 2.

Schools A and C provided results for years 1 and 2, but School B only provided results for year 2. This is because School B was given the questionnaire to complete during year 1, but nobody chose to participate.

### Reliability Test

Stages of concern for both year 1 and year 2 were measured for reliability using Cronbach Alpha scores. The Cronbach Alpha score should be greater than 0.8 in order to conclude that it is reliable. A list of the Cronbach Alpha results can be found in Table 4.6.

*Table 4.6 - Cronbach Alpha Scores from Reliability Test of SoC Questionnaire*

<b>Stages of Concern</b>	<b>N</b>	<b>Cronbach Alpha Score</b>
Unconcerned Year 1	23	0.346
Unconcerned Year 2	35	0.182
Information Year 1	22	0.667
Information Year 2	35	0.491
Personal Year 1	23	0.713
Personal Year 2	35	0.703
Management Year 1	23	0.836*
Management Year 2	35	0.522
Consequence Year 1	23	0.681
Consequence Year 2	35	0.786
Collaboration Year 1	23	0.717
Collaboration Year 2	35	0.883*
Refocusing Year 1	23	0.814*
Refocusing Year 2	34	0.426

\*Cronbach Alpha score > 0.8

These results indicate that most of the stages of concerns were found to be unreliable, or inconsistent, in their responses. The only reliable stages of concern were Management year 1, Collaboration year 2, and Refocusing year 1.



## **User Profiles**

After collecting responses from the Math Intervention Stages of Concern Questionnaire I constructed user profiles for each participant and each school (see Appendix H). In order to construct the user profiles I used the Stages of Concern Quick Scoring Device provided by George, Hall and Stiegelbauer (2006). Each question was answered on a 8-point scale from 0, being irrelevant, to 7, being very true of me now. Each stage of concern had five questions that were grouped to represent it. The questions were randomly placed in the questionnaire so that the subjects didn't know what stage of concern they were addressing with each question. Raw scores for each set of five questions were then summed to create a total raw score for each stage. Those totals were then converted to percentile scores using a conversion chart provided on the scoring device. Percentile scores indicate the relative intensity of concern at each stage (George, Hall & Stiegelbauer, 2006). George, Hall and Stiegelbauer (2006) developed these percentile scores based on the responses of 830 individuals who completed the questionnaire in fall of 1974. Percentile scores are then graphed to make a user profile.

User profiles allow you to see where a person's concerns are in each stage, and help determine what level of use they may be at based on the peaks and valleys of the profile. George, Hall and Stiegelbauer (2006) suggest analyzing user profiles by looking at the highest peaks, as well as an overall interpretation, looking at all seven stages.

### Peak Stage Score Interpretation

Table 4.7 – Peak Stage Frequencies (School A)

School A Peak Stage Frequencies	Fall 2012 (year 1)		Fall 2013 (year 2)	
	# of Teachers	% of Teachers	# of Teachers	% of Teachers
<b>Unconcerned</b>	11	91.67%	12	85.71%
<b>Information</b>	1	8.33%	0	0.00%
<b>Personal</b>	0	0.00%	0	0.00%
<b>Management</b>	0	0.00%	0	0.00%
<b>Consequence</b>	0	0.00%	0	0.00%
<b>Collaboration</b>	0	0.00%	2	14.29%
<b>Refocusing</b>	0	0.00%	0	0.00%

According to Table 4.7, School A had the majority of peak stage concerns within the unconcerned stage for both years 1 and 2. George, Hall and Stiegelbauer (2006) say that the unconcerned stage does not provide information about whether a respondent is a user or nonuser, but instead provides an indication of the degree of priority the respondent is placing on the innovation. A high score in the unconcerned stage indicates that there are other initiatives, tasks, and activities that are of concern to the respondent (George, Hall & Stiegelbauer, 2006). Thus, the majority of respondents from School A are indicating that the math intervention program is not a high priority to them, and that there are other things that are requiring their attention and focus. Another possible reason for the majority of respondents indicating peaks for the unconcerned stage is that possibly teachers are comfortable with the math intervention program and their use of it so much that they are no longer concerned about it and are thus more concerned about other things, making math intervention seem like a lower priority to them.

The main shift from year 1 to year 2 was that during year 1 there was a respondent with a peak stage for information, and in year 2 there were two respondents with peak stages in collaboration. A peak stage in information indicates that the respondent wants to know more about the math intervention program (George, Hall &

Stiegelbauer, 2006). The respondent who had the peak in the information stage was a long-term sub in the school, and thus was not trained on the math intervention program like the other teachers, causing a greater concern for information and knowledge regarding the program. Peaks in collaboration indicates that the respondents are concerned about coordinating and cooperating with others regarding use of the math intervention program (George, Hall & Stiegelbauer, 2006). Even though the number of teachers who had unconcerned at their peak stage increased from year 1 to year 2, the percentage of teachers who had unconcerned at their peak stage actually decreased. This indicates that more teachers overall are putting a higher value and priority on the math intervention program over time.

*Table 4.8 – Peak Stage Frequencies (School B)*

School B Peak Stage Frequencies	Fall 2012 (year 1)		Fall 2013 (year 2)	
	# of Teachers	% of Teachers	# of Teachers	% of Teachers
<b>Unconcerned</b>			10	90.91%
<b>Information</b>			0	0.00%
<b>Personal</b>			0	0.00%
<b>Management</b>			1	9.09%
<b>Consequence</b>			0	0.00%
<b>Collaboration</b>			0	0.00%
<b>Refocusing</b>			0	0.00%

According to Table 4.8, School B also has a majority of respondents with peak stages in unconcerned, 10 out of 11. This indicates, similar to School A, that the majority of respondents feel as though other things are of greater priority for them and thus they have a lower priority on the math intervention program. One respondent did have a peak concern in management, indicating that the respondent is concerned about the management, time, and logistical aspects of the math intervention program (George, Hall & Stiegelbauer, 2006). This makes sense because the respondent was the math department chair, and thus was in charge of managing the math intervention program

along with the interventionist, causing the program to be a higher priority and for concerns to be focused on the management stage.

*Table. 4.9 – Peak Stage Frequencies (School C)*

School C Peak Stage Frequencies	Fall 2012 (year 1)		Fall 2013 (year 2)	
	# of Teachers	% of Teachers	# of Teachers	% of Teachers
<b>Unconcerned</b>	11	84.62%	11	100.00%
<b>Information</b>	0	0.00%	0	0.00%
<b>Personal</b>	0	0.00%	0	0.00%
<b>Management</b>	1	7.69%	0	0.00%
<b>Consequence</b>	0	0.00%	0	0.00%
<b>Collaboration</b>	0	0.00%	0	0.00%
<b>Refocusing</b>	1	7.69%	0	0.00%

According to Table 4.9, School C had all 11 respondents with unconcerned as their peak stage for years 1 and 2. During year 1 one respondent had three peak stages, unconcerned, management, and refocusing. This respondent also had concerns about the management, time and logistics of the program, as well as exploring ways to reap more universal benefits from the math intervention program (George, Hall & Stiegelbauer, 2006). During year 2 all of the teachers at School C felt the math intervention program was a low priority to them.

Overall, the majority of respondents, regardless of location, had peak concerns in the unconcerned stage. This indicates that no matter what program was being used, or what school teachers were at, most of the teachers felt that the math intervention program was a lower priority for them.

Even though there was very high consistency in the peak concerns of respondents, second highest peaks were much more diverse (see Appendix I for Second Highest Concerns Charts for each school). This indicates that even though most respondents feel as though the math intervention is low priority to them, their concerns about the math

intervention program itself are very different and unique to the individuals and their experiences. There are no real consistencies between years or schools.

One thing that was interesting was that stage 4, consequence, which focuses on the impact of the math intervention program on students, was never listed as a peak concern, and only once listed as a secondary concern. All other areas had some respondents with concerns within them. This is indicating that almost none of the teachers are feeling concerned about the impact of the math intervention program on their students. Part of the reason for this could be that the program is showing success, and thus the teachers are not concerned about the impact the math intervention is having because they know it is being successful.

Looking at individual user profiles can give insight into different individuals and how they are feeling about the math intervention program. George, Hall and Stiegelbauer (2006) write about a few common patterns and what those usually mean. One they mention is when a respondent shows a high stage 3 along with a high stage 6 concern this usually means that the respondent usually has some ideas about how to change their use or the innovation itself (George, Hall & Stiegelbauer, 2006). There were two respondents that matched this pattern, Blank #5/7 from School C during Fall 2012 and Zane from School B during Fall 2013. Zane took the questionnaire during Fall 2012 as well, but was working at School C at the time. After that year Zane moved to School B to become the math department chair. When Zane was a regular math teacher his biggest concern was in stage 0, unconcerned, indicating that the program was low priority. But, once he became the department chair his concerns switched, causing his stage 0 concerns to lower and his stage 3, management, and stage 6, refocusing, concerns to increase. This makes sense because Zane now has a direct responsibility with the math department, serving as

the leader, and thus a direct responsibility with the math intervention program.

Coming from the math intervention program at School C, which was very structured, he indicated concerns about the program at School B, wanting to develop some new ideas and methods for the program.

Another combination that was mentioned was when a respondent has high stage 3, management, and a high stage 2, personal, concerns. This indicates that the respondent might have some uncertainty and doubt about whether they can master the innovation (George, Hall & Stiegelbauer, 2006). The only person to demonstrate this pattern was again Zane from School B during Fall 2013. With the transition that Zane made from School C to School B, and the fact that the programs were run differently, Zane may have felt some doubt about whether or not he could master the program and gain control over it. At this point the program had been operating for a couple years, and thus the teachers at School B were accustomed to what was being done. This can cause higher levels of uncertainty and doubt.

As users progress in their levels of use they should also progress in their stages of concern. Thus an individual's profile plotted over time should look like a wave moving from left to right (George, Hall & Stiegelbauer, 2006) (see Figure 4.21). Most of the user profiles (see Appendix H) represent a nonuser profile with high concerns in the early stages and lowering concerns as the stages increase. But, most of the teachers were using the math intervention program, and thus we know that many of these were not nonusers. At the time of taking the questionnaire the only people that were not using the math intervention program were; Mike from School C during fall 2012 and 2013, Derrick from School B during fall 2013, and George and Bridgette from School A during fall 2013. Mike and George had used the math intervention program in the past, so even thought

they were not using the program at the time of the questionnaire they were still experienced users. Derrick and Bridgette are the only identifiable respondents that had never used the math intervention program before, and thus would be able to be classified as nonusers.

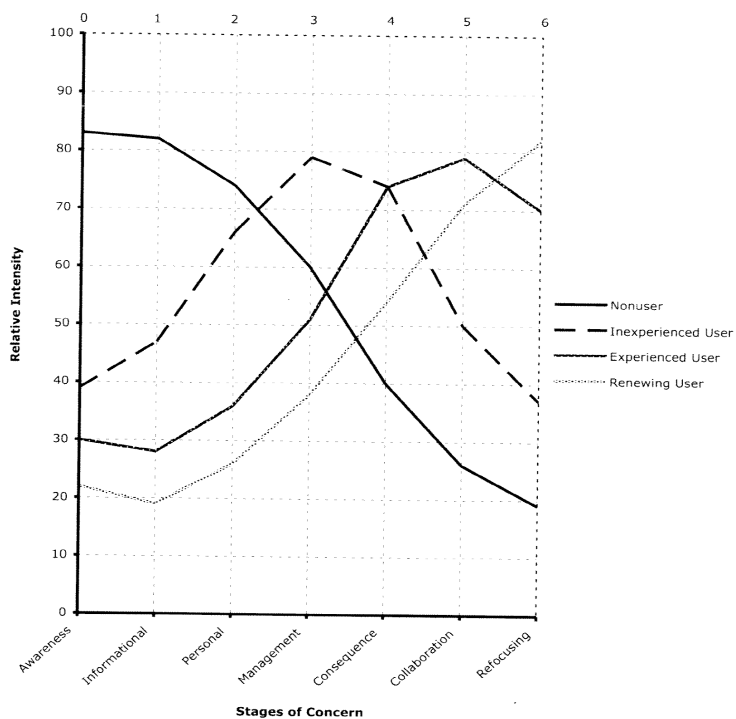


Figure 4.21 - Hypothesized Development of Stages of Concern (George, Hall & Stiegelbauer, 2006, pg. 36)

Table 4.10 – Rank Order and Percentile Scores of Stages of Concern (School A)

Rank order of Stage of Concern; School A	Fall 2012		Fall 2013	
	Rank	Percentile Score	Rank	Percentile Score
Unconcerned	1	87	1	85
Information	2	51	4	44
Personal	3	48	2	50
Management	4	27	6	25
Consequence	6	21	7	23
Collaboration	5	25	3	47
Refocusing	7	20	5	28

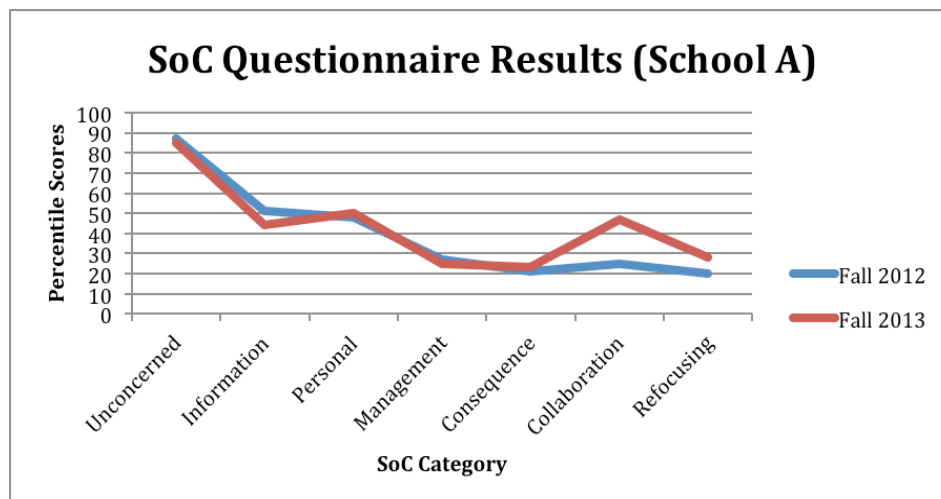


Figure 4.22 – School A Overall User Profile (2012 and 2013)

School A had respondents for both fall 2012 and fall 2013. When comparing the overall school profile between both years (see Figure 4.22) as well as the rank order and percentile scores (see Table 4.10), there was an increase in concerns within collaboration and refocusing, and a decrease in concerns in information. The decrease in concerns for information is an indication that teachers are lessening their desire for information regarding the math intervention program. As teachers become more knowledgeable about the program, the need for information should decrease. This is consistent with an increase in level of use. Increases in collaboration and refocusing are demonstrating a shifting of concerns to be less on teachers needs and more on the student and program needs. These are also signs of increased levels of use. A peak for collaboration suggests that teachers at School A are wanting to work more with other in relation to the use of the innovation (George, Hall & Stiegelbauer, 2006). With a higher value for information, along with a peak for collaboration, teachers might be searching to learn from others through collaboration (George, Hall & Stiegelbauer, 2006). School A was the only school that tailed down towards stage 6, refocusing. This indicates that the teachers do



not have ideas that would be competing with the program (George, Hall & Stiegelbauer, 2006), or searching for new ideas. The small peak at the personal stage might suggest that teachers are still concerned about the consequences of the math intervention program on them personally (George, Hall & Stiegelbauer, 2006). The slight increase between information and personal stages during fall 2013 suggests that there might be some doubt and possibly resistance to the program (George, Hall & Stiegelbauer, 2006).

*Table 4.11 – Rank Order and Percentile Scores of Stages of Concern (School B)*

<b>Rank order of Stage of Concern; School B</b>	<b>Fall 2012</b>		<b>Fall 2013</b>	
	Rank	Percentile Score	Rank	Percentile Score
Unconcerned			1	95
Information			2	35
Personal			3	32
Management			4	27
Consequence			7	6
Collaboration			6	9
Refocusing			5	17

School B only had respondents during fall 2013. Looking at the user profile for School B (see Figure 4.23) as well as the rank order and percentile scores (see Table 4.11), it indicates that teachers had very low concern about the impact that the math intervention was having on students, seen from a very low value for the consequence stage. Tailing up between collaboration and refocusing might be indicating that teachers have ideas on ways to improve upon the program (George, Hall & Stiegelbauer, 2006). The slight decrease between information and personal stages suggests that teachers probably have a positive and proactive perspective with little fear of the personal effects of the program (George, Hall & Stiegelbauer, 2006).

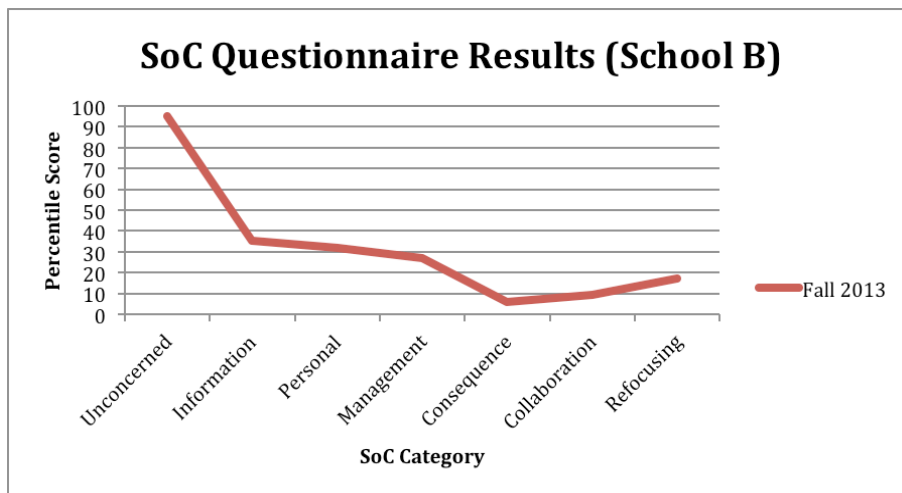


Figure 4.23 – School B Overall User Profile (2013)

School C had respondents from both Fall 2012 and 2013. When comparing the profiles from both years (see Figure 4.24) and the rank order and percentile scores (see Table 4.12), there was a decrease in personal, management, and refocusing concerns. During 2012, teachers indicated a greater concern for how to manage their use of the program, indicated by a small peak in the management stage (George, Hall & Stiegelbauer, 2006). These concerns could be about the time, logistics and management of the program. Both years had an increase between collaboration and refocusing stages, indicating that teachers might have strong ideas on how to do things differently (George, Hall & Stiegelbauer, 2006). Also, both years had very low values for consequence, suggesting that teachers maintained a low concern regarding the impact that the math intervention program was having on their students (George, Hall & Stiegelbauer, 2006).

Table 4.12 – Rank Order and Percentile Scores of Stages of Concern (School C)

Rank order of Stage of Concern; School C	Fall 2012		Fall 2013	
	Rank	Percentile Score	Rank	Percentile Score
Unconcerned	1	96	1	92
Information	3	45	2	41
Personal	3	45	3	36
Management	2	52	3	36
Consequence	7	9	7	8
Collaboration	6	19	6	15
Refocusing	5	34	5	26

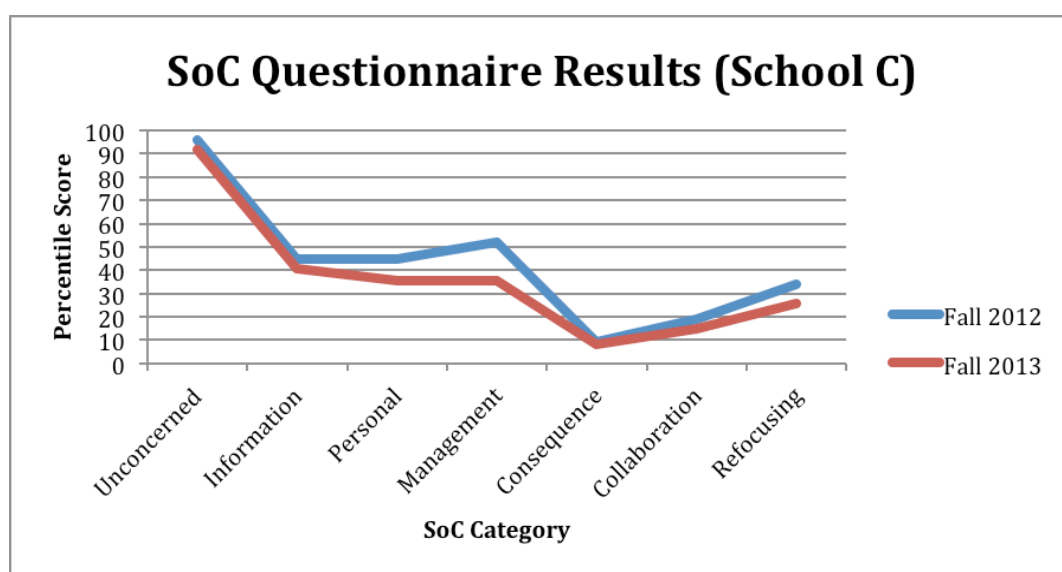


Figure 4.24 – School C Overall User Profile (2012 and 2013)

Nine subjects (Angelica, Bob, Mike, Rose, Fred, Veronica, Tammy, Ulysses, Zane, and Jake) could be identified as taking the questionnaire both year 1 and year 2. Zane completed the questionnaire both years as well but switched schools between years 1 and 2. Looking at their profiles (see Appendix H) we can see how their concerns changed over time.

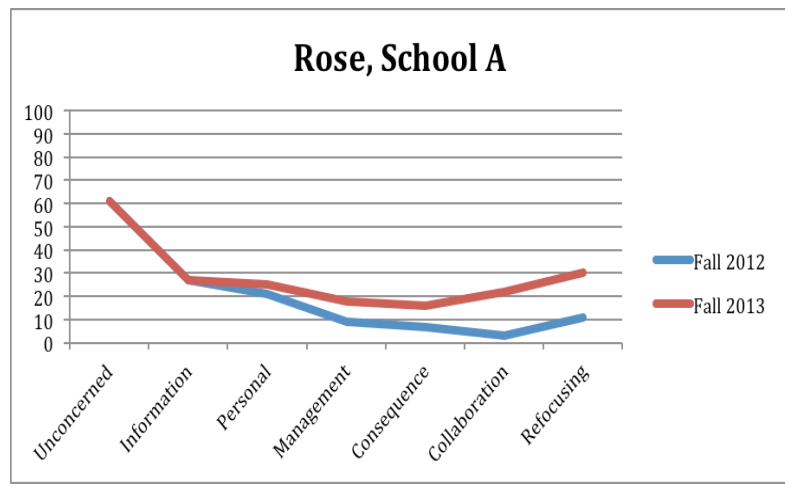


Figure 4.25 – Rose User Profile (2012 and 2013)

Rose (see Figure 4.25) had consistent values for unconcerned and information, indicating that the math intervention program was the same priority level for her, and she had the same level of concern regarding wanting information about the program. But her concerns within each of the other stages increased, which is an indicator of an increase in level of use. The biggest changes were within collaboration and refocusing, indicating that her concerns about working with others and finding ways to improve the program were becoming stronger.

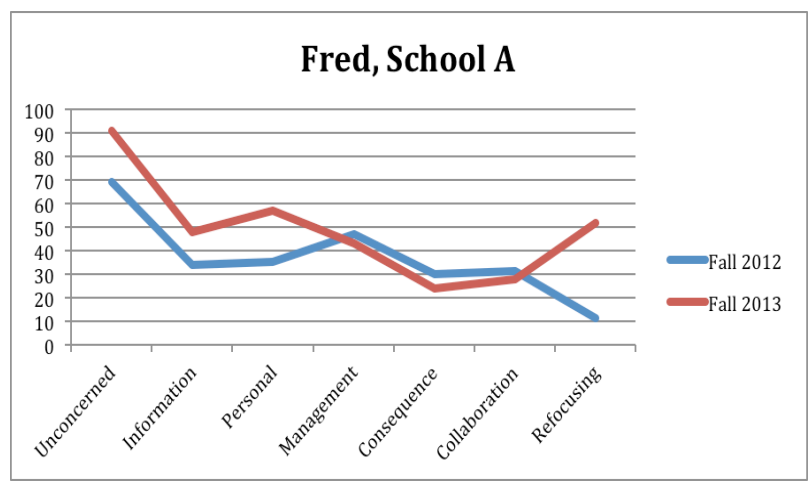
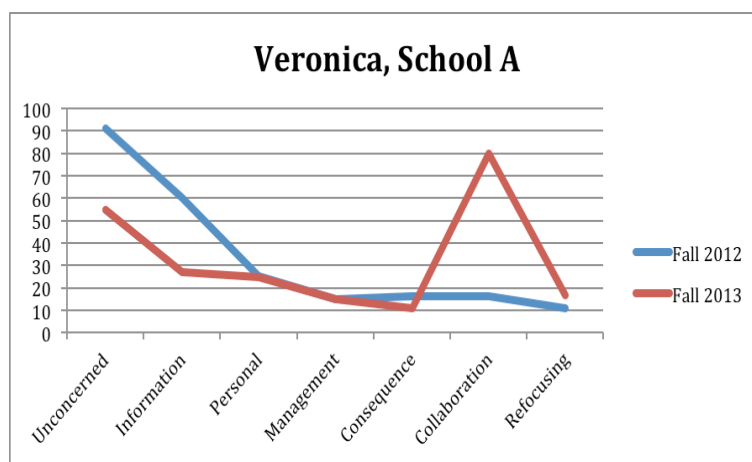


Figure 4.26 – Fred User Profile (2012 and 2013)

Fred (see Figure 4.26) increased in the unconcerned stage, suggesting that the math intervention program became less of a priority or concern for him. Information and personal concerns both increased, along with a big increase within the refocusing stage. In 2012 Fred's profile suggested that he didn't have any ideas for improvements or changes to the program, seen as a decrease between collaboration and refocusing stages. But, in 2013 Fred's profile now suggests that he had ideas for improvement, seen as an increase between collaboration and refocusing stages. This change might suggest that as Fred continued to use the program he began to develop ideas on ways to do things differently. Higher level users tend to demonstrate this same thing, indicating that Fred is increasing in his level of use.

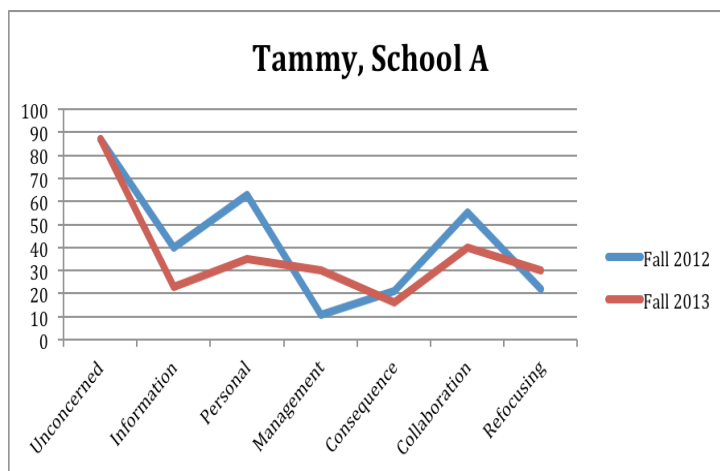


*Figure 4.27 – Veronica User Profile (2012 and 2013)*

Veronica (see Figure 4.27) decreased her concerns within the unconcerned stage. This suggests that she actually become more concerned about the math intervention program, making it a higher priority. Information stage also decreased, suggesting that she was not as concerned with gaining knowledge about the program. Her biggest change came in the collaboration stage, showing a large increase in her concerns. A spike in the collaboration stage suggests that she is concerned about working with others

in relation to the math intervention program (George, Hall & Stiegelbauer, 2006).

Shifting peaks to higher stages of concern is an indicator of higher levels of use.



*Figure 4.28* – Tammy User Profile (2012 and 2013)

Tammy (see Figure 4.28) showed increases within the management and refocusing stages, along with decreases for information, personal, and collaboration stages. Unconcerned and consequence stages did not significantly change. This indicates that she had fewer concerns regarding wanting information about the math intervention program and about her personal use of the program. One of the reasons for these stages decreasing could be due to her increased knowledge and experience with the program. An increase in management means that she is showing more concerns in her management of the program, managing the time and logistics of it. More concerns in the refocusing stage indicate that she is increasing her ideas on ways to improve the program. Again, these increases in concern stages could be due to her increased use of the program, gaining more experiences with it, thus having more things to manage and more time to develop ideas to improve upon it.

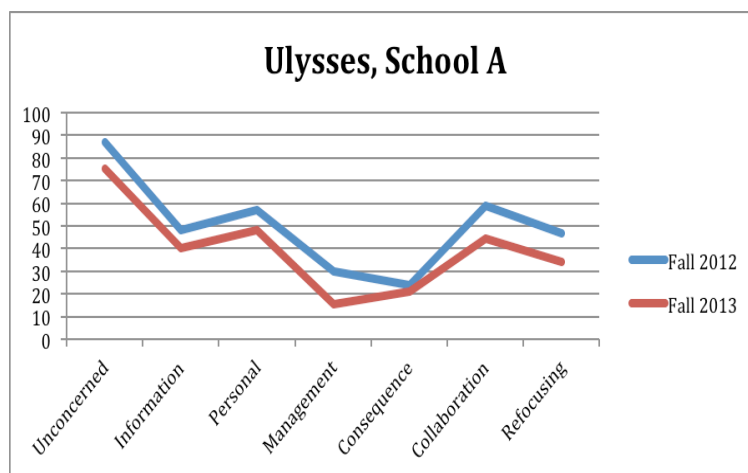


Figure 4.29 – Ulysses User Profile (2012 and 2013)

Ulysses (see Figure 4.29) showed a very similar profile for both years. The patterns in peaks and valleys matched in each stage. This shows that the areas of most and least concerns didn't change. But, every stage did show a slight decrease in value. Decreases in values could be indicating that he is overall having fewer concerns about the math intervention program, becoming more knowledgeable and comfortable with it.

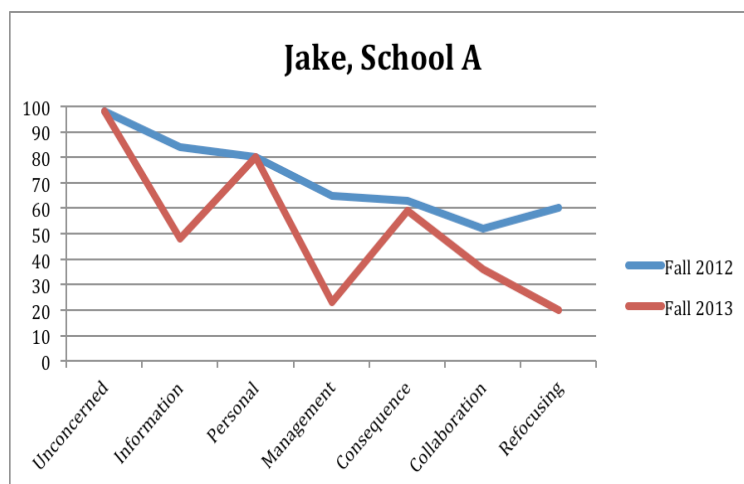
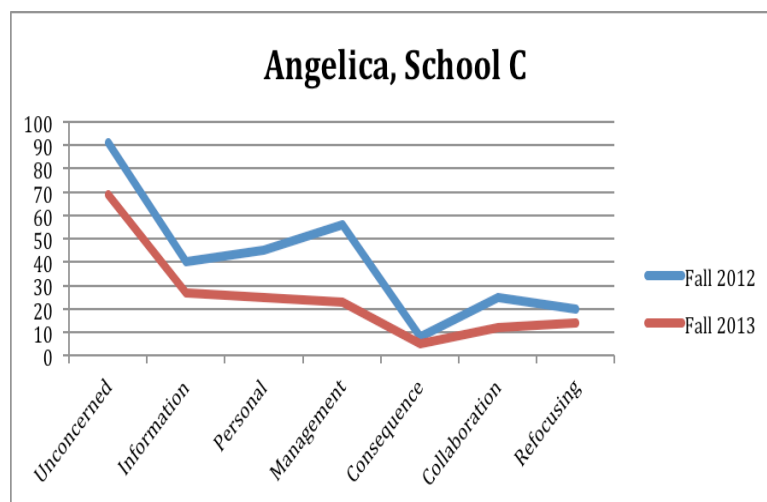


Figure 4.30 – Jake User Profile (2012 and 2013)

Jake's profile (see Figure 4.30) showed one of the biggest changes between year 1 and year 2. During the fall 2012 semester Jake's profile was very similar to a nonuser, having higher concerns within the lower stages and then decreasing along the stages. His

profile did tail up slightly at the end, indicating that he may have had some ideas on improving the program. During the fall 2013 semester Jake had very similar levels of concerns for unconcerned, personal, and consequence, but showed dramatic decreases within information, management, collaboration and refocusing. This indicates that his concerns about his personal use of the program and the impact it is having on his students were more prominent as he used the program further. After using the program for a while he had fewer concerns about gaining information about the program and managing his use, time and logistics of it as well. This may be due to his use becoming more routine and knowing what the math intervention program is, how it works, and what he needs to do with it. Also, his profile for fall 2013 now shows a tailing down at the end, indicating that he is maybe thinking less about ways to improve on the program, possibly accepting the program for what it is.



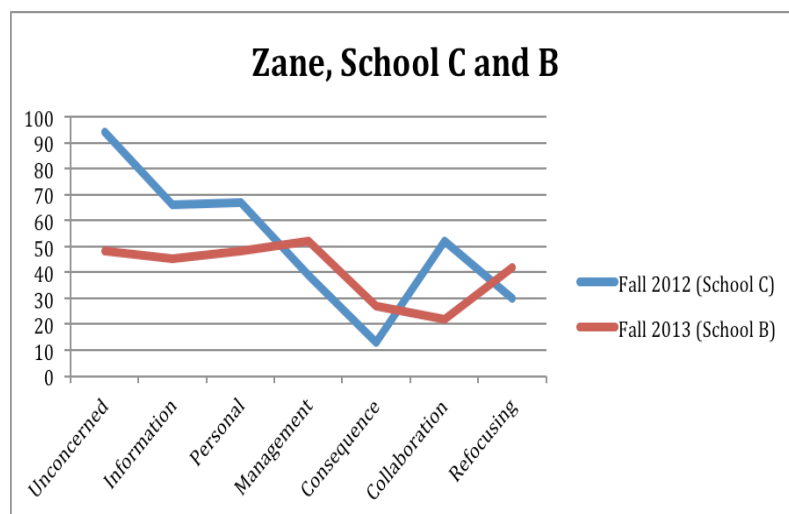
*Figure 4.31* – Angelica User Profile (2012 and 2013)

Angelica (see Figure 4.31) showed very similar patterns in the shapes of her profiles. Both years she had the same peaks and valleys, indicating that the stages of most and least concerns didn't change. But, the values of her concerns within each stage decreased. Management showed the greatest decrease. This could mean that she learned



how to manage her time and use of the program as she continued to use it more.

Unconcerned also had a noticeable decrease, indicating that the math intervention program could be becoming more of a priority for her.



*Figure 4.32 – Zane User Profile (2012 and 2013)*

Zane switched schools and positions between fall 2012 and fall 2013. During the fall 2012 semester he was a regular math teacher at School C, but during fall 2013 he became the math department chair for School B. This explains most of the changes in his profiles (see Figure 4.32). Looking at his fall 2012 profile it was very similar to the other teachers in terms of showing higher concerns within the lower stages and decreasing along the stages. His high concerns in the unconcerned stage indicate that the program was a low priority for him. Higher levels in information and personal stages show that he was searching to gain more knowledge and understanding of the program at that time. A peak in the collaboration stage indicates that he was concerned with trying to collaborate with others about the program and possibly learn from them, which makes sense along with his higher concerns in information. During the fall 2013 semester his profile changed more to represent someone with a more direct role and responsibility for the program. Unconcerned dropped significantly, indicating that the math intervention

program became much more of a priority to him. This makes sense because as a department chair he had more of a direct impact and responsibility with the program. Information and personal concerns both decreased as well, showing that he is less concerned about learning about the program. With increased use and experience he gains more knowledge and thus has less of a need for new information. Management and consequence concerns both increased. Because of his increased responsibilities as the department chair he also has increased concerns about how to manage the program itself and the impact it is having on the students. The decrease in collaboration was interesting to me, because I thought that starting at a new school and learning about their program would show higher concerns about working with others, but instead his concerns about collaborating with others about the program actually decreased. This could be due to the fact that as a department chair you are more of an authority figure, and thus you have more of a role of telling others what to do and what is expected, opposed to working alongside others. One of the other interesting changes was at the end of his profile, showing a tailing down between the collaboration and refocusing stages during fall 2012 but then a tailing up during fall 2013. This indicates that as a regular math teacher he didn't have many ideas about changing or improving the program, but as a department chair he showed greater concern about improving the program. Again, this makes sense because of his role as a leader in the department, trying to find ways to improve what they are doing, including the math intervention program.

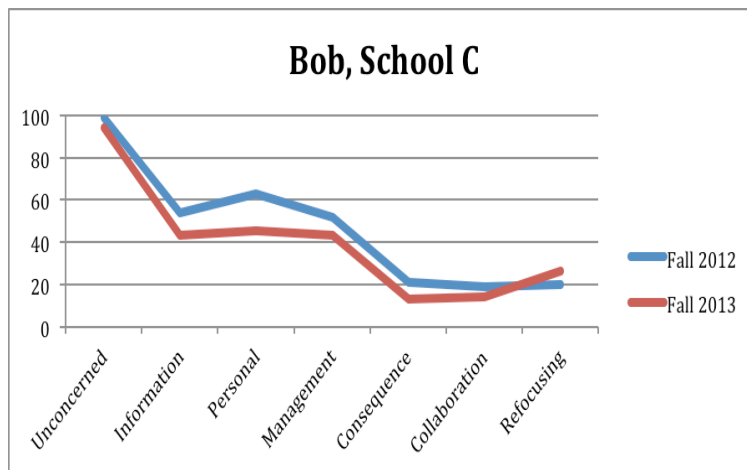


Figure 4.33 – Bob User Profile (2012 and 2013)

Bob (see Figure 4.33) had a very similar profile both years, showing almost the same values for each stage. This indicates that the stages of most and least concern didn't change. But, most of the stages did show a slight decrease in value between fall 2012 and fall 2013, except for refocusing which increased slightly. Decreases in lower stages and increases in higher stages is congruent with more experienced users. These changes are not dramatic, indicating that his use has not dramatically changed either, but it does show some advancement in his use of the program. A slight tailing up at the end of his profile for fall 2013 shows that he is starting to think about ways to improve upon the program.

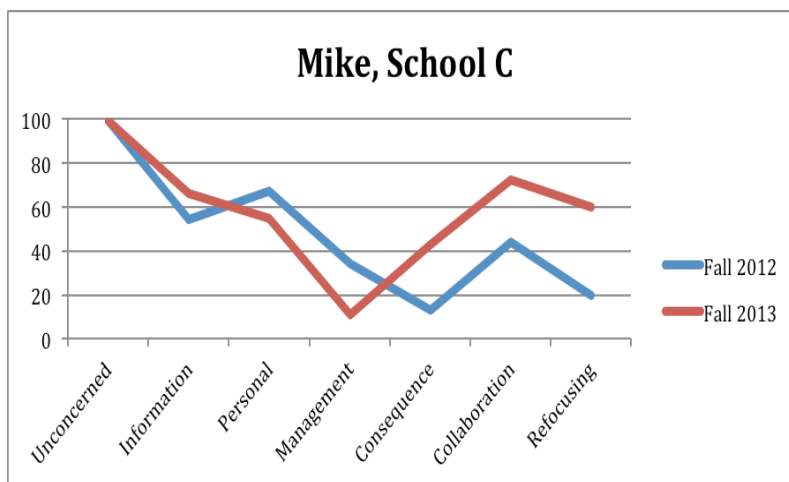


Figure 4.34 – Mike User Profile (2012 and 2013)

Changes in Mike's profile from fall 2012 to fall 2013 (see Figure 4.34) showed a real progression and advancement in his use. During fall 2012, his profile showed he possibly doubted the program a bit with a higher personal concern and lower concern about information. But, during fall 2013 he showed more concern about information than personal, indicating that he was maybe more positive about the program. Management concerns decreased, meaning that he was less concerned about managing his time and logistics, which comes with more experience and shows maybe more of a routine use of the program. Consequence, collaboration and refocusing stages all increased, which is congruent with more experienced and higher level users. His concerns are more focused on the program and the students, and less on himself. This could indicate that he is becoming more comfortable with the math intervention program, knowing what he personally needs to do, and is not starting to think about the impact of the program, working with others, and ways to improve upon it. Unconcerned showed no change, which means that the program is still a lower priority.

#### **Paired Samples t-test**

A paired samples test was done using the raw scores to determine if there was any significant changes in the stages of concerns for the subjects who took the questionnaire both years and stayed at the same school ( $n = 8$ ). A two-tailed t-test was done using an alpha level of 0.95, with the results found in Table 4.13. Each stage (unconcerned, information, personal, management, consequence, collaboration, and refocus) was analyzed to determine if there was a significant difference between year 1 and year 2 responses. None of the stages were found to be significantly different, mainly due to the sample size being to small.

Table 4.13 – Paired Sample t-test Results

		Paired Samples Test			
		Paired Differences			
		95% Confidence Interval of the Difference			
		Upper	t	df	Sig. (2-tailed)
Pair 1	Unconcerned1 - Unconcerned2	3.79427	1.249	8	.247
Pair 2	Information1 - Information2	7.56669	1.710	8	.126
Pair 3	Personal1 - Personal2	5.90417	1.392	8	.201
Pair 4	Management1 - Management2	6.36242	1.548	8	.160
Pair 5	Consequence1 - Consequence2	3.19252	.000	8	1.000
Pair 6	Collab1 - Collab2	4.48609	-.594	8	.569
Pair 7	Refocus1 - Refocus2	3.05512	-.912	8	.388

The biggest difference between year 1 and year 2 responses were found in the information stage, which has a difference of 7.57. Personal and management stages both showed bigger differences as well with 5.90 and 6.36 respectively. This indicates that teachers who completed the questionnaire both years showed decreases in their concerns regarding information about time requirements and resources. One of the reasons for this decrease in concern regarding information is due to the increase in knowledge about and experience with the math intervention program.

### One-way ANOVA

A one-way ANOVA test was then conducted to determine if there were any significant differences within year 1 and year 2 responses between the different schools.

Again, a 95% confidence interval was used ( $\alpha = 0.05$ ). Significant differences were found within personal year 2 ( $p = 0.015$ ), management year 1 ( $p = 0.044$ ), consequence year 2 ( $p = 0.002$ ), and collaboration year 2 ( $p = 0.000$ ). Refocusing year 2 was found to be very close to being significant ( $p = 0.055$ ). In order to determine which

schools had the significant differences a Sidak post hoc test was performed. Results can be seen in Table 4.14.

*Table 4.14 – One-way ANOVA Significant Results*

<b>Stage of Concern that showed significant difference</b>	<b>Schools that differed significantly</b>	<b>Sidak Post Hoc p value</b>
Personal year 2	A and B	0.018
Management year 1	A and C	0.044
Consequence year 2	A and B	0.003
	A and C	0.029
Collaboration year 2	A and B	0.000
	A and C	0.002

According to Table 4.14, School A was involved with every stage of concern that was found to be significantly different. Schools B and C were never found to be significantly different from each other in their responses. This indicates that Schools B and C are showed similar responses regarding concerns about the math intervention program. In addition, School A was found to be significantly different in 4 out of the 7 stages of concerns during year 2.

During year 1, Fall 2012, (see Figure 4.35), Schools C was found to be significantly more concerned about management than School A. This indicates that teachers at School C were more concerned about the processes and tasks involved with the math intervention program (George, Hall & Stiegelbauer, 2006). The other stages of concern were not found to be significantly different, but did have some differences, specifically within consequence and refocusing. School C did have a lower value to consequence, but was not found to be significant. Thus, they were less concerned about the impact of the program on students than School A. But, within refocusing their

concerns were greater, which means that they may have been more interested than

School A teachers in making changes or replacing the math intervention (George, Hall & Stiegelbauer, 2006).

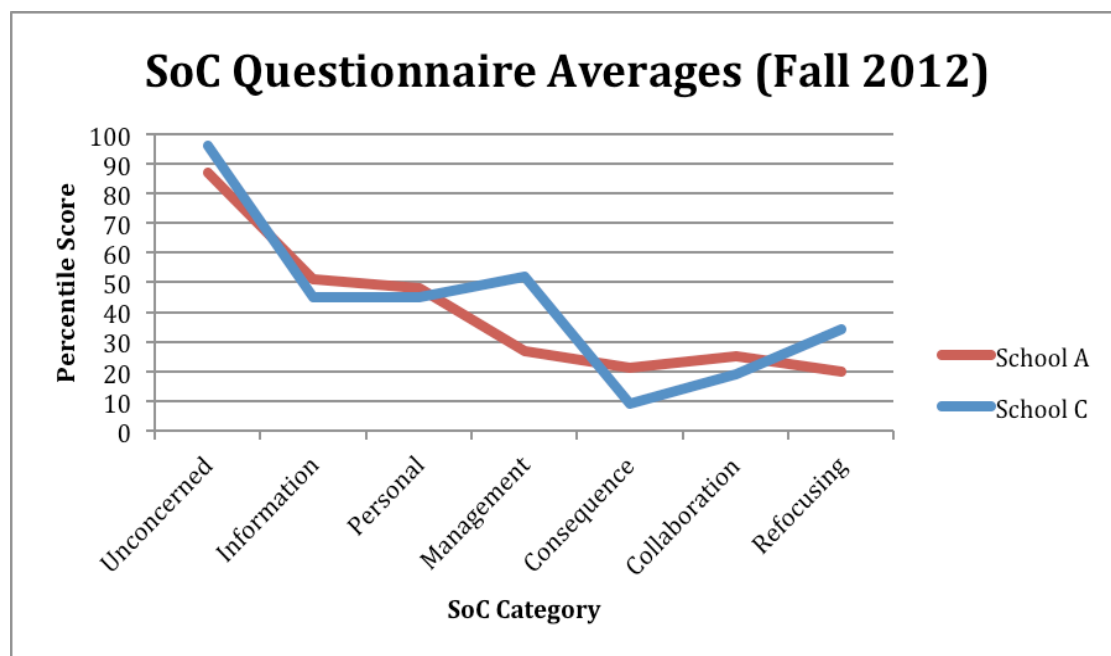


Figure 4.35 – Fall 2012 School User Profiles (Schools A and C)

During year 2, Fall 2013, (see Figure 4.36), there were a number of significant differences that were found, mostly between Schools A and B. Schools A and B had significantly different values for personal, consequence, collaboration and refocusing concerns. Within each of these stages School A was found to have significantly higher concerns than School B. This indicates that teachers at School A were more concerned than teachers at School B about the demands of the math intervention program, more concerned about the impact of the program on the students, more concerned about coordinating and cooperating with others, and more concerned about finding ways to reap benefits from the program or making changes to it (George, Hall & Stiegelbauer, 2006). Also, Schools A and C significantly differed within two stages, consequence and collaboration. Again, School A was significantly higher in each of the stages. From this

it can be determined that the teachers at School A were more concerned than teachers at School C about the impact of the math intervention program on students as well as coordinating and cooperating with others (George, Hall & Stiegelbauer, 2006).

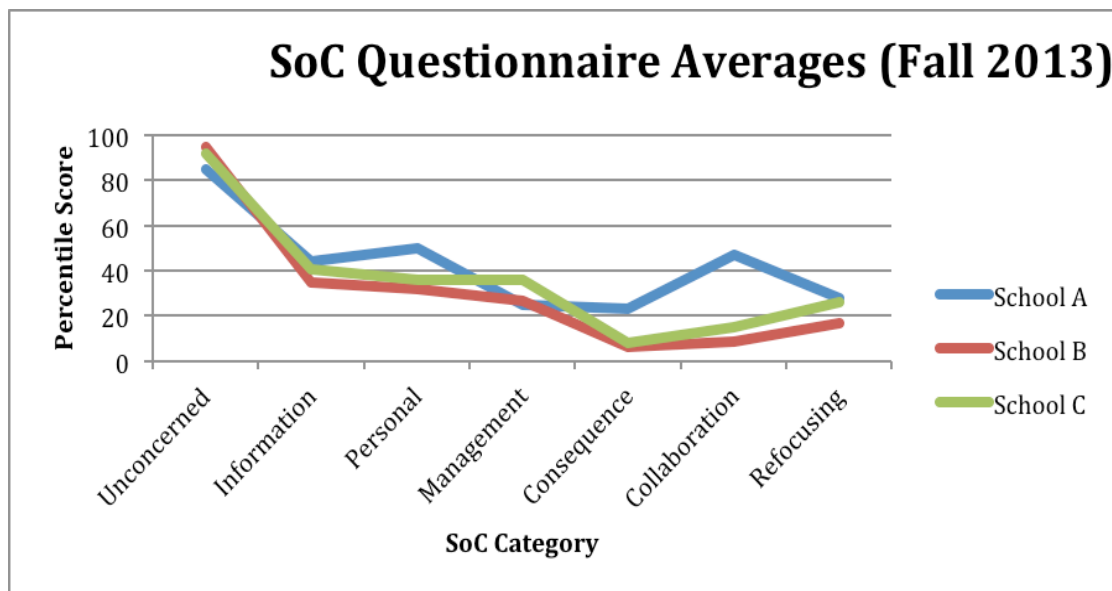


Figure 4.36 – Fall 2013 School User Profiles (Schools A, B and C)

When looking at the user profiles for each school in fall 2013 (see Figure 4.36), Schools B and C have very similar profiles, thus not showing any significant differences within any of the stages. Their profiles still resemble a lower level use with high values within the lower stages and decreasing values as the stages progress. School A shows more of an advanced use with some increases in values at high stages of concern, indicating concerns towards the students, working with others, and improving the program. All three schools were very similar in their concerns within unconcerned, which indicates that teachers at each school are not concerned about the program and put it as a lower priority. Information and management stages are also very similar, meaning that all teachers have very similar concerns regarding learning about the math intervention program and managing the processes and tasks (George, Hall and Stiegelbauer, 2006).



Appendix J lists the Stages of Concern Questionnaire individual question scores by school. By looking within each category we can see where concerns within those categories changed between years, and what teachers at each location were specifically concerned about or not.

A table of the high and low concerns by stage of concerns category for all schools can be found in Appendix K. For School A, within the unconcerned category teachers biggest concern initially was being preoccupied by other thing, but then changed to being concerned about the math intervention program. This shows that as teachers continued to use the program it became more of a concern for them, becoming more of a priority. Teachers said both years that they were not concerned about other innovations.

Information concerns showed both years that teachers were not very concerned about wanting knowledge about the math intervention program. Initially concerns were about what supports and resources were available, progressing later to being concerned about what the requirements are for the immediate future. This shows a progression from a focus on the present to a focus on the future.

High and low concerns within the personal category didn't change. Both years teachers indicated a high concern about wanting to know how their teaching was supposed to be changing, and a low concern about who would be making the decisions.

Teachers indicated during both years a high concern for not having enough time to organize themselves each day. This is not a direct reflection on the program itself, but it does indicate that teachers are feeling as though they have many other priorities and commitments during their day that they are having concerns about maintaining their organization. This could be a reflection as well on why teachers scored so high in the unconcerned category, indicating that the program was a lower priority. Lower concerns

within the management category were more specific to the math intervention program, showing that teachers concerns about managing their time and efforts were focused more on issues outside of the program.

Within the consequence category teachers initially indicated a high concern about the impact of the program on the students. The next year teachers were more concerned about exciting their students about the program. With increased success of the program, concerns about impact on students may have gone down. Students within the program tend to be students who dislike math and thus struggle with it, thus causing a concern about wanting to excite the students about the math intervention program. But, teachers also indicated that they had a low concern about the students' attitudes towards the program. This shows that students may have been willing to receive the help and support, but were not excited about it.

Collaborating with others in order to maximize the impact of the math intervention program was the biggest concern within the collaboration category both years. This indicates that teachers wanted to work with others and were concerned about making the program the best it could be. Lower concerns were in areas that related to other faculty or departments. Often teachers only work within their own departments, and thus have little concern about working with or collaborating with others outside of that department.

Refocusing showed that teachers had the most concern about knowing other approaches that might work better, but then also that teachers had little concern about actually revising or changing the program itself. This indicates that even though teachers might have had ideas about ways to improve the program, they were not concerned about how it was being run and thus didn't feel as though those changes needed to be done.

School B only took the questionnaire during fall 2013, and so there is no data for fall 2012. Teachers at School B indicated that they felt concerned about the math intervention program and that they had little concerns about other priorities preventing them from using the program. This shows that teachers felt they were capable of using the program and were thinking about it on a regular basis.

Even though they were thinking about it, teachers were concerned about how the math intervention program was better than what was previously being done. This could be an indicator of some resistance, searching for information regarding the value and impact of the program.

Within the personal category teachers were not concerned about the time and energy commitments of using the program, but were concerned about who was making the decisions. School B experienced a lot of leadership changes within the three years of the study, gaining and losing their math coach, changing math interventionists as well as department chairs. With all of this inconsistency in leadership teachers may have felt a concern regarding who is making the decisions. School B also indicated a high level of administrative influence when it came to the math intervention program. Administrators would often put students into the program themselves and push teachers at times to refer certain students. This increased influence and pressure from leadership outside of the program could also be a factor in the higher concerns about who is making the decisions.

Similar to School A, teachers at School B showed high concerns for having enough time to organize themselves each day, but low concerns about the requirements specific to the math intervention program. This again indicates that teachers are feeling as though they don't have sufficient time during the day to do what they need, but that math intervention itself is not creating those concerns.

Consequence concerns show a high level of concern about exciting students about math intervention, and a low level of concern about teacher evaluation. This shows that the concerns of the teachers are focused on the students and not on themselves. Being able to focus on student impact and concerns rather than teacher centered is an indicator or and allows for a higher level of use.

Within collaboration, teachers indicate that they would like to help others in their use of the math intervention program, but are not concerned about what others are doing. This could mean that teachers are becoming more set in their ways when it comes to their use of the program, thus not wanting to know what others are doing, but are willing to share what they are personally doing and help others with their use.

Teachers at School B, just like at School A, indicated that they had some ideas of other approaches that might work better, but then indicated that they had little concern about revising the program. Again, this shows that even though teachers might have ideas on how the program could work better, they also feel as though the program is being run well and has little need for change.

Teachers at School C initially indicated concerns about being preoccupied with things other than math intervention, but then showed a high level of concern for the program the next year. This could be an indication that teachers are beginning to prioritize the program as they continue to use it. When teachers are first introduced to a new innovation it will require time to readjust all of the other aspects of their daily lives and schedules in order to accommodate the new innovation into their routines. Once this has been done, then the other things in their schedules will not seem as much of a burden because a routine with the new innovation within it has been established. Having lower concerns regarding other innovations shows that the math intervention program, in

regards to innovations in general, is seen as a priority. This does not mean that the program is a high priority overall, seen by a high overall unconcerned score.

Initially teachers were concerned about how the math intervention program was better than what was being done before. When any change is done, whatever is new will be seen as something scary and will be questioned for its value. People do not want to change unless there is value in making the change. Thus, if the math intervention program is not seen as having more value than what was being done before it, then teachers will not see the need to use it. But, the next year teachers indicated a high concern for the program, showing that they did find value in it and were beginning to put a priority on it as well. Lower concerns were regarding knowledge and use of the program. Teachers indicated that they felt they knew the program very well. School C had the highest number of teachers using the program consistently, and thus there was a low concern about the possibility of using the program because almost everybody was already using it.

Personal concerns were focused on who will be making the decisions as well as what the time and energy commitments will be when using of the math intervention program. These concerns are centered on learning about the program itself, who is in charge and what it will look like when it is being used. Lower concerns were centered on teachers themselves and their roles. Teachers indicated low concern about having to adapt or change their teaching or their role. With the math intervention program being done outside of the classroom, teachers often don't have to change how they are teaching or their normal role within the classroom itself.

Concerns within the management category were high both years about not having enough time to organize each day. These concerns don't seem to be focused on the math

intervention program itself since the lower concerns were more specific to the program. Teachers indicated that they were not very concerned about the commitments and management of the math intervention program. These concerns were very similar to Schools A and B, showing that teachers at all locations were concerned about organizing their daily work, a concern of most any teacher at any location or level. But, the math intervention program was not causing teachers concerns at any of the locations above and beyond those normal concerns.

During fall 2012 teachers indicated concerns about the impact the math intervention program was having on students, as well as lower concerns about the attitudes of students. This indicates that students often had good attitudes about using the program, but teachers were still concerned about how it was affecting the students. As the success of the program increased, teachers' concerns changed. During fall 2013 teachers now indicated concerns about exciting their students about the program. Teachers showed little concern about the evaluation of themselves. This shows a student-centered concern, which is an indicator of a higher level of use.

Collaboration concerns focused on working with others to maximize the effect of the math intervention program. Other people that use the program would be predominately within the math department. Lower concerns were shown in regards to collaborating with others outside of the math department. Concerns at this point are focused on working internally within the math department, and not worried about working with or collaborating with people outside of the department or program.

When thinking about the math intervention program, teachers indicated lower concerns about revising the actual program. But, they did show concerns about revising the use of the program. Teachers initially indicated concerns about revising their own

personal use of the program, and then concerns about adapting the use of the program to fit the experiences of the students. This shows that teachers are content with the way the program is set up and structured, but are searching for new ways to use it and adapting their own use.

Overall, there are many signs of increased use and success of the math intervention program. This can be seen by increases in referral numbers, higher passing rates, increases in numbers and percentages of eligible students and teachers using the program, as well as changing concerns towards higher stages of concern. Teachers are clearly using the program more often, using it quicker, and using it more effectively over time. Concerns are becoming more student focused, and teachers seem to be comfortable with how the program is structured and being run. Even though the math intervention program seems to be an overall lower priority to most teachers, there are indications that teachers are beginning to have more concern for the program as they continue to use it. A lot of these changes did not occur right away, taking three years for them to fully develop, and possibly continue to further grow as use of the program continues.

## **Qualitative**

### **Interviews**

Voluntary interviews were conducted starting during the fall 2011 semester and ending during the fall 2013 semester. This gave teachers five semesters to participate in the interviews. Interview questions for each round can be found in Appendix D. Each round of interviews built upon the responses from previous interviews in order to allow for increased depth.

School A had 17 teachers interview at least once during the study, with School B having 4 and School C having 7. Thus, the majority of the interviews were conducted

with teachers from School A, with minimal response from School B. A complete list of teachers interviewed can be found in Appendix C. Once the interviews were conducted they were coded and themed into the following categories.

### **Doing What's Best for Students**

When teachers were asked why they used the math intervention program they often responded with, if it can help my students be successful then I want to give them that opportunity. Vern at School A described it as,

But then as the semester progressed I realized, and honestly thought about what's best for them, that there's a lot of students in there that are trying but are not getting that help they need, they're not getting enough help in the classroom... (personal communication, fall 2012).

They also talked about making sure they picked the right students to be in the program and the struggle of trying to identify who and when to refer students. Special cases were discussed where the intervention program could help teachers support students that were experiencing unique situations. Concerns were also voiced about referring students to and using the program.

**Giving All Students Help.** Some of the teachers felt that if help was needed, then it was their job to provide that. They didn't toil over their recommendations to the program, but just provided support for any of the students who needed or wanted it. Ulysses from School A stated that often he would tell his students that, "...if you want extra help then we'll figure it out" (personal communication, fall 2012). Angelica from School C stated, "I mean if I have the thought in my head I don't really struggle with, do I assign them or do I not assign them" (personal communication, fall 2012). The needs of the students were placed above the criteria given to the teachers for deciding what type of



students to refer to the math intervention program and the process for referring students set by the math interventionists and the district. Amy from School B said, “I feel like if anybody needs the help, I’ll refer them” (personal communication, fall 2011). Amelia from School A felt so strongly about the impact of the intervention program that she said, “Everybody would benefit from the help from the interventionist” (personal communication, fall 2014). Even as teachers saw the total numbers of students within the math intervention program increasing to levels that almost strained the program, they still were determined to provide support to the students that needed it, saying “It wasn’t like I was scared to up the numbers that were recommended” (Adam, School A, personal communication, fall 2013). Adam from School A expressed one of the reasons for this determination when he said,

And so the 90 or the max, that can always be adjusted for students’ needs. I believe that’s what the math interventionist is here for, and that’s what the interventionist told us at the beginning, ‘don’t worry about me, just take care of the students, and we’ll get this program right, and we’ll help out the students’ (personal communication, fall 2013).

Teachers often go above and beyond to provide support to their students, which often creates a culture within the school. Tammy from School A described this culture, saying

I think it fits in with the culture of this school’s attitude of, we will do anything and everything we can to help you as long as you take advantage of the opportunities we offer you. I think it is just part of what School A believes in. I know we are not the only school that has it, but I think it’s just a natural part of our culture (personal communication, fall 2012).

Even after recommending students to the program, teachers would express concerns about the possibility that they may have missed a student, "...I just get concerned about my students that I'm not recommending, and should I have recommended them" (Amelia, School A, personal communication, fall 2014), or excluded someone from getting the help that they wanted or needed, "I mean to some degree I want to make sure I'm not keeping it away from somebody that could actually use it" (Ulysses, School A, personal communication, spring 2013).

Not all schools allowed free and open use of the math intervention program. School C had the strictest criteria, having teachers go through multiple levels of strategies to try to work with the student prior to referring them to the program. School B had the most open use of the program, often seeming like there were very little criteria at all. The math interventionist at School C would sometimes work with students that were never even recommended to be in the program, "So the interventionist will work with some of those kids just on a regular basis, even if they aren't necessarily on our list of kids that need to be working" (Zane, School B, personal communication, fall 2012). School A provided criteria and suggestions for other strategies and interventions, but didn't require any of them to be done before referring a student to the program. Zane was able to experience and work with the math intervention programs at both School C and School B. He said,

...I like the way things were run at School C a little bit, but there were times where I was like, can we just get this kid some help and get him on track here even though they have a C right now, I know in a week when we take the test they're not going to have a C anymore. Where here it's

sort of a give everybody help that we can. Definitely extremes (personal communication, fall 2013).

Many of the teachers expressed that they wanted to give their students every opportunity to be successful in their class, but focused more on just the students who were failing. Vern from School A said, "...I care about those students, and I want them to be able to do well, so, that's when I look, when I talk to them and make the referral" (personal communication, fall 2012). Some mentioned that if there were students failing then they were going to use the math intervention program to get those students extra help no matter what, even if it meant increasing the number of student in the program to even higher levels. Ulysses and Jake from School A demonstrated this when they said,

Even though there's a concern that there's a lot of students in the program, just knowing that like a student really needs it, if they're really on the bubble, that they need it, I still want to give them that chance (Ulysses, School A, personal communication, fall 2014),

and, "...anybody who had an F I felt like should be in intervention just because I felt like any kid has a chance to pass the class, but they just all need that little extra help" (Jake, School A, personal communication, spring 2012). Teachers would make sure to phrase it to the students in a way as to try to give them the choice of using the program, and encouraging them to agree to it. Becky from School B described how she would address her students, who were failing, about being in math intervention, saying

And you just phrase it that I want you to be successful in this class, this person over here is willing to get you some extra help, do you want to bring up your F so you can pass so you don't have to retake this class, oh

perfect, okay let's get you some extra help (personal communication, spring 2013).

When phrased well, teachers indicated that many of the students were very responsive to being in the intervention program.

Overall, teachers expressed a strong desire to give students a chance to be successful and try everything they could to allow that to happen. Most teachers felt like using the program could only help students, and thus there were very few risks involved. Bob from School C said, "If I usually had any doubt I just went ahead and did it. I figure we have it, it can't hurt them one bit. If I had any wavier I always went ahead and referred" (personal communication, fall 2011). Math intervention could also allow teachers to discover the real roots of student struggles,

You know I always think it's better to bring up the student who needs the help, for whatever reason, whether because they're not doing anything to they are, they aren't getting and they need the extra help, because you'll find out information about what's causing the problems (Dylan, School B, personal communication, fall 2011).

Sometimes teachers needed to know that they had tried everything they could, keeping themselves accountable for the success of their students. Oscar from School A described this when he said, "So it's another tool that a teacher suggests that kind of makes for checks and balances, like are you doing everything in your power to help that student" (personal communication, spring 2012).

**Picking the Right Student.** Even though teachers want all of their students to be successful, some of them also realized that not all students would be fit for the math intervention program. This caused the teachers to be more specific in their use of the

program, making sure that they picked the right students to put into it. Some students showed very little effort or desire to do what was required in order to be successful, while others expressed a strong motivation to get help. Students may be able to be successful without the need for the math intervention program. Many teachers indicated a struggle with identifying who and when to refer students to the program. Other teachers stuck strictly to the set criteria provided to them at the beginning. Often time these struggles led to a delayed or hesitant use of the math intervention program.

When teachers were asked what they looked for when deciding which students to refer to the program many of them described looking for students who were trying really hard in the class and showing effort but were still not achieving at the level they should be. In addition, teachers indicated that they didn't want to refer students who they felt didn't care or were not trying to help themselves. Vern from School A described it as,

I they're struggling, but they don't care that they're struggling, or they're not trying to change things, then, yes I still care about them cause they're my students, but I'm just not motivated to get them involved in this program (personal communication, fall 2012).

Dylan from School B felt similar, saying, "The one thing that's tough is for students that don't do anything in class, and don't put forth the effort to try and learn, to then go and get put into the math intervention program" (personal communication, fall 2011). Some teachers felt that if the student was not willing to work in the classroom then they were not going to work in math intervention either, saying "If I don't think they're going to work for the interventionist then I don't send them" (Becky, School B, personal communication, spring 2013). Other teachers felt like the students that weren't showing any effort would try to use the math intervention program as a way to get out of working

in other classes as well, which Amelia from School A described as, “I want to reward the students that are still trying and I don’t want to reward the students that are purposely not trying and so they can get out of other classes to get help” (personal communication, fall 2014). Teachers felt that by referring students who didn’t care they were punishing the students that were trying and did care, described by Holly from School A when she said, “...that’s hard for me to give them extra help and take away time from other kids who have been working hard when these kids haven’t done anything” (personal communication, fall 2011). Students who were not working in class or completing assignments were still a struggle for many teachers because they didn’t know the real reason why the student was not trying,

It’s hard to know whether a student needs math intervention, because if part of it’s their behavior then you can still recommend them even though it’s their behavior that’s causing them to be not successful instead of just mental blocks (Jake, School A, personal communication, fall 2013).

One of the teachers, Quentin from School A, talked about the differences between intervention programs within the middle schools versus the high schools. Middle schools would automatically place students who failed a concept on their past test into an intervention class which was taught like a normal math class within a classroom. When asked to compare them he said,

This is much more voluntary, and I think can often be a more positive difference for those students. Cause I remember a lot of struggling students; ‘I don’t want to be here’, and it was very hard to get them to try the stuff (personal communication, spring 2012).

When students were not working in the classroom, often teachers would then turn to others for help and guidance. Referrals to administration, conversations with counselors, co-teachers or math coaches, and many other techniques were used to try to alleviate the problems. But, sometimes teachers indicated that those other people would then try to push for the student to be placed in the math intervention program, which most of the time the teacher disagreed with. This often created a moral dilemma for the teacher, feeling pressure to refer the student on one side while feeling as though it was not appropriate on the other. These differences in opinion between the teacher and others could be a result of miscommunication regarding what the math intervention program really is and should be used for. Amy from School B discussed this when she said,

...sometimes the administration sees it more as a punishment to go to math intervention and I don't want that, I don't want them to see it as a punishment. I want them to see it as a reward, you get this opportunity (personal communication, fall 2013).

Rose from School A goes on to say,

The administration I think understands a little bit more about who should and who shouldn't do it, but I think the other are more maybe concerned about getting the immediate help regardless of the current commitment level to using the help (personal communication, fall 2012).

But, sometimes the communication with others would help,

Working with the math coach on that, cooperative learning techniques helped me gather better formative data, aside from things like the homework, to know was it conceptual misunderstanding or was it just

laziness so they're just not practicing the skills (Quentin, School A, personal communication, spring 2012).

Some of the students showed that they did care, motivating teachers to recommend them to the math intervention program. Becky from School B said, "If I think the kid's going to be successful in it, and they need the extra help, I'm definitely going to recommend them in there" (personal communication, spring 2013). This was again described by Jake from School A when he said, "If they are putting forth the effort and they show me that they actually do need a little more help, then that's when it's going to refer" (personal communication, fall 2011). Amelia indicated that many of the students showed a desire for the help, saying, "But here at School A kids want to be in interventions, which is nice" (personal communication, spring 2013).

When students showed this desire for wanting help it often made it easier for teachers to identify students for the program, thus making their use of the program easier and often faster. Fred from School A indicated that students that asked for the help often became higher priorities for him to refer to the program, stating, "Depending on the student, someone who you know needs it, maybe has asked for it and needs it, and so that becomes a pretty high priority" (personal communication, fall 2012). Some of the teachers felt that if students voiced their desires to be in the math intervention program then they were voluntarily making that decision,

I usually let them make all the decisions of whether they wanted to do it. I didn't push them either way, and then I waited for them to respond back to me on whether they wanted to be in it (personal communication, spring 2012).



By letting students make the final decision it took pressure off of the teachers to find the “perfect” student to refer. Students who showed initiative in the classroom by vocalizing their needs gave teachers the confidence that they would be successful in the program. Nate from School C was motivated by this, saying, “The students I’m referring to the interventionist I really want to be somebody who can really benefit and I feel more confident that they’re going to end up passing” (personal communication, spring 2013). Student choice allows students to have some accountability in their commitment with the teacher to want and get the help they need, “It becomes a two-way communication and a commitment from the student to also be an active participant, active member, in the intervention program” (Patrick, School A, personal communication, spring 2012).

But, not all students are vocal about their desire to want to get help or be in the math intervention program, thus forcing teachers to battle with the decision of what students should be recommended. Identification of students for the program was one of the most voiced concerns. Amy from School B discussed this battle when she said, “It’s kind of hard to distinguish, what’s the line where I say okay this kid needs help but this kid doesn’t” (personal communication, spring 2012). Fred from School A talked about how one of his biggest concerns was making sure he was getting the right kids in the program, as well as making sure that he was not leaving anyone else out (personal communication, spring 2012).

Even after the math interventionist explained to teachers what to look for in students, and after experiencing the program for multiple years, some teachers still struggled with identifying the student they felt were best for the program, “...even though I know the interventionist talked about that at the beginning it’s still that question of who should we do it for” (Fred, School A, personal communication, fall 2012). After

struggling to decide who should be in the program, Fred from School A started to become very routine in his use,

...at the beginning of the semester I get four or five kids in there and almost probably sit back from it a little bit then, and almost like well I got some kids in intervention, that's good, where as I should probably be continuing that throughout more of the semester (personal communication, spring 2013).

Even though Fred was routinely referring a set number of students each semester, he expressed the desire to use it more regularly, but was prevented due to his struggles with identifying students. His use of the program could not grow until those concerns and struggles were addressed and overcome. Overcoming these concerns can be done by gaining information and knowledge about the students, and experience working with them individually. Teachers often struggled with why students were not being successful, "...is it due to her lack of knowledge or lack of understanding or is it due to her absences, persistent absences?" (Adam, School A, personal communication, fall 2013). Some of the teachers indicated that they needed to be sure that the students really needed the help, and wanted to gain as much information as possible before recommending the student,

I just think that there's definitely times where I wait to long, or you wait until they've already failed the test. I don't catch it early enough, so I wish there was just a way. But I always feel like I want to give the student a chance to pass and do it on their own. But yet there's probably times which I should have referred them sooner (Holly, School A, personal communication, fall 2011).

Rose from School A shared this same concern, stating, “I waited until there was at least one test to try to see what those tests actually looked like and what their understanding of the material was. Try to give them any opportunity to show me what they know” (personal communication, spring 2012). This confusion for teachers often caused them to be hesitant or delayed in their use of the program, as well as more routine. Teachers often indicated a desire to use the program and identify students faster. Tammy from School A said, “I think probably my greatest difficulty with intervention has been knowing how to identify which kids need it, and get them in there sooner” (personal communication, spring 2012). As teachers continued to use the program they often got better at identifying students sooner, thus using the program sooner as well. Just a year later Tammy reported, “Definitely got several students in earlier” (personal communication, spring 2013). Once teachers got faster at identifying students they become more comfortable and confident using the program, indicated by Nate from School C when he said, “What I found really helped was when I was able to identify students earlier” (personal communication, spring 2012). In addition, teachers started to see the value of identifying and recommending students earlier,

Trying to identify the students sooner in the semester so that they can get and work with the interventionist earlier and start the process of building on what they already know and trying to fill in the gaps of what they don’t know (personal communication, fall 2012).

Once teachers answered that question for themselves then most teachers were comfortable moving forward and recommending the student to the program.

All of the teachers were given criteria from their math interventionist regarding what to look for when identifying students for the math intervention program. Some

teachers relied on these criteria to make their decisions easier. Jake from School A said, “I think I know the purpose of intervention, so I recommend accordingly” (personal communication, fall 2011). Other teachers felt an obligation to stick to the set criteria, “I want to make sure I’m following the expectations of what we do before we refer that student to the interventionist” (Nate, School C, personal communication, spring 2012). Sticking to the criteria caused teachers struggles at times, feeling handcuffed by them. Mike from School C talked about his struggles when he said, “The only frustration I’ve had is sometimes when you know that’s what a student needs there’s been kind of hoops you have to jump through before you can get to that point” (personal communication, spring 2012). School C required teachers to go through multiple stages of interventions prior to recommending a student to the program, thus causing teachers to go through “hoops” before they could get their students support from the math intervention program. This delay often caused teachers to feel like the student was not getting supported in time and therefore often having to catch up on old material or even testing over the material before the student could get in to see the interventionist.

Zane was able to talk about the math intervention programs at both School C and School B because he worked at both locations. When comparing the programs he said, “...at School C those kids wouldn’t have gotten in to see the interventionist because they weren’t taking care of theirs, where here administration is having the math interventionist work with those kids” (personal communication, fall 2013). Since School B was much less strict about their criteria, often teachers simply looked for any student that was struggling within the set courses. This allowed for much more open use and fewer concerns for teachers, but also less structure and guidance. The structure of School C was something the some teachers enjoyed and felt it made using the program easier for

them because once students met the given criteria they knew they were to refer them to the math intervention program, “You got to have some criteria to be met in order to even use it. But, if any of those criteria have been met, then you can use the interventionist” (Bob, School C, personal communication, fall 2011). Other teachers felt the criteria of School C prevented them from using the program more often,

I know that I used it. I did not use it very much. And that wasn’t based on not thinking it’s a good idea. It was just based on, I didn’t feel like I had many kids that met that criteria (Chad, School C, personal communication, fall 2011).

For some teachers the criteria changed as they used the program more. Tammy from School A described how she changed in her thinking of the criteria as she used the program, stating,

I kind of felt like it had to be a kid that just didn’t get anything, and now I’m starting to realize like there are kids that are struggling and they get a lot of it and they’re really smart, but they’re struggling with certain things and that could be a good reason to send them to intervention as well (personal communication, fall 2012).

Karen from School A also described how her criteria for identifying students changed, saying,

Initially I think the thought was if they’re failing they should be on intervention. And that’s probably more of the school and administration piece. But, I think we’ve fine-tuned it a little bit. That it’s more of the students that are struggling but still have a chance to pass, and it’s not just automatically if they’re failing they need it, or if they have a D they need

it. There's more issues there, it's more cognitively how are they learning (personal communication, fall 2011).

While most teachers viewed math intervention as being very effective, it was only one of many interventions that the schools and teachers provided to support struggling students. Some of teachers relied on utilizing other supports before deciding to recommend a student to the math intervention program. Ulysses from School A said, "...intervention is just another support system, so the fewer supports the students need the better" (personal communication, spring 2013). Teachers enjoyed having multiple resources available for them to help their students, knowing that not every student is going to respond to and be successful with one single resource, thus "...you want to have an endless supply of interventions that you can try" (Angelica, School C, personal communication, spring 2013). Tammy from School A talked about the relief of having so many options for students to get help, saying, "...there's a ton of other options and I can take any of them" (personal communication, spring 2013). Jake from School A talked about how using the math intervention program still might not be enough for the student to be successful, and thus students may need to be willing to do more than just that (personal communication, fall 2013). Some of the teachers were seeing success through the other support programs that they didn't see a real need to use the math intervention program much. Angelica from School C described this when she said, "I actually haven't assigned to terribly many people because most of the interventions that I put in place my kiddos will do" (personal communication, fall 2012).

But, not every school had the same resources available. Teachers at schools that had fewer alternate resources available relied more heavily on the math intervention program. When students struggled having success in the math intervention program, or

choose not to participate in it, then this left the teacher with few options. Oscar from School A talked about this struggle when a student refuses to use the math intervention program, stating, “So the struggle was just now finding another alternative that would work for that student...” (personal communication, spring 2012). Mike from School C knew that not all students would be best for the math intervention program, but also realized that those students still deserved support and help somehow (personal communication, fall 2012). Some of the teachers tried to provide the support to their students themselves or felt that students would just naturally become successful with time and practice within the classroom, “...and I think that they can do a better job, and I think that they will turn around naturally or without additional support” (Nate, School C, personal communication, spring 2012). Lucy from School A when talking about her struggle to decide when to refer a student said, “I think it’s just my judgment in just seeing how much can I work with a specific student if I know they’re struggling, here’s what I have done, and is my help enough for that student” (personal communication, spring 2012). George from School A also talked about this, trying to decide if students really needed outside help or not, saying, “I do struggle with, could they be doing more in class to really get this fixed, or is this something that needs someone else” (personal communication, fall 2011).

**Special Cases.** After using the program for a while most teachers developed a sense of what type of student should be in the program and when to refer them. But, some of the teachers also discussed special cases where students needed support but didn’t necessarily fit the set criteria and mold that had been developed. Special cases that teachers discussed were one-on-one attention, needing help during the school day, gaps in

knowledge, disabilities, requiring additional time or a new perspective, and the need for confidence.

When teachers were asked what the best thing about the math intervention program was many of them responded with the fact that it provided students a more personalized one-on-one instruction or small group environment. Within the classroom teachers have very limited time that they can work with students on an individualized basis due to the number of students and demands on classroom time and instruction. Nate from School C talked about the importance of math intervention being able to provide one-on-one instruction when he said, "...there's a lot of students that need that one-on-one help, but the only way they're going to get it is through the intervention program, so I think it's good" (personal communication, spring 2012). Becky from School B said, "The good thing with the math interventionist is it's one-on-one help, so the interventionist can't pull more than two or three kids during a period, cause otherwise you don't get the individualized attention that they need" (personal communication, spring 2013). When students cannot get the one-on-one help that they need they often get left behind. Veronica from School A talked about how math intervention allows for the focus to be on the needs of the individual student instead of the needs of the classroom as a whole as they move on to new material (personal communication, fall 2012). This individualized attention was very important for some students who had difficulty focusing within a larger group setting or classroom environment. Jake from School A discussed the need for this individualized attention, saying, "...the classroom setting maybe is not the best for them to learn, not necessarily because the other behaviors in the class, but just they learn differently and need more of a one-on-one help" (personal communication, spring 2012). Karen from School A described the struggle of getting



students the attention that they need, even when she had a co-teacher and others in the room to help, saying, “Well I have 20 on 3, but still there’s some students that need that one-on-one, and 6 to 1 ratio is still to much for them” (personal communication, fall 2011). Amelia from School A talked about how some students would feel embarrassed admitting they didn’t know the answer or how to do the work when in front of their peers, saying, “And with interventions a lot of times it’s just the interventionist and them, or just a few other people that aren’t in their social group, so they can get help without being embarrassed” (personal communication, spring 2013). This embarrassment would often cause students to not participate in class, making it difficult for teachers to assess their understanding and help them to be successful. Math intervention provided an environment where students could not fade into the crowd,

I just think that kids benefited a lot more with one-on-one instruction, and some of these kids are the type that like to lay back and let other people answer the questions and where they are in that one-on-one setting they don’t really have that option (personal communication, fall 2012).

The value of the one-on-one instruction was seen by many teachers, including Fred from School A when he stated,

I honestly think some of those kids get more, and I hate to say this as the teacher, but get more out of that math intervention period than they do probably the normal school period. And it’s because they’re in a smaller setting, they don’t have buddies to worry about their ego or anything like that (personal communication, fall 2011).

Taking students away from their peers, friends, and social groups allows them to focus at a higher level, which means that often times more work could be accomplished during a single period of math intervention than an entire week of regular classroom instruction.

Another aspect of the one-on-one support that was valued by teachers was the fact that someone was holding the students accountable on a regular basis, talking with them about their grades and behaviors. Angelica from School C described one of her students that needed consistent accountability in order to be successful,

If you're not there by his side he will put his head down, so, but if you're right there by his side he can do it, and it was important to him to be passing, but he really just needed somebody to be there (personal communication, fall 2012).

The three schools in this study have the lowest socio-economic status in the city. This means that often times parents are working multiple jobs or irregular hours, requiring the students to have more responsibilities at home and often don't have a parent or guardian there to check their work and hold them accountable. Fred from School A talked about seeing this within his students and school when he said,

A lot of these kids just need a little someone looking over them, and our cliental not every one of our students has that parental factor to say, 'hey sit down here and try this', or, 'I'll help you with this', or have the ability to come after school always, or before school due to rides or whatever (personal communication, fall 2013).

For other students it was the ability to get help during the school day that made math intervention such a valuable program. Teachers talked about how for some students

it was very difficult to arrange times to work before or after school due to conflicts and issues. Nate from School C described his struggles getting students to come in for help on their own, saying, "...I've had some students who can't come before school, can't stay after school, where they really just don't have an option to get help unless it's during the school day" (personal communication, fall 2012). Teachers at these schools often struggle to get students to come in for additional help outside of the school day, creating a real need for the structure of the program to be during the school day. Patrick from School A talked about seeing the value of getting help during the school day when he stated,

When this program started it kind of fit the bill for our kids because a lot of our kids ride the bus and so it met the need to meet during the day and kind of helped with the kids that couldn't come after school or before school (personal communication, fall 2012).

Students often had to work jobs after school, not allowing them the opportunity to come in for help with their teachers. Amelia from School A talked about one of her students that had this type of conflict and had used the math intervention program for the past couple years, "I think he was even maybe working last year, and that's why it worked really well for him too, cause he had other things going on after school so during school getting math help was great for him" (personal communication, fall 2014). Without support for the students during the day they often had to resort to other types of resources, sometimes paying for those on their own, which Amelia discussed when she said, "...think about a student who truly has to take off work to get help, or hire a tutor" (personal communication, fall 2014). Taking time off of work cost the student and their

family money, which was often needed for many of these students who were from lower socio-economic families. Paying for a tutor was also a financial burden for them.

If it wasn't the student working it would often be the parent or guardian who was working and could not provide transportation for the student to come to school early or stay later. Sally from School A talked about this sometimes hidden problem, saying, "...people that don't know our school system, the fact that, it's really hard to get students to come in before school or after school because of their home arrangements, things like that" (personal communication, spring 2012). Other times students just didn't want to give up their own time to come in before or after school. They had the ability, but would refuse to come in, thus not receiving the help they needed. But, students often responded well to getting help during the school day since they were already there and was not costing them any more additional time beyond the normal day. Fred from School A described this, saying, "...I feel it's more structured, it's during the class day so they're more willing to do stuff..." (personal communication, spring 2013).

Teachers also talked about students that would come to them with significant gaps in their knowledge. These gaps were often a result of a lack of understanding from previous courses or attendance issues. Within the classroom, teachers do not have time to address topics that are not part of the content being taught at that time. Math intervention allowed the time for these students to get the specialized help they needed within the specific areas that they had gaps. Mike from School C talked about what he looks for when referring students to the program, saying,

I've tended to use it when I've had students who have missed significant chunks of time, students who I feel like have kind of been putting forth an

effort that with me haven't been progressing as much as I would like (personal communication, spring 2012).

Students often miss school for various reasons, making it difficult for teachers to reteach the concepts from those days the student missed. Bob from School C talked about using the math intervention program to help with this, saying, "I used it when kids got sick. Like if they were gone for about 3 to 4 days. Or if someone was incarcerated, and then they just pop in and try to get them caught up" (personal communication, fall 2011).

Not only could students get the material that they missed taught to them by the interventionist, it was also a time for them to work on completing any missing assignments they might have from those days as well, "And so she was able to make up a lot of her missing work, with the intervention, because she missed so much school" (Amy, School B, personal communication, spring 2012). Completing assignments with the interventionist was not always because the student missed the instruction, but could also be done due to a lack of understanding on how to begin and what to do. Often students are not completing assignments because they simply don't understand the content well enough to do it independently. Teachers often struggle with identifying students who are not doing homework because they choose not to or because they simply couldn't do it. Fred from School A talks about his struggle identifying students when he said,

There's a fine line there between if you said some kid, well you have to have turned in half of the homework assignments or something, I don't know, maybe the kid went home every night and tried to do all of them but really couldn't get started (personal communication, spring 2013).

Filling in gaps may not take very long for some students, based on what they may have missed. Teachers could use the math intervention program or whatever length of time they felt was needed or until the results were seen, and then could take the student back out. There was not commitment to keep the student in the program, which made teachers more comfortable using the program as well. Dylan from School B talked about this when he said,

The nice thing about the way it's set up is, a student will go into the program and be in the program as long as it takes for them to get back on track. And then once they get back on track, then they don't necessarily have to remain and continue to go to the intervention room and get worked with the interventionist (personal communication, Fall 2011).

Some teachers talked about how they used math intervention as a way of providing students with disabilities, special education, or English Language Learners (ELL) an opportunity to get the support they needed that could not be provided within the regular classroom. There has been a big push for inclusiveness of students with special needs into regular classrooms, often requiring teachers to provide some additional supports for those students in order for them to be successful. Dylan from School B used the program almost entirely for students who had special needs, talking about, "I think it's a great idea because it's a way that, the students that have learning disabilities, they can take a test, have extra time" (personal communication, fall 2011). The hard part with these students is that teachers often have a difficult time deciding if the student is struggling due to lack of math skills or because of their disability, special need, or language. Sally from School A talked about this struggle as she tried to identify whether an ELL student should be recommended for the program when she stated, "But we need

some really good background information that that is, they really struggle in math, that it's not because of the other outside things" (personal communication, fall 2013).

Karen from School A also discussed a similar situation trying to decide if a level 2 ELL student should be in the math intervention program or not, saying,

This student in particular, he's a level 2, so his English is okay. It's not fantastic, but he does struggle with the applications, which is 50% of their grade now. And so it's weighting that option, and can we accommodate it in the classroom versus is this something that will come with time as he learns more English too (personal communication, fall 2011).

Sometimes just providing students with another perspective allowed teachers the chance for students to learn the material in a new way, which Holly from School A talked about, saying, "I liked that they were given an opportunity to learn it from a different teacher who maybe teaches it a little differently, which helps especially the students who struggle to see it multiple ways" (personal communication, fall 2011). These students often have struggled with math for many years, and thus come to teachers with a very low sense of confidence. Veronica from School A talked about the struggles of working with students who have lower confidence levels, saying, "Not that they're unable to do the math, it's just that their confidence isn't there so they don't want to start it, in case they get it wrong" (personal communication, spring 2012). In order to help students with this, Oscar from School A talked about using the math intervention program as a confidence booster, looking for students who needed to have some experiences with success in order to get them back on track (personal communication, spring 2012). Students who struggle verbalizing their thoughts and ideas onto tests and quizzes could

use math intervention as a way to help them develop those skills, which Tammy from School A discussed when she said,

And so trying to get him into intervention to help him learn to verbalize his thoughts, or not verbalize, but write down verbalizations. It took a long time for me to realize that that wasn't going to happen for him by himself (personal communication, spring 2012).

**Concerns.** Even though most teachers responded very positively about using the program, some of them also voiced concerns. As the popularity of the program grew, so did the number of students, causing a fear of overcrowding. Some teachers felt that the program was providing too much support for the students, almost enabling them to not work on their own inside of outside of the classroom because of it. In order for students to work in math intervention during the school day they must miss another class to receive that help, which some teachers were not comfortable with. When referring students teachers were concerned about misplacing students or using the criteria correctly. Sometimes there would be a stigma that would come with needing extra help. Often teachers would admit that the math intervention program was not a high priority for them, and thus was not used as often or as quickly as it should.

Overcrowding the math intervention program was something that many of the teachers started to realize was either happening already or would be happening soon. Even though teachers saw this as a concern, very few of them said that it would prevent them from using the program if they felt it was needed.

I'm not going to take away from my student. I want them to do well and if I think they're a good candidate I'm still going to recommend them. But, I'm thinking about the math interventionist as well and saying, well I



don't want to go over capacity (Adam, School A, personal communication, fall 2013).

Some teachers would adjust the number of students they were referring based on the total number of students in the program,

If I know the interventionist has a lot of kids then maybe I would not assign or refer because I'd think I created too much of a work load for the interventionist, and if the interventionist has few kids then maybe I would assign more that actually needed it and not referrals that aren't necessary (Angelica, School C, personal communication, spring 2013).

Amelia from School A talked about how not knowing how many students were in the program actually hindered her from using it, saying, "...sometimes I don't know if the interventionist can take on more, so I'm like, well I don't know if I'll suggest them for it..." (personal communication, spring 2013).

Teachers started to realize they needed to be more selective and careful about which students they were referring. Fred from School A talked about how he was being more selective as the semester went on, saying, "...it needs to be a special case or someone really asking for it or something like that for me to put you in there at this point in the year, when I know there's packed houses already" (personal communication, fall 2013). Patrick from School A talked about his struggle to identify which students to refer, stating,

...there's lots of students that need additional help, and so trying to make sure my students aren't going to dominate the time that the interventionist has. I think that goes into part of making the decision as to which kids I submit and which ones I don't (personal communication, spring 2012).

Ella from School C discussed her struggle with referring students whose grades were extremely low and probably had no real chance of passing, saying, "...is it really worth taking out interventionist away from a student where they might be successful for this student who has a 3% in your class" (personal communication, fall 2011). Teachers had to find a balance between referring students and maintaining the effectiveness while not losing the individualized help that was so important to the success of the program.

Tammy from School A discussed this concern when she said, "...I guess there's a concern in the back of my mind for reaching a maximum capacity and still having it be successful" (personal communication, fall 2013). Maintaining the balance was something that Patrick from School A also talked about, saying,

We need to make it a program that is beneficial and helpful to the kids but in the same point that we don't overwhelm the program to make it so that the students that are in it aren't getting the help that they need by having to many kids in (personal communication, fall 2012).

As the numbers of students in the program increased teachers expressed a fear of monopolizing the math interventionist's time and preventing other students that needed the program more from getting help. Amelia from School A expressed this concern, saying, "Cause the other thing is that I don't want to take interventions away from somebody that should be using it" (personal communication, spring 2013). Sally from School A knew the program could be effective for all of her students, but also realized the potential harm in referring too many students,

I could put my whole class of ten in there and they could all have intervention help, and that would be great, but sometimes I think, okay, well, I've used the intervention enough for me and my kids, which I think

I have the best ones in there that I need, but kind of like save some room for the other teachers (personal communication, spring 2012).

This fear of referring too many students was not evident for all teachers, causing concerns that some teachers were abusing the program, "...concerns of some teachers, abuse isn't the right word, but you know sending 10 kids at a time, that's not fair to the kids, it's not fair to the interventionist" (Sally, School A, personal communication, fall 2013). Teachers began to realize the dangers of overcrowding the program and started to reflect on how many students they were recommending and how much they were using the program. Nate from School C said, "I just feel like if all the teachers are referring 8, 10, 12 students, then that's going to just be too many. So I don't want to take my share, if that makes sense" (personal communication, fall 2012). Lucy from School A also had this similar concern, saying, "I don't want to over recommend students just because they are at a low grade, and put too much on the interventionist's plate" (personal communication, fall 2011). In the end some teachers just realized that, "There are more kids than what the interventionist has time for" (Nate, School C, personal communication, spring 2013).

The students that teachers did refer into the math intervention program received the support and help they needed, but sometimes teachers feared they received too much help and support. Teachers talked about students relying on the math intervention program for all of their practice and learning, causing a refusal to do work and participate in the classroom. Amy from School B expressed this fear when she said, "...there are some kids that I do feel take advantage of the system. They will put their head down and say 'oh I'm just going to the math interventionist today'" (personal communication, fall 2013). But, some teachers realized that the students were making significant gains within

the short periods of time that they were working with the math interventionist and that the time in the classroom was not creating the same impact for them, such as Fred from School A who stated, "...for some of these people they probably learn as much in 50 minutes as they might of in 4 class periods in a different room" (personal communication, spring 2012). Teachers battled with whether the advantages of the math intervention program outweighed the disadvantages. Ulysses from School A struggled with how much support to provide in order for students to be successful without hurting their ability to learn on their own, saying, "...I want them to be more self-sufficient without risking their success" (personal communication, spring 2013). Other teachers felt we were providing so much support in order for students to just pass the courses and move on to the next, saying,

I feel like we sometimes will push kids through and make them do things, when if they are going to be successful in school and life later on they are going to have to start making better choices, and they are not always doing that (Zane, School B, personal communication, fall 2013).

These concerns didn't always continue, sometimes as teachers continued to use the program they saw this go away, such as Tammy from School A when she said,

I know last year I talked about students kind of saying like, they would just learn it in intervention. They didn't have to do stuff in class because they were taking that time. I haven't had that concern this year... (personal communication, fall 2012).

Providing continual support for students could have the potential to create a dependency on the support, in which students don't know how to learn and be successful without it. Tammy from School A talked about this as well, saying,

...you have to phase out of the program, and so teaching Advanced Algebra I've had kids come to me and say, 'well I want to do intervention', and I have to say to them you can't, you have to figure something else out now (personal communication, fall 2013).

Tammy from School A went on to talk about her fear of not being able to get a student out of the program if it wasn't being successful, because the student had been in it for so long that it had just become normal for them and something they were used to (personal communication, fall 2013). The question for teachers became how do we support the students who need it, but also create the skills to be successful once they are out, and would there be students that just always needed that support to be there. Patrick from School A discussed this, saying,

...as the kids get older we're going to say you need to come in and do this because you need to recognize you need help, but at the same time you know there are a pocket of kids that won't do it if somebody doesn't make them do it (personal communication, fall 2012).

This creates for teachers a fear regarding the future of the students that are in math intervention and how they will respond once they are out of the program, "But then I just get concerned about my students that are in it and how they're going to move on" (Amelia, School A, personal communication, fall 2013).

One of the reasons for the program getting overcrowded was due to some students being misplaced. Teachers discussed situations where either themselves or others placed a student into the program incorrectly. Sometimes an administrator would recommend the student to be placed in the math intervention program. Often teachers were afraid to voice their disapproval of the recommendation for fear of being insubordinate to their

administrator. Amy from School B talked about times when she would be having issues with students in the classroom and would send them to the office with a referral form to talk with their administrator, “Usually when I write referrals, those kids that choose to do nothing in my class, a lot of times their action plan is to have them get one-on-one help with the interventionist” (personal communication, spring 2012). Other times counselors or administrators would try to place a student in the math intervention program because the semester was almost over and the student needed one last big push to get their grade up, which Fred from School A talked about, saying,

...my concern would be more that from the pressure from a counselor maybe or from an administrator that hey he’s failing why isn’t he in there, or can we get him in intervention, or you know kind of at like the 12<sup>th</sup> hour... (personal communication, spring 2013).

This put pressure on teachers to use the intervention program inappropriately, in their eyes. Fred goes on to say, “...the reason I sent them down to your office because they’re not doing any work in class, solution isn’t well let’s just put them in intervention and make them sit in another math class for that long” (School A, personal communication, fall 2013). Chad from School C also felt pressure from administrators to recommend certain students, stating,

The kids, if I remember right, that went there were kids where sort of the hope was already lost. But, an administrator or somebody wanted me to send them there. The stuff they went to see the interventionist about they were fine with that stuff, but there was still a whole other part of the semester that they weren’t so clear on (personal communication, fall 2011).

When students get misplaced, often against their own will, they can see math intervention as a punishment rather than an opportunity to get extra help and be successful. Tammy from School A talked about the struggle to convince students that math intervention would be helpful and not a punishment, "...he just hates math, and my offering him more time to do math is like the worst thing ever. I had to convince him that it wasn't a punishment..." (personal communication, spring 2013). Another reason that student might have felt it was a punishment was due to their past experiences with math intervention at the middle school level where they were forced to be in it, creating a stigma about getting math intervention support. Tammy from School A talked about her struggle to convince 9<sup>th</sup> grade students, just recently out of middle school, that math intervention would be a positive thing and almost having to push them to get help in general (personal communication, fall 2013).

Due to the strict criteria set by some of the schools, teachers had concerns about being able to get students into the program that they felt needed it. Some teacher felt that if a student wasn't failing then they were not supposed to be using the program. Zane at School C expressed his struggles with students whose grades were at a D level but he knew needed support still, saying,

...or a kid that has a D, is working pretty hard to get that D and could use some extra, but well you're not failing so I can't put you in this program. I'm sure if I talked to the interventionist, if the interventionist had time something could be worked out (personal communication, fall 2012).

Even though he knew the student didn't meet the given criteria he also knew that if he talked to the math interventionist he could get the student some support if he really needed to.

Other teachers talked about all the different steps and things that needed to be done before a student could be referred to the program according to the given criteria.

Jake from School A discussed his frustrations, saying,

When it was introduced last year, it started out I think a little rocky just because of the hoops you had to jump through to even get a kid signed up for intervention. It seemed like a lot, but at the same time we have to make sure kids are placed correctly if they're in intervention (personal communication, fall 2011).

Even though Jake was frustrated about the “hoops” he had to jump through, he also realized the value of them in order to ensure the correct students were placed in the program. Most of the time, after teachers had used the program for a while and became more familiar with the criteria, they were able to make changes to alleviate their concerns.

Concerns also occurred regarding simply using the program. Some teachers felt concerned that others would judge them based on them using the program. If they referred students to the program it would be a poor reflection on themselves, almost an admission of failure as teachers. Sally from School A talked about this possible fear when she said, “And I don't know if that's how other teachers think that oh this might look bad if I'm sending a kid to interventions type of thing” (personal communication, fall 2013). Others were concerned once they realized that they were not prioritizing the math intervention program, and thus not using it effectively. Nate from School C talked about how he came to this realization, stating,

I guess I don't know exactly why it is that I didn't really refer them sooner than I did, other than just the fact that I think sometimes I get caught up in



some of the other things that I have going on and I didn't really consider the fact that I needed to be doing something for them as soon as I should have (personal communication, spring 2012).

In addition, teachers discussed some teachers who didn't feel the need to use the program at all, wanting students to be responsible for getting their own help on their own time and not feeling responsible for providing that support if they were not willing to seek it out themselves. Mike from School C described these teachers, saying,

Some teachers are old school where they teach the material, they need to learn it in class, ask me to get help if they don't understand it, if they don't do any of that it's kind of off their plate (personal communication, spring 2012).

**Implications.** When it comes to doing what's best for students, teachers were found to put the needs of the students above all else. Using the program was a way to provide the support and help that their students needed so badly and that they couldn't provide themselves within the regular classroom. Educational leaders need to focus on doing what is best for students, providing supports where they are needed in order to ensure student success. Programs and supports need to be designed to fit the specific needs of the students who will be using them. Leaders need to make sure that teachers understand that the extra work and time required to use the programs and supports are for the good of the student. If teachers feel that the focus is not on doing what is best for students, then they may doubt the purpose of the program. This desire to help students who were really trying and wanting to be successful also caused stress on teachers to try to identify the right students to refer to the program. Some let students choose, while others relied on special cases and others to help them identify students who needed the

help. Even though there were concerns about overcrowding the program, teachers again put the needs of the students above all else and still found ways to use the program for students that were in need. With experience many teachers were able to find a balance in their use of the program, identify students quicker and thus use the program faster and more effectively. To help with teachers with this process educational leaders need to provide support within the classroom, especially for inexperienced users. Criteria needs to be set so that teachers have guidance and resources to turn to, but not so strict as to prevent teachers from using the program effectively. Educational leaders need to provide teachers the freedom to use the program as they see fit, allowing them to use their judgment in order to feel a greater sense of connection and value in their use.

### **Communication**

One of the themes that was consistently brought up by teachers was the importance of communication. Before any of the teachers used the program for the first time there was communication from the math interventionist about training and educating them on the program, their use, and the referral process. Teachers would talk about the importance of consistent communication between themselves and the math interventionist while using the program. In addition, teachers would sometimes talk with non-math teachers, such as administrators, counselors, parents and students about the math intervention program. Teachers talked about how this helped them develop a greater sense of comfort for the program, building their knowledge about what was occurring within it and helping them identify students for the program.

**Initial Communication.** The math interventionist at each school provided information to all teachers prior to the first semester of use. This was a way to educate teachers on what the math intervention program was, how they were supposed to use it,

what they should be looking for when referring students, and how to go through the referral process. Every teacher was given this information, even if they were not planning on using the program. This was then repeated every year for any new teachers. The math intervention program was also discussed with the entire school faculty, making sure that everyone in the building knew what the program was and why it was going to be in the school. Since the program impacts non-math teachers as well, due to pulling students out of other classes to work, this was important information to share. In addition, the math interventionist in some of the buildings also made personal appearances at non-math department meetings, talking about the program more specifically with them and answering any questions that teachers might have.

Initial training and educating of math teachers prior to using the program was very important in order to ensure that teachers had any questions or concerns addressed, increasing their knowledge and comfort with the program, and thus hopefully increasing their use of the program as well. George from School A talked about what he was given during his initial training, stating, “We were informed of it. We were given some things to look at, as well as some guidelines for who really qualifies for the program, who would be the best fit” (personal communication, fall 2011). Even though the teachers were given criteria and expectations, not all of those could be specifically defined, leaving area for teachers to have some discretion. Fred from School A talked about the criteria given to him, saying, “I don’t think you could have said here’s the criteria, they have to meet all these or they’re not going to make it, that would probably be impossible to do, to much gray area” (personal communication, fall 2012). Not all teachers were at the schools when the program first started, and thus received training when they first arrived. Adam from School A was a new teacher and described the training he received, saying,

Well it was introduced to me and the other new math teacher this year just through a meeting before school, and we met and the math interventionist went over what you do with the students and what we're kind of looking for in students that qualify and should have this privilege to be able to be in the math intervention (personal communication, fall 2013).

Teachers were asked if they felt like they were given enough information at the beginning, and if they could go back would there be anything they would have wanted at that time. Many of the teachers responded positively, saying that they were given everything they needed in the beginning. Becky from School B talked about the initial training she received, "When they started the program they said that this is what it's for, they laid it out in a department meeting so all the math teachers knew what was going on" (personal communication, spring 2013). Angelica from School C also discussed the initial training, stating, "I think it was pretty clear-cut in the beginning. This is when you use it, this is why you use it, and this is how you use it. It was explained to us just fine" (personal communication, fall 2013). This information was also shared with the whole school, making sure everyone in the building was aware of the program. Tammy from School A talked about how this communication helped people become more comfortable with the program, saying "I think it was presented well to me at the beginning so I felt fairly comfortable with it even at the beginning" (personal communication, spring 2012). When teachers feel more comfortable with the program they are more apt to use it. Adam from School A talked about how his comfort changed his use of the program, saying,

And so the information the math interventionist provided me and just kind of the descriptions, the details, have really helped me as a teacher be

comfortable with contacting parents about math interventions as well as having students work with the interventionist in the program (personal communication, fall 2013).

This comfort was import especially for new teachers who were being flooded with new information about many different new things and responsibilities they were going to have to worry about. Tammy from School A was not working at the school when it first started, but was given training when she arrived, describing her experience as,

Being new to teaching and being new to the building, it's one thing that I feel like has been presented well to me, that I know what I need to do in order to be involved in it, how to get a kid into it, how to communicate about it, once a student is in the program (personal communication, spring 2012).

But, not all new teachers felt this same way. Some of them were overwhelmed by the information that was being given to them, and so they had to mentally prioritize and filter it. Zane from School C describe his experience of first hearing about the program, saying, "It is very likely at one of the opening meetings someone said something about it. I filed it away as, alright that is not so important for the first week of school, so I will worry about it later" (personal communication, fall 2012). Even if teachers didn't have the information they needed, they often knew how or who to talk to in order to get it. Vern from School A talked about this when he said, "Yeah, I think there was enough information there. And, if there was something I didn't know, there's plenty of ways I could have found out" (personal communication, fall 2012).

In order to help teachers with the identification of possible students for the math intervention program some of the interventionists provided them with a list of students

who had been in the program at some point. Most of them responded very positively to this, saying that the list really helped them. Every semester teachers got new students, thus requiring them to develop relationships and get to know their students all over again. The list of names allowed teachers to have some knowledge about their students, even before the first day of class. Ulysses from School A talked about how the list helped him, saying,

I like the possible recommendations, the students that were already in it before, ones that were close to being in it, that was nice too. Especially since I had never been in the building, I don't know any of those names, so it was nice to have something to go into the class with (personal communication, fall 2012).

As a new teacher this helped Ulysses because he had no prior experience or relationships with the students. Fred from School A had taught for over ten years, but still talked about how the list helped him, saying,

We had a sheet at the beginning of this semester of some students that were new to me that I, that were in the intervention the previous year. So using kind of that information at the beginning of the semester was helpful to kind of get a heads up I guess on who might need it again (personal communication, spring 2012).

For many of the teachers the list allowed them to speed up the process of identifying students for the math intervention program, and thus use it sooner. Fred from School A went on to say, "I think identify who might need it ahead of time versus three months down the road saying maybe we should need it" (personal communication, fall 2012).

For other teachers it allowed them to focus on specific students that might need extra support. Rose from School A described how the list of names impacted her,

I would say getting the list of students who've been in it before is helpful.

It's definitely helpful to see, because then I'm more aware of looking at their work to see do they need it again or was it something they needed just for that time period. And also to have that conversation and talk to them individually, hey if you want to do it again it's available, but we're going to try this first (personal communication, spring 2013).

Sometimes the interventionist would personally talk with teachers about previous students, which Sally from School A talked about, saying,

The math interventionist brought up a student's name at the beginning of the year that got referred by somebody else, and it kind of make me keep my eyes, and she hasn't been referred yet, but it made me keep my eyes open a little bit more and focus on her and what can I do in the classroom first, and then just as an added part I know that the interventionist is there (personal communication, fall 2011).

Not all teachers were provided a list of students, but discussed how having a list would have helped them use the program. Nate from School C talked about this, stating,

I mean I can see the benefit of having a list of students that I'm getting that have worked with the interventionist...Because I think that to often it's just you don't realize until it's to late what students really need that help, cause you got 50 new kids you're trying to sort out (personal communication, spring 2013).

**Communication with Math Interventionist.** When teachers were asked whom they talked to about the math intervention program, almost all of them talked about how important their communication with the math interventionist was in regards to their use of the program. The interventionist provided information for training new teachers, information before working with students, as well as after working with students, information about the referral process, and data on the program. Many teachers talked about how they liked how accessible the math interventionist was and the consistency of the communication. All of these things led to increased use and comfort with the math intervention program.

Before the math interventionist ever worked with a student the teacher and the interventionist would have to communicate. Sometimes the teachers would come to the interventionist for advise on possible students for the program, as well as going through the referral process. Ulysses from School A talked about his communication with the interventionist before referring a student, saying,

...just being able to talk about what issues the students bring up to the interventionist I feel like they get across to me too, and if there's issues that the student has I can bring them to the interventionist or just overall with the class with a student that might not be in the intervention program, whether they should be or shouldn't, or just an extra idea on how to help the student (personal communication, spring 2013).

Adam from School A discussed how communicating with the interventionist helped him, "...every time I've asked the interventionist about hey I'm thinking about a student, the interventionist always gives me more details and we talk about it, and that support has



really helped” (personal communication, fall 2013). Sally from School A discussed how talking to the interventionist helped her communicate with her students, saying,

The interventionist completely lets us know and let the kids know that’s not what it’s about, and gives us the language to talk to them about it, if we are confused, if we don’t exactly know what to say to the kids the interventionist really helps us out with that (personal communication, fall 2011).

Some of the teachers felt that talking with the interventionist gave them new ideas and a different perspective to the issues they were dealing with. Tammy from School A talked about the impact she felt by communicating with the interventionist, saying,

I think one of the biggest things that I appreciate is being able to have conversations about kids that I just don’t always know what to do with...communication that can go on with me and the interventionist, I can figure things out that I wouldn’t have by myself (personal communication, spring 2012).

Filling out the referral form was another form of communication that gave teachers an opportunity to share information with the interventionist. Dylan from School B talked about using the referral form as a way to inform the interventionist about the student,

And then giving the math interventionist the opportunity to learn more about the student and about the situation and understand why they’re there...what that has done is that’s given the math teachers, like myself, an opportunity to kind of describe things a little bit more specific to the

student, and help the interventionist understand what needs to be covered (personal communication, fall 2011).

Referrals were not always done in a formal manner, sometimes they were informal conversations between a teacher and the interventionist, such as with Amy from School B who said,

I mainly go to the math interventionist and say these are the kids who I see as needing your help, and then the interventionist will work with them and be like, ‘yeah they definitely are struggling, I’ll keep pulling them’, and I’m like, okay (personal communication, fall 2013).

Zane from School B also talked about the informal referral process, describing it as, “It is mostly just shoot the interventionist an email and say hey when you get a chance would you pull this kid in and work with him” (personal communication, fall 2013).

Once a teacher refers a student to the math intervention program, the math interventionist then communicates with the teachers before each session working with a student, as well as afterwards. Many teachers talked about the impact of these pre and post conversations on their use of the program. Conversations before working with a student were often used as a way for the math interventionist to gain information needed in order to ensure that the student received the support and attention specific to the needs of that student. Lucy from School A discussed how the interventionist and her would talk each time before a student would be worked with, “Every time before they meet we always talk about what we want to get covered during intervention time” (personal communication, fall 2011). Nate from School C talked about how he improved at providing information to the interventionist before working with the student, saying, “I’m trying to be a little more explicit, give the interventionist instructions as to what I think is

going to help those students the most” (personal communication, fall 2012). Rose from School A also talked about her improvement when she said, “I’ve been at least trying to be better about communicating to the interventionist specifics about what students are struggling with in class” (personal communication, fall 2012). These improvements were often a result of teachers developing their skills at identifying student’s needs and struggles. Veronica from School A discussed this growth in herself, “I’ve just been more knowledgeable about what my students struggles are, so I’ve been able to tell the interventionist more about them so the interventionist can help them better” (personal communication, spring 2012). Also, pre conversations allow the teacher and the interventionist to make sure that the work done in the classroom is matching the work done in the intervention. Amelia from School A talked about how the communication with the interventionist helped maintain consistency, saying, “Because the interventionist and I do talk about things, like in how I taught stuff so the interventionist has an idea of how I’ve done things, and I’m sure they tell the interventionist how I did stuff in class” (personal communication, spring 2013). Veronica from School A discussed how her communication with the math interventionist changed over time, “Collaboration with the math interventionist has been a lot more in my opinion. We’ve talked about how to teach stuff...” (personal communication, spring 2013). These pre conversations didn’t always occur just between the interventionist and the teachers, but also between the teachers themselves. Teachers started having more conversations about their instructional methods and strategies, trying to align them and learn from each other. This led to improved instruction within the classrooms, which helps all students, not just the ones within the math intervention program.

Conversations between teachers and the interventionist after working with students seemed to have the biggest impact on teacher use, providing teachers feedback on what occurred during the intervention session and how the students responded.

Ulysses from School A discussed the impact of his post conversations, saying, "...I really like the feedback, the posts afterwards, cause then I know what worked for the student in the session and then I can possibly bring that into the classroom too" (personal communication, fall 2012). Not only can the feedback from the interventionist impact what teachers are doing in their classrooms, but it can also help teachers determine what the real cause of student struggles may be. Sally from School A talked about how the feedback helped her address student needs,

But we go more in depth in what are the specifics, why is the kid struggling with retention, do they work hard in class and they just can't follow through, it is text anxiety, those types of things that we have those face to face conversations with (personal communication, fall 2011).

Other times the feedback can serve as a second opinion on the needs of the student, either confirming or denying what the teacher was thinking. Fred from School A talked about how the logs helped provide another opinion, saying, "I think the logs have definitely been nice to; one, to know where the interventionist spent most of the time...on the flip side of that almost kind of a second opinion..." (personal communication, fall 2012).

Once those needs are determined, teachers might then make adjustments to their use of the program as well as their instruction. Amy from School B described how her post conversation with the interventionist caused her to change what she was planning, stating,

...the interventionist does a nice job of giving me feedback as far as how the interventionist helped them or what they still need to work on the

interventionist might say this kid's not ready to take this test yet, I'm going to work with him a couple more days then he'll probably be ready, if they've missed a lot (personal communication, spring 2012).

Jake from School A discussed how the feedback helped him determine which students would be best for the program, saying, "I've talked with my math interventionist about changes in regards to students who aren't seeing any progress or aren't choosing to do any work or practice outside of the normal curriculum day" (personal communication, spring 2012). These changes allow for students to have the opportunity to be more successful in their learning.

It didn't matter if the post conversations were via email or personal conversations; both seemed to have the same impact on teachers. Amy from School B often had personal conversations with the interventionist, saying,

Well, the only contact would be like information conversation. So, whenever I would see the math interventionist the interventionist would say, 'oh yeah, I worked with this person and they're really struggling, or they're understanding it now, or worked some problems together'. Just like informal conversation, there wasn't like an email, there wasn't like documented I think (personal communication, fall 2011).

This post communication is also what set the math intervention program apart from many of the other programs that had been put into place to support student learning. Patrick from School A talked about the difference between the intervention program and the other programs within the school when he said,

...when you compare that with other programs that we might have in place you don't really know which kids are going which kids aren't going. You

don't necessarily know exactly what's happening during that time in terms of what material was covered, and so in terms of other district programs, again we don't necessarily know exactly who's there, who's not there and what material is being covered (personal communication, fall 2012).

Many of the teachers discussed how comfortable they were with the math interventionist. This comfort was often developed as a result of a trusting relationship between the math interventionist and the teacher. Jake from School A discussed his relationship with the math interventionist, saying, "I would say my relationship with the math interventionist is good. I feel like we can talk about things. I feel like the interventionist has the kids best interest at hand" (personal communication, spring 2012). Relationships are important in order to open the lines of communication, described by Veronica from School A, "I think that relationship helps though, because we're so comfortable talking about that we can talk about the teaching aspect of it or our success with it or what we're having trouble with" (personal communication, fall 2012). Amelia from School A described her communication with the interventionist when she said,

I go to the interventionist all the time. I have no worries talking with the interventionist. I feel like we can be open. The interventionist always gives me good advice. The interventionist is very good at seeing like maybe even the bigger picture. And the interventionist has good experience (personal communication, fall 2014).

The math interventionist at School A was the only one that worked as a teacher at the school prior to becoming the interventionist. This allowed for math teachers at School A to have an established relationship and sense of trust with the interventionist before ever working with the math intervention program. Patrick from School A talked

about his trust with the interventionist when he said, “I wouldn’t say there’s anything I wouldn’t discuss with the interventionist, so very comfortable, and professional” (personal communication, fall 2012). When trust and a relationship are established, then teachers become more comfortable using the program and communicating with the interventionist. Rose from School A talked about her comfort talking with the math interventionist, stating,

There’s open communication about the positive, the negatives, and about how things can better work. I don’t think that there’s any hesitation on my part to tell the interventionist if somebody’s using it as any excuse or not doing what they need to in class, or any kind of hesitations to tell you about things that are going on (personal communication, fall 2012).

Teachers who didn’t know the interventionist before using the program talked about how it would have helped, “If I knew the math interventionist say for five years, yeah, because part of that guilty feeling would go away, and I would probably talk to the interventionist more about the work load...” (personal communication, spring 2013). Thus, having a prior relationship with the math interventionist may help teachers become more comfortable with the program, and therefore use the program quicker and communicate with the interventionist more often.

Communication with the interventionist was also easy for many teachers because of the accessibility of the interventionist. Schools A and C both had the math interventionist working within the math department office, continually around and among the math teachers. Tammy from School A discussed her access to the math interventionist when she said, “I feel like there’s a lot of communication just simply

because it's housed in the math department" (personal communication, fall 2013).

Nate from School C talked about his access to the math interventionist, saying,

I feel like the math interventionist is just right across the hall in the math office, so I can come over and ask the interventionist about a student, if the interventionist has worked with the student in the past, sometimes I'll come talk to the interventionist about a student before I ever refer them... The math interventionist is a very accessible person. I feel like if I have a question I can come over here to ask the interventionist. So I think that that has helped make me feel more comfortable using it (personal communication, fall 2012).

School B had the math interventionist working in a classroom nearby the math office and math classrooms, allowing teachers to quick access the interventionist if needed. Dylan from School B talked about his access to the interventionist, saying, "What's nice is that since the interventionist is just down the stairs from here, I'll even go down and talk with the interventionist" (personal communication, fall 2011).

Immediate access to the interventionist allowed communication to come in many forms, such as face-to-face or emails. Nate from School C talked about the different ways that he communicated with the math interventionist, stating that, "Occasionally we'll have a conversation face-to-face about a student or something like that, but usually email" (personal communication, spring 2012). In addition the interventionist was also a member of the math department, eating lunch and working with the teachers daily, attending all the monthly math department meetings, as well as weekly professional learning community (PLC) meetings. This allowed teachers abundant opportunities to



communicate with the interventionist, as well as the interventionist to communicate with the teachers.

Since the math interventionist was able to communicate with the teachers on a regular basis the teachers all understood what was going on with the program (Dylan, School B, personal communication, fall 2011). The interventionist at School A would visit classrooms at the beginning of each semester in order to help teachers talk with the students about the math intervention program as well as identify any students that might be in need of extra support. Adam from School A talked about having the math interventionist observe his classroom,

The math interventionist came in and observed, and then I communicated with the interventionist just to make sure, hey what do you think about this, and then yeah I think that might be a good one to refer to the program (personal communication, fall 2013).

Karen from School A also discussed the impact of having the interventionist observe her class,

The math interventionist has been in my classroom, so the interventionist has kind of watched some kids, and then from there I said okay I think I'm going to recommend this student to come work with you and we talked about the things I was seeing (personal communication, fall 2011).

Teachers would also go to the math interventionist for advise on referring students and using the program, which Holly from School A talked about when she said,

I've even talked with the interventionist and said here's the situation, here's the student, this is what they do, this is what they don't do, what do you think. And then the interventionist either gives me more ideas to use

to see if it would work, or just says yeah refer them, or no don't (personal communication, fall 2011).

While communication was important, it had to come in the form of two-way communication in order to be seen as effective. Lucy from School A discussed her comfort as a result of the two-way communication with the interventionist, stating, "So I think there's a comfort level in just the conversations we have about students, and I know I can approach the interventionist with a question, or the interventionist can approach me about a question" (personal communication, spring 2012). Veronica from School A also talked about two-way communication, saying, "...knowing the interventionist wants to do what's best for them too and wants to be consistent and I can communicate that to the interventionist and the interventionist can communicate to me" (personal communication, spring 2013).

Another vital component to the successful communication between the math interventionist and teachers was the consistency of the communication. Oscar from School A said, "Just with the communication that the interventionist has done has helped make it easier to use the math intervention I guess" (personal communication, spring 2012). Since the math interventionist worked very closely with the teachers, communication was allowed to occur on a regular basis. Emails and face-to-face conversations were the most popular forms of communication. Some forms of communication were formal, while others were informal. Conversations with the interventionist often began before the referral was ever done, and then continued during the referral process, before each student was worked with, after each student was worked with, and then during math department and PLC meetings. Oscar from School A talked about these early conversations when he said,

After I refer them to the math interventionist though, I mean it still takes a lot of communication and a lot of contact between the two of us, deciding when the best time for them to come in is, what style that I'm teaching, where we're at in lessons, what I've tried, what has worked, what has not worked, suggestions of what the interventionist could try to do (personal communication, spring 2012).

Monthly math department meetings often included time for the math interventionist to discuss the program with the teachers. Mike from School C said, "We talk about it as a department quite frequently. Most months when we have our department meetings it's on the agenda" (personal communication, fall 2012). At math department meetings the interventionist would often talk with the teachers about the program, reminding them about it. Nate from School C described the impact he felt from the reminders the interventionist provided, stating, "Like I can remember the math interventionist talking about the intervention program and saying, 'hey, if you have students keep me in mind.' And that was some of the initiative that I had to get students into the interventionist" (personal communication, spring 2012). These reminders also helped Sally from School A, who said, "When the interventionist continues to ask us, and it's still okay, it's still right there and I continue to think 'hmm, is there another kid that could benefit from that?'" (personal communication, spring 2012). This consistency helped to develop trust and relationships further, as well as continually reminded teachers about the program and its presence, causing the program to come back to the front of their minds and become a higher priority. Veronica from School A discussed this, saying, "The more that the interventionist talks about that and brings it up in department

meetings, we're discussing it in PLCs, has helped bring it to the top of my mind when I'm teaching" (personal communication, fall 2012).

During the monthly math department meetings the math interventionist would also share data about the math intervention program. Data would consist of total number of students in the program, passing rates of students, current grades, and many other pieces of information. Seeing these numbers again served as a reminder to teachers about the impact of the program and that it was available to be used. Veronica from School A described how the data on referral numbers helped remind her about the program, "So the math interventionist brings it to the forefront of my mind when presenting on kind of how those intervention forms get entered" (personal communication, spring 2013). Angelica from School C talked about wanting to see the data as a possible motivator for her to use the program, "Even just to know how busy the interventionist really is. Not to be nosy, but just because then I might be more apt to assign a student" (personal communication, fall 2013). Veronica from School A also talked about being motivated by the data, "The data helped me realize, okay I need to get interventions in sooner rather than later" (personal communication, spring 2013).

Seeing successful data helped develop deeper trust in the program, which Mike from School C talked about when he said, "Part of the reason everyone bought in is the math interventionist does a good job of sharing that data at our department meetings...so that kind of helps build support for it, that people are seeing that" (personal communication, spring 2012). Sometimes the data, such as large numbers of students referred to the program, scared teachers from using the program, which Amelia from School A discussed, "Sometimes when I see the math intervention numbers spike up, I'm like, oh, maybe I shouldn't recommend anybody right now, cause it's really busy"

(personal communication, fall 2014). The data allowed teachers to grow in their knowledge of the program, as well as provide teachers the knowledge to communicate the impact of the program to others. Rose from School A discussed how the data helped her to be able to communicate with her students more effectively about the program,

I think that at the end of the semester the interventionist shows us the information of these kids passed and this is the percentage of at least the following year, so I'm able to articulate that to students cause it helps them to buy in, getting that data out... (personal communication, spring 2013).

Patrick from School A talked about the value of the data when he said,

The data helps with that, and then explaining how we do things and then also justifying the fact that intervention has been successful, or showing that intervention has been successful for a lot of the students. So that has been helpful to kind of have numbers to go with the program or go with the data and explain to others (personal communication, fall 2012).

This increase in knowledge also led to an increase in comfort with the program. Patrick from School A went on to describe how the data impacted his comfort of the program, stating,

I think more comfortable then I was before, and I think that again goes back to the communication that we have between the interventionist and the teachers, especially in the department meetings we're sharing the data and showing the impact and how it's working (personal communication, fall 2012).

Math interventionists would communicate regularly with teachers about students that were being worked with as a whole group, but also individually. Becky from School B discussed the group emails she would get from the interventionist each week, “Weekly the interventionist always sends out an email saying if you’re quizzing or testing these are the kids that I’m pulling, so if you want me to add or subtract anybody on this list please let me know” (personal communication, spring 2013). These emails allowed teachers and the interventionist to be consistent in their instruction and pacing, making the program more effective. Dylan from School B talked about how he felt planning with the interventionist was important to him and making sure that they were trying to be preventative with student issues and struggles, “We communicate via email, like you know as far as our scheduling for tests, so that it’s not just the interventionist is in a different place but is actually proactive, so I think it’s a big thing” (personal communication, fall 2011). Patrick from School A also discussed how communicating with the interventionist was important for the effectiveness of both the teacher and the interventionist, saying,

There’s typically daily, or at the minimum three days a week, of communication between the interventionist and the teacher to make sure that what is being covered during the intervention time is coordinating with what is being taught or what needs to be built upon whatever foundations of previous material that the student is lacking (personal communication, Spring 2012).

Individually the interventionist would communicate with teachers regarding the students they referred to the program. Amelia from School A talked about the regular communication between her and the interventionist regarding her students, saying, “The

interventionist gives really good updates, so I know what the interventionist worked on, when they're meeting, and how it went" (personal communication, spring 2013).

Sally from School A also talked about the many different ways that she communicated with the interventionist on a regular basis, saying,

I never am in the dark about what the interventionist is doing with my students; the interventionist is always letting me know, I'm going to be working with this student this day this period, and then after that happens the interventionist tells me what they went over, and then checks on them in the next few days, what do you think, how's it going, that sort of thing (personal communication, fall 2011).

Not all of these individual conversations occurred via email, some of them occurred more informally during the day. Angelica from School C talked about the difference between her email conversations and personal conversations with the interventionist, saying, "I would say when it's about the interventionist it's more email. We have personal conversations, but when it's work related it's mostly email. It's just so much quicker" (personal communication, fall 2013). Amy from School B discussed the different ways the interventionist communicated with her, saying, "The math interventionist will email, come just pop by my room, talk to me at lunch about some of the kids being helped" (personal communication, spring 2012). Other teachers relied more heavily on personal conversations, described by Becky from School B when she said, "So usually during lunch you have a daily update who the interventionist sees and how it went" (personal communication, spring 2013). These informal conversations allowed for daily communication between the interventionist and many of the teachers. Amy from School B went on to say, "We have really good communication between the

two of us. I mean we talk every day about it” (personal communication, fall 2013).

Some teachers became so comfortable informally communicating with the interventionist on a regular basis that some of them no longer used the referral form, but instead just verbally talked to the math interventionist about the students who needed help and referred them through the daily conversations they were already having. Amy from School B said she doesn’t even use the referral form any more (personal communication, fall 2013), while Becky from School B said,

...the interventionist has created a form that we can create that we can turn in. However, work of mouth is just a lot easier and more convenient.

Cause that way they get the help right now instead of doing a little paper process (personal communication, spring 2013).

Using personal conversations was able to save some teachers time and energy during the referral process.

Early on, not all teachers felt that communication was present or effective. Dylan from School B talked about how the communication was lacking during the initial few semesters of use, stating that, “So right now there doesn’t seem to be a method of communication that is consistent as far as communicating when a student is in the program and what’s going on” (personal communication, fall 2011). Knowing this was a concern for teachers, the math interventionists changed some of their forms of communication. One example was the math interventionist at School A started filling out a log after working with each students, documenting what occurred during the math intervention time and the impact on the students. Initially teachers didn’t look at the logs very often, thinking that they weren’t very important or needed. Thus, in response the math interventionist at School A began sending the logs to the teachers individually in



order to ensure they were seeing them. Veronica from School A talked about the struggle she experienced between feeling like she should be using the logs but also feeling as though they weren't needed, saying,

I feel like I should use the log form more to figure out what they did with the interventionist. But, I think that the interventionist is in communication with me often enough, and we see each other and we talk about them often enough that I kind of know what's going on (personal communication, spring 2012).

But, with time most teachers realized the importance and value of the logs. Sally from School A discussed how these logs helped improve communication, saying,

We have a log that we can go look at and see what happened every time they met with the interventionist, and we can see that, and it's a visual. It's like, okay before, maybe, well the interventionist worked with somebody, what happened? Some teachers might be like, 'oh, well, are we seeing any results?' (personal communication, spring 2012).

**Communicating with Others.** Teachers also discussed communicating with people other than the math interventionist. Math coach, administrators, counselors, co-teachers, parents and students were all mentioned as people that teachers communicated with regarding the math intervention program. These conversations allowed for multiple perspectives and opinions regarding students and the use of the program, developed teacher skills at identifying students for the program, and were a way to advocate for the program. Most of these conversations occurred during the referral process or before, with very little communication after the student was referred to the program.

The math coach was someone that many teachers identified as having an impact on their use of the program. Most of the time the math coach would have conversations with teachers before referring students to the program. Teachers who had little experience with the program, and thus struggled with identifying students who would be best for the program, talked the most about the impact of the math coach. Vern from School A talked about how the math coach helped him with finding the right students and beginning the use of the intervention program,

I had a lot of discussions with the math coach about it...she knew how fast they were supposed to be getting done and how slowly I was doing them, and so she's really getting on me about that, and kind of giving me suggestions on who I could start with, that kind of thing. And so that kind of started the whole thing for me, and then I took over the process (personal communication, fall 2012).

Ulysses from School A discussed how the math coach provided reassurance and a new perspective on which students to refer, "Some that the math coach confirmed that I was already thinking about recommending that the coach mentioned too, and then some that I hadn't thought about yet that the coach mentioned, that helped me out" (personal communication, fall 2012). George from School A also received reassurance from the math coach, saying, "It's just kind of a reassurance more saying, yeah, you know he was on my radar and now that you say that we probably could get that set up" (personal communication, fall 2011). The math coach would spend time in classrooms working with teachers, providing time for the coach to talk with them about students and discuss possible supports, including math intervention. Amelia from School A talked about her experience being a new teacher and working with the math coach in her classroom, "So I

still feel really new, and talking to other people really helps me, and like having the math coach in my class was really helpful so I could change things to be better” (personal communication, fall 2014). Quentin from School A discussed how the math coach helped him with many things, some of which he could apply to his use of the math intervention program, “The math coach helped me to not only design formative assessments and cooperative activities, but also to understand what those results meant then afterwards talk about it, get some feedback, and what does that tell us about some students” (personal communication, spring 2012).

New teacher are often so overwhelmed with all the changes and new responsibilities that it becomes difficult to think about and prioritize everything. Tammy from School A was a new teacher who received help from the math coach on identifying students for the math intervention program,

At least one of my students that’s been in intervention I didn’t even notice that they needed the help and then the math coach was in my classroom and said to me, ‘this person has to be in intervention because they’re behind everyone else’ (personal communication, spring 2012).

Sally from School A was not a new teacher, but still experienced a positive impact from having the coach in her classroom, helping her identify students, stating, “...our math coach would come into our room a couple times and asked about just kids in general, like what about this student and have you thought about them for interventions” (personal communication, fall 2011). Nate from School C was an experienced teacher, but inexperienced at using the math intervention program, describing how the math coach helped him use the program and actually demonstrated how to use the program at times,

The math coach and I are both assigning, the coach is helping make suggestions and is helping me across the board with all my interventions, not just the interventionist, but all the things that I'm doing to help students be successful (personal communication, fall 2012).

Sometimes teachers just needed another perspective on the students in their classroom, which the coach could provide,

Our math coach, when the coach is in the room the coach gets the observers perspective of it, and just says you know, 'I was looking at this person's work today and it seems like they're missing this', and you say oh, you know it's just kind of that second perspective (George, School A, personal communication, fall 2011).

Teachers who didn't have experience or confidence identifying and referring students to the program would have concerns about referring the wrong students. The math coach would help alleviate those concerns by helping teachers gain experience and reassurance, which Nate from School C talked about when he said,

I think that my fear from before was that I was going to be referring students that I shouldn't have been referring, where it wasn't appropriate. And so having the math coach there to say, 'hey, this person would be good' or if I think a student's good, asking the coach if I thought they should be referred, that helps (personal communication, fall 2012).

Often times this help from the math coach would only be needed during the initial stages of use. Once teachers became more experienced and comfortable identifying students and using the program they would not need the help from the math coach any more. Nate from School C went on to say,

I mean I think about how much the math coach really helped me become more comfortable with it. I think she helped me better recognize this is a student who would be great for the intervention program and you should refer that student. I think that kind of thing is really helpful, it gave me an idea of the types of students to refer and then I feel like since then I can spot those students on my own (personal communication, spring 2013).

Math coaches would sometimes serve as a co-teacher for a classroom. This allowed the coach to have daily exposure and experience with the students, thus being able to provide reliable and trustworthy recommendations for students. Veronica from School A talked about how having the coach in her room on a daily basis helped her, saying, “The math coach really does have good ideas, and the coach’s ideas really do fit with my classroom because the coach has seen it and knows what would work well for those students and helps me problem solve” (personal communication, fall 2012). Angelica from School C discussed her experience having the math coach as a co-teacher when she said, “...I would say the math coach actually reminds me that it’s an option as well, so the coach has influence as my co-teacher and us discussing” (personal communication, fall 2012).

The math interventionist and coach often worked together and helped each other. This caused teachers to have greater trust and faith in the recommendations that the math coach had for certain students to be in the math intervention program. Angelica from School C talked about how this helped her be more comfortable using the program, “And I think the math coach just knows the math interventionist, the coach just knowing all the teachers so much better just kind of makes them feel more comfortable with remembering that they can use that intervention” (personal communication, spring 2013).

Nate from School C also discussed how the relationship between the coach and the interventionist made him more comfortable, saying,

I know that the math coach works quite a bit with the interventionist, and I know that the coach has worked in Algebra classes before, so I know that when the coach makes suggestions you know the coach is a reliable person to listen to (personal communication, fall 2012).

Sometimes the math coach may be the only other person that teachers talked to about the math intervention program, “The only other people that I really have a nice conversation about it would be the math coach” (Angelica, School C, personal communication, fall 2013).

Special education teachers were also often co-teachers within math classrooms. This provided teachers another person in the room to help them work with students, as well as identify struggling students who might be fit for the intervention program. These co-teachers also have a background in special education, thus allowing them more experience identifying students who are struggling and maybe having some ideas on how to support them. Karen from School A talked about the value of her co-teacher’s input, saying, “He also can see the difference between someone who needs intervention and someone whose not trying, and someone who’s doing fine without it” (personal communication, fall 2011). Ulysses from School A discussed the impact of having a co-teacher by saying, “...my co-teacher and I will kind of, we can bounce ideas off of each other, just deciding if a student fits it or not...working with their IEP manager” (personal communication, spring 2013). Fred from School A talked about how his co-teacher helped him decide which students to refer to the intervention program, “I would say my

co-teacher definitely as I mentioned has helped me in some of those decisions”

(personal communication, fall 2011).

It didn't seem to matter who was in the room to support the teachers, it just needed to be someone that they trusted and worked with on a regular basis. Ulysses from School A talked about his transition from the math coach to a co-teacher,

...at the beginning of the year I remember that the math coach was able to give me, I was able to bounce ideas off of her with who to intervene with, rather than I guess the co-teacher has kind of replaced that, where I can bounce ideas off of her and we can kind of get ideas on what pace we should be at with her too (personal communication, spring 2013).

Ulysses later didn't have anyone in his room anymore, and went on to say, “Yeah, having another person in the room would have helped” (School A, personal communication, fall 2014). Most of the time teachers were searching for another opinion to either support their own or provide them further guidance. Tammy from School A described how she felt her use of the program increased once she had a co-teacher,

I think that part of why I've done this better this year is because I've had a co-teacher for all of the classes in which my students qualify, and so there's always kind of been two opinions. I've been able to ask her about everybody that I do refer. But if I didn't have that I'm not sure how I would get a second opinion (personal communication, fall 2012).

Angelica from School C talked about the influence of others, saying, “...just utilizing the outside views of others when they come in, which I do when they tell me. But there's got to be a point where I just do it myself” (personal communication, fall 2013). IEP (individualized education plan) managers who were not co-teachers also

impacted teacher use of the program because of the trust teachers had in them to provide reliable information about what the student needs, which Bob from School C talked about when he said, “But a special education person might say, ‘you know what, they might need a little help’. So, if they put in a good word I would usually do what they recommended” (personal communication, fall 2011).

Administrators and counselors were often not seen as reliable sources for teachers. Most of the time this was due to a lack of understanding about the purpose of the math intervention program. Mike from School C discussed his doubts with the administration when he said, “I don’t know how much all our administrators know about it” (personal communication, spring 2012). Teachers felt like they understood the program and what it was for, while administrators and counselors maybe had a different idea of its purpose. This caused higher levels of distrust when administrators or counselors would talk with teachers about possible students to put into the program. Fred from School A talked about some of his struggles with administrators when he said, “I get this feeling that with some of the administrators, ‘oh man, that students failing math, well then intervention will be the fix for them, let’s get him in there’” (personal communication, spring 2012). Teachers felt that administrators might be using the program inappropriately, putting failing students into it without really thinking about whether the student would be successful or not. Ella from School C talked about the expectations of the administration when she said, “We’re mandated by our administration to follow a certain procedure. It is not up to our colleagues to encourage or dissuade us from doing it. It is expected that you follow the procedure” (personal communication, fall 2011). Chad from School C told about an experience where an administrator influenced a recommendation of one of his students,



I had one student that just didn't do any work for the first two weeks of school. Wouldn't do anything, and I don't really go for that really well. Eventually I sent her out of the room. Sent her to an administrator, and the administrator said, 'you know, I think you should put her in math intervention'. I said I don't think that's really what that's for, he said, 'I think that's exactly what that's for', and then I said fine and went to sign her up...but an administrator certainly was the impetus for trying to refer the one student that didn't meet the criteria, cause I wasn't going to argue about it (personal communication, fall 2011).

Teachers often do not resist authority, and thus may end up using the program inappropriately because of miscommunication with the leadership of the school. Rose from School A discussed how she wished the communication between teacher and administrator was more consistent in order to provide support for the student from multiple sources,

Because sometimes I feel like maybe it's just me and the interventionist that are really on this with the student, like this is what we're going to do, and then there's the administration trying to do other things with them that are kind of separated, so it would be nice to get their feedback so I didn't necessarily feel like I'm the only one here with them on this one page of what we're doing (personal communication, spring 2013).

School B experienced a situation where the vision for the role of the math interventionist was different between the administration and the math department. This caused tension between them. Zane from School B describe this difference, saying,

I think sometimes the administration wants the math intervention position to be something, and then the math department sort of has a vision of what it should be. So sort of protecting the interventionist from just being a special education study hall kind of thing. So I think that is something that would have sort of continually have to do and make sure that it's being used appropriately and productively (personal communication, fall 2013).

Administrators and counselors were also going around the math teacher, recommending students to the math intervention program without talking to the math teacher about it first. Zane from School B discussed this as well, saying,

I've had some side conversations about that with teachers who are feeling kind of frustrated about that because it was something those kids were being assigned through their administrator as their administrator saw they were failing in math so let's get the interventionist involved (personal communication, fall 2013).

To alleviate this issue administrators and counselors need to be properly informed on the purpose and use of the program so that they can communicate effectively with teachers about it and influence their use in return. Zane from School B actually arranged a time to meet with the administrator in charge of the math department and the past math coach of the school and talked about the intervention program (personal communication, fall 2013). Mike from School C also had a similar meeting, saying,

We kind of tend to have a meeting about once every two months, the interventionist, math coach, myself and then our assistant principal who kind of oversees math, just to talk about what's going on in the math

department, what's working, what's not (personal communication, fall 2012).

As administrators and counselors become more knowledgeable with the program they should become more aligned with the teachers in their use. Fred from School A went on to say,

I guess we collaborate or maybe talk with maybe a little bit more with an administrator or counselor with more and more comfortable they get with it then maybe I collaborate with them on the option for intervention a little bit more (personal communication, fall 2012).

Veronica from School A actually had positive experiences communicating with counselors regarding gathering information about her students in order to help her make referrals to the intervention program, saying,

Sometimes I've asked the counselor to check, like if they've dramatically changed in their behavior in class, before going to intervention. I've done that with a couple of students and it's been home life more then their ability in math, so I've never gone any further then that (personal communication, spring 2012).

Amy from School B suggested, "And I think by keeping the lines of communication open that helps a lot. Counselors, administrators, teachers, we all kind of make sure that we know what's going on, we're not blind sided by it I don't think" (personal communication, fall 2013).

Occasionally math teachers talked about having conversations with other teachers in the building that were non-math teachers, but had a common student who was in the math intervention program. Sally from School A is the math department chair and thus

on a regular basis had meeting and communicated with the other department chairs.

She talked about her conversations with the other department chairs, saying,

...I've talked to a couple other teachers, probably more department chairs than other ones, just about the program and how well it's working and asking how in terms of those students missing those other classes is that been rough for those teachers (personal communication, spring 2012).

Sally went on to say that her communication was, "...maybe collaboration might not be the right word, but maybe just spreading the work a little bit more" (School A, personal communication, spring 2012), and, that she would, "...just talk to them in general about the student, and say 'hey', not maybe even math, but 'how are they doing in your class? Do you feel like this is something that's helping boost their self-confidence?'" (School A, personal communication, spring 2012).

These conversations allowed teachers the opportunity to advocate for the program to non-math teachers, explaining what it was and how it worked, as well as answering any questions they might have about it. Patrick from School A talked about opportunities to talk to others about the program, saying,

On a rare occasion a teacher outside of the math department will ask what is the intervention program, or what are they doing, so we will kind of explain that to them a little bit...other teachers, if they have questions or if they approach me about it, and then other people outside of School A or outside of the school district that ask sometimes, if we are discussing what are we doing at School A to help kids that struggle, you know it's an opportunity to discuss some of the things that we do outside of meeting

with the kids after school or before school (personal communication, spring 2012).

Some teachers said that they would talk about math intervention whenever they talked about school (Veronica, School A, personal communication, spring 2012).

Mike from School C described the chain of communication across the school when he said, “That was kind of with the department chairs, and the department chairs took that information to their departments and shared it. So some probably got lost in translation through all that” (personal communication, spring 2012). With so many people involved in the chain of communication it becomes very easy for miscommunication to occur. Patrick from School A talked about making sure everyone in the building was informed, and thus knowledgeable, about the program,

So working to establish good communication between all parties involved, not just with the math department. So I think the level of knowledge for myself is high, and I think for the math department and building I think is high as well (personal communication, spring 2012).

Fred from School A also discussed the value of making sure everyone in the building knew what was happening with the math intervention program so that there was no miscommunication or misunderstanding within the building, saying,

Maybe even onto there a better understanding for the rest of School A on what math intervention is...I think they have some false ideas of what's really going on or how many people the interventionist actually works with on a weekly basis that they don't understand really (personal communication, fall 2012).

Other teachers, such as Amy from School B, expressed that they never communicated with any of the non-math teachers, talking only to other math teachers, “But not outside of the math department I really don’t talk about it, or collaborate about it” (personal communication, spring 2012). When asked if he talked any non-math teachers in the building about intervention, Fred from School A said, “In terms of between other teachers in the building I guess probably not” (personal communication, spring 2012).

Some teachers showed concerns for the other teachers, seeing a need for communication. Amy from School B went on to say, “The only concerns I would have would be like having other teachers that maybe aren’t in the math department buy into it more” (personal communication, fall 2013). This shows that some of the teachers, even though they were not communicating or collaborating with many people, did see the value of it.

If building wide communication can be done well, then the whole staff can help support the program. Mike from School C discussed how the whole school supported the program, saying, “Other than a couple teachers that I heard about, the building has done a nice job of supporting it, which makes it a lot easier on us too” (personal communication, spring 2012). This wide spread support makes it easier for the math teachers to use the program because they know that other teachers that are being effected by it are also supporting it and seeing the value.

Math teachers would often have to communicate with parents and students about the math intervention program. Parents were required to be notified when referring any student to the program. Sometimes teachers would contact home to talk with parents about something completely different, but then through the conversation math

intervention would get brought up and discussed, leading sometimes to referrals.

Amelia from School A talked about how she always kept math intervention in her mind when talking to parents, saying, "...a lot of it is because I called home to parents because their kids weren't performing well, and then it was one of the things I had suggested" (personal communication, spring 2013). If a teacher was calling a parent specifically about recommending their student for math intervention they would have to explain the program to the parents and make sure that they got their approval. George from School A discussed how he would communicate with parents, saying, "I try to sell it to the parents, just kind of getting them on board. I've had really positive feedback from parents" (personal communication, fall 2011). Adam from School A also talked about his conversations with parents,

Every parent I've contacted so far, I think I've had three or four students in math intervention, and they've been really supportive of it. I've talked to them at parent-teacher conferences, as well as just on the phone.

They're like, 'yeah, I'd really love my son or daughter to be in that program' (personal communication, fall 2013).

So when presented positively, often parents would respond positively in return.

Parent-teacher conferences were another opportunity that some of the teachers talked about for having conversations with parents regarding the math intervention program. Teachers were already planning on talking with the parents about their student's performance and grades, and the parents were planning on being there for a conversation about their student, so it worked well for them to talk about the math intervention program as well if needed. Sometimes the teachers just began the conversation with parents about it, which Fred from School A talked about when he said,

“...maybe at conferences kind of a little communication with some of the parents about how this might be an option and we might see how things go” (personal communication, spring 2013). Tammy from School A discussed starting conversations with parents during conferences, “I met a lot of parents at parent-teacher conferences and started those conversations with parents earlier too, so I think that helped” (personal communication, fall 2013).

Teachers were encouraged to always have conversations about the program with their students at the beginning of the semester, informing them about it and reminding them that it was available to them. In addition, teachers should continue the conversation while students are in the program to keep informed about how the student is performing and feeling. Rose from School A discussed how she would continually talk about the math intervention program with all of her classes as a reminder to them,

...I need to kind of pop that back into kids heads maybe every week, maybe a couple times a week, hey this is available too. So it's a reminder, so some students self-advocate for themselves, and me not having to go directly to them and say do you want to do this, so it is their idea instead of mine (personal communication, spring 2013).

Before ever referring students, teachers would explain the program to the students and begin to have individual conversations with students they think might need it. In order for this to occur teachers needed a level of knowledge that they were comfortable with. Once they reached that level, teachers were fine communicating with both parents and students, “I know better what's going on because I can communicate not only with the kids but with the adults easily” (Tammy, School A, personal communication, fall 2013). Sally from School A talked about her initial communication with students, saying,



“...I’m talking to kids more about it, or they hear it, and we have those discussions of oh this could be something good for you” (personal communication, fall 2013). Tammy from School A discussed how having those initial conversations with students about being in the program made her more comfortable as a teacher using the program, saying, “And so I think that has made me more comfortable, just bringing the kids into the conversation more” (personal communication, spring 2013).

As students gained experience using the program they would begin to tell each other about it, causing students to sometimes go to their teachers and actually request to be referred into the math intervention program. Veronica from School A talked about seeing the change in student communication about the program, saying, “I think more kids are open to it, because they understand more about it I think after experience and the word gets around” (personal communication, spring 2013). Sometimes students would even talk about the program in front of their classmates, which Tammy from School A experienced and described as, “...a lot of them don’t feel embarrassed to talk about it. I think that in itself is a positive” (personal communication, spring 2013).

Once students were in the program many of the teachers mentioned that they would try to have follow-up conversations with their students in the classroom. Adam from School A talked about how math intervention provided a talking point for him and his students, encouraging and increasing communication between the teachers and students within the classroom (personal communication, fall 2013). Oscar from School A discussed how he would have immediate conversations with students after their first time in intervention in order to assess how it was going,

It’s not just communication between the interventionist and I, but then I also talk with that student. I ask them, ‘well, what did the interventionist

show you to do?', 'is it working?'. I'll ask them point blank, 'do you like the math intervention?' And if they do like it, well then I encourage them to say with it. And if they don't like it, I ask them what they don't like about it, and if they still want to be in it, or if we could do another option (personal communication, spring 2012).

Amy from School B described what she would hear from students when they would return to class after receiving math intervention,

A lot of them will come back and say, 'yeah, I did really good with the interventionist today', or the interventionist will tell me how good they did and then I'll make that connection with them in class, I'll say, 'oh the interventionist said you did really good, you're totally ready for this test' (personal communication, fall 2013).

Sally from School A discussed how she would have follow-up conversations with her students after they went to math intervention, "...then I can have that conversation with them, oh I know you did this with the interventionist and it went really well, how do you feel" (personal communication, fall 2013). Patrick from School A used follow-up conversations as a way to provide his students support and encouragement,

So the students I know are in intervention then I'll also make special note to go and talk with those kids as they're doing guided practice and just encouraging them, much like I would the other students, but especially those students because knowing that they are getting the extra help just to reinforce that they are doing well or to show them that by doing the extra effort it's making a difference, and just trying to encourage them and doing that (personal communication, fall 2012).

Because of these conversations, teachers were able to build their confidence by receiving positive feedback from students, motivating them to continue and possibly increase their use even further. Tammy from School A talked about how the feedback from students effected her, saying, “I guess I feel more comfortable with just the whole process and more confident with the kids that I’ve referred because of the conversations I’ve had with them” (personal communication, fall 2012).

Many of the teachers said they very rarely talked with other math teachers about the program. When they did talk, some of the teachers asked each other for help on the referral process, “I have had conversations with colleagues about the process” (Amy, School B, personal communication, fall 2011). Lucy from School A mentioned talking with other teachers about how to use the program, saying, “I’ve talked to some other teachers about how to use it” (personal communication, fall 2012). When asked if he talked with anyone else about the intervention program, Jake from School A said, “Not really. I mean just for recommendation purposes yes...” (personal communication, spring 2012).

Most of the conversations that they had with each other were before referring a student, trying to gain information from the student’s previous teacher, seeing if they agreed or disagreed with recommending them for math intervention. Holly from School A discussed how she would often search for reassurance, saying, “I’ve talked to different people about whether I should or not, and given them the scenario and taken their opinion, whether it was a yes or a no” (personal communication, fall 2011). Jake from School A discussed how talking to other teachers helped him make decisions about using the program, “...they gave me insight on which direction I should do” (personal communication, fall 2011). Dylan from School B described his conversations with the

other math teachers, “And we’ll try to find out okay see if somebody has had this student, what kind of success have they had, what has not been successful, would this student benefit from being in the intervention program” (personal communication, fall 2011). Becky from School B discussed that she liked knowing if her students had been in math intervention in the past, saying, “Cause once a kid starts interventions you kind of want to know they got some extra help, especially Geometry going into Advanced Algebra” (personal communication, spring 2013). Ulysses from School A described his conversations with other math teachers and how they changed over time, “Talking to other teachers about the student when they had them has increased. Just not as much like talking about intervention in general, just talking about the students more” (personal communication, fall 2014). Even though teachers were not talking about the math intervention program directly, their conversations would still affect their use of the program. Oscar from School A talked about how he was affected, “And so you’re still talking about the students, indirectly talking about whether or not we should place a student in math intervention” (personal communication, spring 2012).

Other times teachers would collaborate about methods of instruction, but again, the focus was not on or about math intervention. Becky from School B talked about the importance of collaborating with other math teachers when she said, “...the communication between the teachers is very essential, because there are 18 million different ways to factor quadratics, so we want to make sure that we’re consistent” (personal communication, spring 2013).

Sometimes, through their conversations with others, teachers would influence other math teachers without knowing it. Fred from School A talked about an experience

where he was influenced by a conversation he heard another math teacher having with a parent,

I heard a teacher yesterday making a phone call home to a parent and it wasn't about putting the student in intervention, it was about other things, and then saying well yeah we do have the math intervention program here but your student doesn't qualify. And she said basically what I would say. So I was happy to hear that conversation... (personal communication, fall 2013).

Adam from School A had a similar experience, talking about overhearing other teachers making contacts home,

So I hear them calling parents and so at the beginning of the year, well, I should be looking for students and when they do hit that benchmark or that criteria I shouldn't hesitate to make that phone call or tell that student about that opportunity (personal communication, fall 2013).

It seemed like many of the teachers associated communicating with other teachers and collaborating about instruction. Often collaboration about instruction was the main reason and focus for teacher conversations, so they didn't know how to effectively communicate with others about non-instructional topics. When asked about collaborating or working with others about the math intervention program, Jake from School A said, "I don't know what that even means, work with other people in regards to math intervention" (personal communication, spring 2013).

Eventually some of the teachers began to determine that talking to other math teachers in general, not specifically a past teacher of their student, would be advantageous. Sally from School A came to this realization, saying,

I haven't really had a conversation like that, but that would definitely be something to take advantage of, because even if the other teacher doesn't have the student they know a math background enough to you know say hey you know this kid could probably use a recommendation (personal communication, fall 2011).

Sally went on to say,

I think just continuous conversations with the math interventionist and not being afraid to have those courageous conversations with the interventionist and with the other teachers about the program and what they could see changing or what they feel is the biggest benefit of it (personal communication, fall 2013).

This realization was that conversations among teachers that are all using the same program could fuel dialog about ways to improve upon it that may never have occurred otherwise.

Being the math department chair for School A, Sally talked about how she could talk to all the math teachers about the program, saying,

...just in terms of department chair and like I want to have those conversations with teachers and if I know the teachers a little more personally then others I'll be like hey, and then they'll tell me that some kids are struggling and then right away I'll be like hey do you think they would be a candidate for math interventions (personal communication, fall 2013).

Oscar from School A discussed the importance of having conversations with others when he said, "Whether it be directly or indirectly, all of us teachers have to talk

about math intervention and the students and stuff like that in order for the program to work” (personal communication, spring 2012). Communication was seen by many teachers as something valuable, causing increased comfort with the program, which Patrick from School A discussed, saying,

So I would say the communication has definitely improved the comfort, increased the comfort level, but then is also extremely useful as we continue to move forward in trying to work with the kids in the regular classroom as well (personal communication, fall 2012).

After some teachers gained experience using the program, they could then become mentors for new and inexperienced teachers. Being a new teacher, Tammy from School A talked about the importance of communicating with other math teachers,

Especially since it is my first year, and not knowing any of these kids before anyway, I often liked to try to find out who their previous teachers were and just find out if the stuff that I’m seeing from them is typical, if they’ve used intervention before, if other teachers have seen behavior issues from them, of if they struggle with concepts (personal communication, spring 2012).

Reflecting back, Rose from School A thought about the importance of teachers sharing their experiences, saying, “It just needs to be maybe the teachers reaching out to others that have used it and having that conversation with them about what’s the best use of it might have been helpful” (personal communication, spring 2013). Veronica from School A was asked if she could go back to the beginning what she would change, and her response was to have experienced teachers share their experiences with others and help with the training, “Come from teachers who did it maybe would help to better explain

kind of how their process, how they thought of this kid and how they processed whether they should be in intervention or not” (personal communication, spring 2013).

When the program was first introduced all of the teachers had learned about the program together, and thus there were no experienced teachers to provide guidance and information. School A had five new math teachers one year, creating an opportunity for experienced teachers to help the new teachers in developing their knowledge and use of the program. Sally from School A talked about the experience of getting the five new teachers, saying,

...having some of us experienced talk about it and say, and I think that really helped the new teachers to realize it's not really a lot of work for me to do, there's a couple steps I have to take and it's a good communication piece, and it really helps the kids learn their math (personal communication, fall 2013).

Since some teachers already had experience using the program there is a certain level of trust in what they had to say about it. In addition, they were peers to the new teachers, thus allowing for increased trust and comfort between them. Angelica from School C would talk to another math teacher that she knew was experienced using the program, saying,

I guess I have talked with another math teacher, cause she assigns a lot of people, or refers a lot of people, so have you assigned anybody to the interventionist... We talk about it a little bit but not, kind of, how many have you assigned, or have you done any. But, not critiquing or anything, it's just who are you assigning to it (personal communication, spring 2013).



When teachers felt uncomfortable talking with other math teachers it was because they valued being able to customize their use of the program to their individual needs, and thus felt if they talked to others about it then they might feel like they were critiquing or judging others for the way they were using it.

With experience teachers became more comfortable talking with other math teachers about the program, because they had gained knowledge and comfort with it. Sally from School A talked about this change in communication with other teachers, saying,

So I would say its been a big increase in terms of talking with other teachers for me personally, because before it was just me and my kids, and now that I know more about the program and know more teachers that have kids in there I feel like I can have those conversations (personal communication, fall 2013).

In addition, sometimes teachers might have had a negative experience with the program, and therefore might influence inexperienced teachers in a negative way, which Mike from School C described an experience with, saying, “There has been a colleague here who had two students she referred that weren’t successful, and she talked about that, and it didn’t influence me at all but I could have seen how it influenced some other people” (personal experience, spring 2012).

Once a student was recommended into the program there was very little communication between teachers. Some teachers would occasionally talk about the results they were seeing in their students. When asked about conversations with other math teachers, Amy from School B said, “We’ve just talked about how the interventionist helps a lot of our kids. That’s the only conversations we really have” (personal

communication, spring 2012). Patrick from School A talked about having conversations with other math teachers, saying, “All the math teachers that have used the intervention program, we all talk, ‘how’s so and so doing’, ‘is it working’. So there are conversations about what is the progress of that student” (personal communication, spring 2012). Teachers would often have lunch together, allowing time for them to talk with each other. Nate from School C described the conversations they would sometimes have at lunch, saying,

When we talk in the lunch room or things like that about students and what we’re doing to help students, sometimes we’ll talk about students who are struggling and see if there’s any suggestions and I’ll say I’ve referred a student to the math interventionist, or something like that (personal communication, fall 2012).

Mike from School C also talked about lunch conversations when he said,

...it gets talked about like at the lunch room, where they referred some four students and all passing now, just kind of different stuff like that, where a teacher might say that a student finally figured something out. That happens quite often (personal communication, spring 2012).

Other teachers said that they didn’t see or feel a need for continual communication and collaboration among math teachers regarding the math intervention program. When asked if he wanted more communication between the other math teachers, Fred from School A said, “Maybe a little bit more communication, but I don’t think it would need to be a big collaborative piece, no” (personal communication, spring 2013). Fred went on to say, “I would say that collaborating more about who’s been in it and who might need it would be the extent of the collaboration, not necessarily

collaborating in the sense of what's going on in there..." (School A, personal communication, fall 2013). Rose from School A also discussed not needing communication with other math teachers, "To be honest, I don't think I've had a conversation with another teacher about intervention, or the use of it, or when they've done it" (personal communication, spring 2013).

Some of the teachers didn't communicate with other math teachers at all, instead only communicating with the interventionist or co-teachers. Ulysses from School A discussed how he preferred talking with the interventionist, saying, "...not with any of the regular math teachers. The ones that had history I guess I got most of the history from just talking with the interventionist" (personal communication, fall 2012). Angelica from School C admitted that she only communicated with her co-teacher, saying, "The only person I think I really do talk to about it would be the co-teacher. I don't really talk to other teachers about it too much" (personal communication, fall 2013).

Jake from School A said he didn't communicate with other teachers because, "I feel like the interventionist does such a sufficient job there is not reason for me to have to go and talk with another teacher about how to make intervention work better" (personal communication, spring 2013). When asked if she coordinated her use of the math intervention program with others, Tammy's reply was, "My initial answer is no, because I don't know what that would look like" (School A, personal communication, fall 2012). Thus, some teachers just didn't understand the concept of working and communicating with others about the program.

One of the main reasons that teachers said they didn't feel the need to communicate with other teachers was because they didn't teach the same classes. Sometimes teachers may be the only person teaching a specific class. When asked if he

collaborated with other teachers about the math intervention program, Bob from School C said, “So I really had no one to confer with cause it was only me teaching those particular subjects last semester” (personal communication, fall 2011). Ulysses went on to say, “...I don’t have other teachers that teach the same classes, I guess, so I haven’t had much need” (School A, personal communication, spring 2013). Amy from School B shared the same concern, stating that, “...I’m the only Geo Plus teacher, so I don’t really collaborate for that class because there’s nobody to collaborate with” (personal communication, fall 2013).

When teachers had a common class they would sometimes talk to each other about the math intervention program, which Nate from School C discussed when he said, “I do a lot of planning with another math teacher, she’s the other geometry plus teacher and so we talk about some of the things that we are doing for our students” (personal communication, fall 2012). At semester students get shuffled around, thus teachers with the same classes would talk about the students that switched teachers. Nate from School C talked about having conversations with another math teacher and comparing their student lists, saying,

And it’s nice with another math teacher, cause the teacher and I are the only ones teaching Geometry Plus so it’s really nice to kind of compare our lists and just go through the list and talk about what kind of interventions or what different things we put in place for the students (personal communication, spring 2013).

But, just because teachers didn’t communicate with each other doesn’t mean they didn’t see the value in it. Ulysses admitted later on that, “...collaboration would be helpful, wouldn’t hurt anything” (personal communication, spring 2013). Reflecting

back, Tammy from School A realized the value of communicating with others, saying, “I don’t know that I ever really talked about it much with anyone. And I probably could have gained some of that faster by talking to people about it” (personal communication, spring 2013).

Time and priority were both issues that teachers talked about preventing them from using the program or communicating with others. Tammy from School A discussed these issues, saying,

I would say it’s something that unless I’m doing it in a department meeting or something, there’s too much to do, it’s not going to be at the top of my priority list. Would it be helpful, yeah, I think it would. But, am I going to seek it out for myself, probably not (personal communication, spring 2013).

Ulysses from School A talked about his issues with finding the time needed to communicate with everyone in order to refer a student,

...it can be hard enough just getting time to get the recommendation for it and get a hold of the parent, but to also have to find like their counselor or their IEP manager and get them linked up with you and have a conversation about whether they need to be in it (personal communication, spring 2013).

Another reason that teachers didn’t feel a need to communicate with each other was that each of them developed their own ways of using the program and which students should be in it that were unique to them. Ulysses from School A talked about these unique uses when he said, “I guess I could see how every teacher might have their own

personal idea of which students need to be recommended, so that's kind of how it's set up, it's nice that way" (personal communication, spring 2013).

**Implications.** Educational leaders need to make sure that information is being given to teachers at a time that is relevant to them, close to initial use, so that teachers can put value on the information and mentally prioritize it. Information, such as a list of past math intervention students, helps teachers become more knowledgeable and thus more comfortable and quicker using the program. Formal or informal communication both can be effective and should be allowed in order to ensure that teachers can communicate in the form that best suits them and their needs. Developing relationships and trust are vital to successful communication and use of the program. Access to information and leaders is important for users, knowing that they can get answers to questions and have informal conversations when needed, also helping to further develop relationships. Data and results need to be shared with users in order to develop their knowledge and comfort with the program. This allows them to communicate to others about the program more effectively. Successful data can be used as a motivator for increased use of the program. In order for communication to be effective it needs to be consistent. Daily, weekly, and monthly conversations, either formal or informal, will increase the teacher knowledge and comfort of the program. Providing another person to aid teachers within the classroom during their initial stages of use, such as a co-teacher or coach, will help teachers use the program quicker and become more comfortable using it. Building-wide communication needs to occur so that all of the staff and teachers in the building know about and support the program. Everyone in the building needs to have an understanding of the purpose and use of the program. Leaders need to prioritize

communication, making and allowing time for teachers to talk with each other about the program and their use of it.

### **Know What You Have to Know**

When asked about searching for and developing their knowledge levels, teachers often said that they knew what they were supposed to do, but didn't know the details of the program, the other programs, or things that didn't pertain to them directly. When asked if they felt like they wanted or needed to know that information they replied that they didn't see the need. Teachers only wanted to know what was relevant to them and what they had to know in order to do their job.

**Knowing Teacher Roles.** The most common things that teachers discussed when asked about their level of knowledge were the referral process and purpose of the math intervention program. For most teachers these are the only things they are required to know in order to use the program. Ulysses from School A talked about his level of knowledge, saying, "I mean I understand the process of signing them up, communicating with everybody that they're related to and involved with and everything, counselors, administrators...I know everything that is going on in the intervention too" (personal communication, fall 2012). Amelia from School A described her level of knowledge similarly, stating,

But I understand the process of talking to the kid, talking to the parents, doing the online form, and then the interventionist pulls them out once a week, and I know the interventionist sends an email to the teacher and then they show up with their pass, and then I know the interventionist works with them and then I get the reports of what the interventionist worked on with them and areas of struggles and their strengths, cause the

interventionist details it really good (personal communication, spring 2013).

Veronica from School A was a new teacher, and when asked about her knowledge level she said,

My only knowledge is that I can ask the interventionist to work with someone, and contact home, make sure that's okay. And so the math interventionist maybe meets with them maybe once a week, kind of, every other week, and I think the interventionist logs about it, and that's all I know (personal communication, spring 2012).

But, just knowing the process for using the math intervention program didn't ensure that all teachers were comfortable with and effective at using it. Angelica from School C discussed her struggles with using the program, even after she had knowledge of the process, "I understand what the process is and it's really just doing it, and staying on top of it is probably the most difficult part. Cause there's a lot of different things we can do" (personal communication, fall 2012).

The expectations and roles of the teachers are all focused on the referral process. Once a referral is submitted the teachers have very little expected of them because the math interventionist then takes over. Teachers often expressed a very high sense of confidence and knowledge regarding the referral process and their role with it. Fred from School A said,

But the process of what I have to go through and I guess what affects me more on a day to day basis I would say I'm, I don't know if highly knowledgeable is the right word, but somewhere close to that (personal communication, fall 2012).



Angelica from School C had a high sense of confidence with the math intervention program in her roles as a teacher, but much lower confidence outside of that, saying, “I just really understand how to assign the kids and get them the help that is out there for them, but beyond that I don’t know a whole lot” (personal communication, spring 2013). For most teachers they just wanted to know when to use the program and which students to recommend, which Zane from School B talked about when he said, “Part of me would have just said, just tell me when I should be using the interventionist and what type of students I should be letting the interventionist know about” (personal communication, fall 2013). One of the main reasons teachers felt confident in their knowledge about the process of using the program was because of the information that the math interventionist shared with the teachers at the beginning of the program and each semester. Patrick from School A said,

The math interventionist has done a nice job communicating with all of the teachers and the department, of the program and making sure everybody, all of the teachers, have an understanding of what the expectations are, what kind of students to target, and what the process would be (personal communication, spring 2012).

Most of the knowledge and confidence that teachers shared was specific to the school they taught at. Ulysses from School A said he felt knowledgeable about the process and use of the program, but only knew how it worked at School A, “I feel like I’ve got a good grasp on how it works here” (personal communication, fall 2013). Becky from School B also felt knowledgeable and informed about the program at her school, but was not confident about the programs at the other schools, “I’m not sure how other schools are running their programs, but for here we’re pretty comfortable” (personal

communication, spring 2013). When asked about the change in his level of knowledge, Nate from School C said, “Well I think I have a much better idea of how the intervention program works at School C. I just assume it works the same at other schools, but I don’t know” (personal communication, fall 2012).

One of the reasons teachers were not confident about the programs at the other schools was because they had no experience using them. When teachers were later interviewed and asked if their knowledge levels increased, they would again talk about their knowledge using the program and how it had increased with experience. Teachers only knew what they had witnessed and experienced themselves through their use of the program, which Vern from School A talked about, “I’m sure that I only know the tip of the iceberg there, just the stuff that I can actually see about the program” (personal communication, fall 2012). Tammy from School A described her increase in knowledge, saying, “Besides identifying kids earlier and better, besides that I don’t know that I feel like my knowledge is really increased” (personal communication, fall 2012). When asked why she felt her knowledge had increased, Tammy said, “I guess you could say knowledge of how to identify kids earlier has increased, cause I tried different things to identify those kids” (School A, personal communication, spring 2013).

With more experiences using the program teachers were able to customize their use of the program to fit their needs and the needs of their individual classes. Tammy from School A went on to say, “I would say that it’s increased probably just a little bit in just because I’ve had so many different types of classes now, and need for intervention might look different in different classes” (personal communication, fall 2013). Teachers began using different methods and techniques in order to identify students easier and faster, which Veronica from School A discussed when she said,

I'd say maybe higher because now I have strategies that I could share with people about how to determine who should be in intervention right away, like my little learning targets or exit tickets or my homework quizzes or quizzes in general or just making sure people do formative assessments more often and actually look at them and grade them, kind of see how the students are doing (personal communication, spring 2013).

Through the experience of using the program with students, teachers gained knowledge on how to talk with students about it, which Tammy from School A discussed, "Knowing more things like that and being able to talk to them clear up misunderstandings, I'm more comfortable with it" (personal communication, spring 2013). Rose from School A also expressed that her increases in knowledge helped relationships with her students, saying, "As far as how to interact with the students I would say now my understanding is better..." (personal communication, spring 2013). They also gained knowledge in identifying the correct students for the program, "I think what I've gained more knowledge of is the students who are going to be successful in it" (Mike, School C, personal communication, fall 2012).

Often this increase in knowledge would be accompanied by an increase in comfort. Nate from School C talked about his change in knowledge,

Well I feel like I know what the intervention program is, how it works, how you get students in there. I wouldn't say I feel any more comfortable with it, I don't feel like I've learned that much in the last year. But I feel at a level where I'm comfortable enough to use it (personal communication, fall 2012).

Sally from School A also talked about her comfort when asked about her knowledge level, saying, “I mean I think I feel really comfortable with it. I know what it looks like...” (personal communication, spring 2012).

This increase in knowledge and comfort allowed some of the teachers to feel confident that they could share their knowledge with others, advocating for the program and helping others in their use of it. Mike from School C felt he was knowledgeable enough to share it with others, saying, “I think I could describe the process to any teacher who had questions about it” (personal communication, fall 2012). Veronica from School A also expressed her confidence in helping others and sharing her knowledge when she said, “I think I could teach someone, like if a new teacher didn’t know what it was all about, I feel like I could really explain it and teach it to them better about the process” (personal communication, fall 2012).

The purpose of the math intervention program was another thing that many teachers expressed high levels of knowledge about. Holly from School A described her level of knowledge as, “I feel like I understand what it’s doing and what needs to happen and what it’s for” (personal communication, fall 2011). Once teachers understood the purpose of the program they could then use the program more effectively, which Jake from School A talked about, saying, “I think I know the purpose of intervention, so I recommend accordingly” (personal communication, fall 2011).

Math department chairs often expressed a need to have a higher level of knowledge because of their leadership position. Zane from School B taught as a regular math teacher his first year using the program at School C and then became the math department chair for School B the following year. When asked about his level of knowledge as the newly hired department chair at School B he said, “I’m forced to know

more about it than I did last year” (personal communication, fall 2013). As leaders, math department chairs need to be knowledgeable about the programs and resources that are being used by and are available for the math teachers. In addition, they often work more closely with the math interventionist and coach, creating a leadership team, and thus gaining more knowledge through increased experience and closer relationships.

Karen from School A talked about gaining her knowledge at the math department chair, saying, “Pretty knowledgeable, based on being the department chair and just communication with the interventionist” (personal communication, fall 2011). Since the department chairs had a higher level of knowledge they could then influence and help other math teachers in their use of the program. Sally from School A discussed how she would use her knowledge and position as the department chair to help others, saying,

“So I feel like I’m becoming more knowledgeable on how other teachers are viewing it, and how hopefully I can support the interventionist in pushing some teachers that hardly use it at all to use it more, and teachers that are using it maybe not in the right sense for a handful of kids and how we can kind of battle with that” (personal communication, fall 2013).

In the end, most teachers said that they knew enough information in order to do their job, and that was good enough for them. Tammy from School A knew there were things she didn’t know, but that didn’t bother her, saying, “I’m sure there’s a ton of stuff that I don’t know about how it works and maybe what goes on, but I think I know enough for it to work for me at this point” (personal communication, fall 2012). There was very little desire from the majority of teachers to extend their knowledge further. When asked if he would want any additional information about the math intervention program beyond his current knowledge, Fred from School A replied, “I don’t know if I would need

anything. I don't know how important it is for me to know the other ends of it or not..." (personal communication, fall 2012).

Sometimes teachers just didn't know what they didn't know, giving them a false sense of confidence in their knowledge, which Amy from School B stated, "I don't know what else I could know about it, I guess" (personal communication, fall 2013). Quentin from School A expressed a false sense of confidence about his knowledge of the program when he said, "I assume for the most part I know what's going on" (personal communication, spring 2012). Other times teachers were simply content with the level of knowledge they were at. George from School A felt his level of knowledge was sufficient, saying, "I feel like I know...how should I say this...enough I guess" (personal communication, fall 2011). Jake from School A felt the knowledge he had was meeting his needs, "I think the information I'm getting is sufficient. It meets my needs" (personal communication, spring 2013). Chad from School C knew his knowledge level was not high, but was content with that, stating, "I think I know how it works and all that. But that's about it. Any deep understanding I don't think I have" (personal communication, fall 2011).

As long as the needs and concerns of the teachers were being addressed through the information and knowledge that they had, most teachers were content and thus didn't feel a need to know additional information that was not directly related to them and their role with the math intervention program. When asked about knowing all the details of the program, Zane from School B said, "I would say most teachers probably wouldn't need to know all that detail I guess" (personal communication, fall 2013). Angelica from School C talked about seeing a value in knowing additional information, but not having a desire for it, "So, I could use it, but I don't need it all at the same time" (personal

communication, spring 2013). If teachers didn't know something, they felt they knew enough to know where to find the information if needed, which Nate from School C discussed when he said, "...the information and things that I need I can easily, like the answers I need I can easily get if I have them" (personal communication, fall 2012).

Zane from School C talked about not knowing a lot about the program, but knew how to get the information he needed, "...I knew enough that when it was time I would know who to go ask and figure things out I guess" (personal communication, fall 2012).

**Knowing Beyond the Essentials.** A few of the teachers did indicate that their knowledge extended beyond the process and their roles within the math intervention program. Teachers indicated having knowledge about the data and results of the program, knowledge about the grant supporting the program, as well as knowledge of other schools or teachers and their use.

The math intervention program was developed as a result of the district's application for a federal grant that focuses on increasing graduation rates. Math was one of the areas of concern within the district, causing some of the students to not graduate on time due to lack of credits. Teachers were not required to know about the grant, but some of them discussed knowing of it and some of the details behind it. Becky from School B talked her knowledge of the grant when she said, "...we've been pretty informed. Like how the grant works and what kids to send and all this stuff that was written in the grant" (personal communication, spring 2013). When asked about his level of knowledge, Mike from School C also addressed knowing about the grant, saying, "...a little bit of the grant behind it and stuff..." (personal communication, spring 2012). One teacher, Ella from School C, even took the time to read the entire grant, "I read the grant cause I wanted to. Cause I wanted to know what my new responsibilities were...I knew what the aims and

purposes of the grant were” (personal communication, fall 2011). Most of the teachers’ knowledge regarding the grant was very shallow; knowing simply that the program was supported by grant funding and what the purpose of the grant was. Beyond that, many of the teachers didn’t know specifics about the grant, and again didn’t feel a strong desire for that knowledge because it was not directly impacting their jobs or roles.

As teachers continued to use the program they were able to see the data shared by the math interventionist, as well as the results within their students. This helped to increase their knowledge about the program and its impact. Dylan from School B experienced the results, saying, “I understand how we’re using it, and I see the benefits of it” (personal communication, fall 2011). Fred from School A discussed how his interactions with the math interventionist helped his knowledge level, “I’ve learned maybe more about some of the other pieces of it through the interventionist” (personal communication, spring 2012). Adam from School A talked about how he could see changes in his students that were in the math intervention program, “Just that confidence that’s helped my knowledge level and understanding how the program can provide confidence as well as just basic knowledge and math understanding to students” (personal communication, fall 2013). Seeing results within the students was something that Jake from School A also addressed, “I feel pretty knowledgeable about what’s going on in terms of what’s happening with the students in math intervention, and I’m seeing some results from I believe from the interventionist on my students” (personal communication, spring 2012). Others discussed how they knew more about the program as a whole, seeing the data that the interventionist was sharing with them. Mike from School C talked about his knowledge, saying, “I am pretty familiar with how many kids we’re



getting through interventions, the success and failure we're having right now. I've seen the data..." (personal communication, fall 2012).

Experience also allowed teachers to gain knowledge about how other teachers were using the program. Each teacher seemed to have their own unique touches on their use of the program, and often teachers would see how others were using it and adapt their use. Sally from School A talked about gaining knowledge about other teachers and their use of the program, saying, "I just think it's becoming more and more knowledgeable about how other teachers are using it or what they're thought process about how they're going to put kids in there" (personal communication, fall 2013).

**Lack of Knowledge.** Since the knowledge of most of the teachers was specific to their schools, their programs, and their roles, there were areas where teachers lacked knowledge. The areas where teachers talked about lacking knowledge were about what the other schools were doing, the details of the math interventionist's job, and the future or history of the program.

None of the teachers I talked to could accurately describe the programs at the other schools, or knew the data and results from them either. When asked about his knowledge of the other programs, Ulysses from School A said, "The other programs at School B and C I don't know how their programs run" (personal communication, fall 2012). But, Ulysses later went on to say he had an interest in seeing and knowing the data from the other schools as well, "It would be interesting to see data from the other schools" (personal communication, fall 2013). Nate from School C also discussed a lack of knowledge regarding the other schools, "Other than the fact that they have them I don't really know anything about them" (personal communication, spring 2012). Mike from School C was the only teacher that indicated some level of knowledge about the

other programs at the other schools, saying, “I know a little bit about some of the programs in the other schools” (personal communication, spring 2012), but he also was the department chair and thus was exposed to a higher level of information than most other teachers.

Many of the teachers indicated a lack of interest in knowing about the other schools, such as Nate from School C, saying, “As far as how it’s used at other schools, I don’t really have an idea about that, and I don’t feel like I’ve really gone out to search that information out” (personal communication, fall 2012). Amy from School B felt similar to Zane when she said, “I’m not like, I haven’t researched it, or read about it, or looked in to see what other schools are doing. I just know like what we do here” (personal communication, fall 2011). Amy from School B later went on to say, “I just kind of feel like I don’t really necessarily care what the other schools are doing. I know what we’re doing, and it’s working, and I feel good about using the math interventionist” (personal communication, fall 2013). As long as teachers felt knowledgeable about the program at their school, often times they were content and didn’t feel like the information regarding the other programs impacted them.

Even though many of the teachers felt very knowledgeable about the process and purpose of the math intervention program, very few of them could describe the details and roles of the math interventionist’s job. Mike from School C discussed his knowledge of the process, procedures, and even the grant, but about the interventionist he said, “In terms of what all the interventionist has to do, all the data entry and paperwork, that type of stuff I don’t know too much about” (personal communication, spring 2012). Sally from School A knew her role very well, but then talked about her lack of knowledge regarding the interventionist, “But then on the interventionists end, the phone calls that

are made, if the interventionist has to go through talking with administration, or people at the district office I don't know really that end, aspect of it" (personal communication, fall 2011). Oscar from School A indicated that he felt knowledgeable about what was going on in the math intervention program, as well as how it worked at the school, but then talked about his lack of knowledge regarding the details of the program, "I don't know all the ins and outs of what is going to make it work. I don't know, like where the funding comes. I don't know the ins and outs of the math intervention" (personal communication, spring 2012).

Teachers' knowledge about the math interventionist rarely went beyond their immediate experiences, such as knowing that the interventionist works with individual students, how many students the interventionist works with, and just knowing the interventionist as a person. Jake from School A discussed his lack of knowledge as a result of never witnessing the interventionist working with students, "I mean I understand what the interventionist tried to do with them. But I haven't really sat in on any interventions that the interventionist has had" (personal communication, fall 2011). Zane from School C also talked about never witnessing the interventionist at work, saying, "I sort of get it, but I've never sat and watched the math interventionist work with someone, or I don't really know what's going on past that experience, or when those kids are coming and that sort of stuff" (personal communication, fall 2012). The next year when Zane was asked about his knowledge level again he indicated some growth, but still indicated a lack of knowledge,

I think I'm starting to figure out how the math interventionist is working a little bit, but again I'm not super comfortable with it at this point where I could feel like I would be able to describe to you exactly how the

interventionist is doing that, how that sort of looks in the classroom and that kind of thing right now (School B, personal communication, fall 2013).

George from School A talked about his knowledge about the interventionist, saying, ...we get what the math interventionist does, takes the kids into this little conference room of ours and works through problems with them and helps them to do homework. But the other side of it, the most business side of it, I would say we're left in the dark probably on purpose, or thankfully for me, I got enough to do I guess. That's the interventionist's job (personal communication, fall 2011).

The job of the math interventionist was not important to the role of the teacher and their use of the program, and thus was viewed as unnecessary. Fred from School A also expressed a lack of desire for knowing more information about the job of the math interventionist when he said, "...the business end of how things are going to be approached or attacked I'm probably not super knowledgeable on, but don't necessarily need to be super knowledgeable on them" (personal communication, fall 2013). Teachers have enough information that they need to know regarding their every day job duties, anything above and beyond that can become burdensome, causing frustration.

The only piece of information that teachers often wanted to know that didn't relate directly to their job or role with the program was about the future of the program. Most teachers are used to having new programs come in for a short period of time and then be taken away or cut due to lack of funding or results. Since most of the teachers were beginning to build a routine in their use of the program and seeing positive results, they expressed concerns about not knowing if the program would exist beyond the

funding from the grant. Fred from School A expressed his concerns about the future of the program, saying,

...what happens at the end of the term for this, is it going to continue...what are the future plans of the math intervention program? Will budget cuts eventually, or the grant run out, and then will there be money around to continue it...what will happen to the interventionist? (personal communication, fall 2012).

This lack of knowledge about the future of the program caused teachers to be hesitant about using the program, assuming that it would be taken away in the near future similarly like the other programs they had experienced before.

When Angelica from School C was asked about her knowledge she expressed a lack of understanding regarding the history of the program, “Maybe not so much about the history about why we do it or where...somebody just woke up and said ‘this would be good’. I don’t really know” (personal communication, fall 2012). Zane from School C also indicate a similar lack of knowledge about the history, saying, “I actually don’t know any of the history of it at all” (personal communication, fall 2012). The teachers that talked about not knowing the history of the program were all teachers who were not around when the program was first introduced, thus missing the initial training and experiences when the program began.

**Implications.** Educational leaders need to make sure that the information being provided to teachers is specific to the roles and jobs that they will have to perform. Additional information is rarely needed, or even wanted by most teachers, and could cause a distraction to their use of the program. Getting teachers to use and experience the program will also allow them to increase their knowledge, unique to their use and needs.

There will be some teachers, such as department chairs, who will need to know more about the program and can serve as change agents and resources for other teachers. The future of the program should not be concealed from the teachers. Leaders need to be transparent with the teachers regarding the program and how long it will be around, giving teachers the faith and understanding that it is worth their time to learn how to use the program and investing their time in it.

### **Comfort**

With increases in knowledge often came increases in comfort. Knowledge and comfort were often associated with each other. Most teachers showed an increase in their use of the program once they became comfortable with the process, the math interventionist, and their role with the program. Comfort was again specific to the school and program that teachers were using. Some discomforts were discussed as well, such as not having enough time, other requirements, identifying students and communicating with others.

**Maximum Comfort.** When asked how they would rate their level of comfort regarding the math intervention program, many of the teachers responded with very high and positive responses. Some teachers talked about how their comfort was as high as it could get, such as Ulysses from School A who said, "...I feel like I'm at the top and there's nowhere to move up" (personal communication, spring 2013). Sally from School A also talked about her maximum comfort level, saying, "If I can go higher than completely comfortable I probably would, but I don't know what that would be" (personal communication, spring 2012). Tammy from School A put her comfort level on a rating scale, stating, "I would rate it really high, like an 8 or 9, scale of 1 to 10" (personal communication, spring 2012). These high levels of comfort were seen very

early on, often during the first semester of use, such as Nate from School C and Oscar from School A who both said during their first interviews, “I feel very comfortable with it” (personal communication, spring 2012). Lucy and Rose, from School A, both said they were “very comfortable” during their initial interviews (personal communication, fall 2011). Since many of the teachers had very high initial comfort levels, when asked about how their comfort levels had changed over time they often said that they were still very comfortable, showing no significant change. When asked about his change in comfort, Mike from School C said, “I’ve always been pretty comfortable with it, so I’d say it’s probably the same” (personal communication, fall 2012). Sometimes just knowing and believing in the purpose of the program was enough to allow teachers to be comfortable with it, which Chad from School C discussed, “I think I’m fine with it. I think what it’s for is a really good idea” (personal communication, fall 2011). Other teachers had not experienced anything that caused them any discomfort with the program, and thus felt very comfortable with it, such as Vern from School A, “I have no concerns or things that make me uncomfortable about the program” (personal communication, fall 2012).

Comfort was often specific to the school and the program that teachers were using. When asked about her comfort level, Amy from School B said, “With our own school I feel comfortable” (personal communication, spring 2012). Rose from School A felt comfortable with the program being used at her school, saying, “I think that I have a high comfort level with the actual program itself” (personal communication, fall 2012). But, if teachers were to go to another school and use their program, their comfort level would falter due to having to adjust to a new process and program. Zane was the only teacher that experienced this change, going from School C to School B, and described

how this affected his comfort level, “I definitely got pretty comfortable with it last year. And then this year it’s just such a different process, and less regimented, that I’m still, I feel pretty comfortable” (personal communication, fall 2013). Switching programs didn’t cause Zane to lose all of his confidence, because there are similarities between the programs that allowed for his previous comfort to be maintained to some extent.

**Discomfort.** Not all teachers expressed high levels of comfort initially. Teachers may express high levels of comfort in some areas, but then have discomforts in others. Some talked about having discomforts that caused their use of the math intervention program to be hindered. Time, duties and responsibilities, identifying students and communication were all discussed as being some of the discomforts that teachers were experiencing.

Time and management of daily responsibilities for teachers often did not allow for much additional time or energy to work on anything beyond the regular day-to-day duties. This applies even more to beginning teachers who are experiencing a steep learning curve in all aspects of their job. Vern from School A talked about how being a new teacher caused him discomfort, “I mean the job in general, as a first year teacher is just very strenuous...I felt overwhelmed trying to get it all taken care of in such a quick manner, I was pretty slow about it” (personal communication, fall 2012). Having to tend to all of the daily responsibilities left Vern without the time needed to use the math intervention program effectively, resulting in slower use and fewer referrals. Even experienced teachers felt similar discomforts. When asked what could be provided to increase his comfort level, Ulysses from School A stated, “Other than more time. But, that comes” (personal communication, fall 2013). Fred from School A, also an



experienced teacher, talked about how he was not able to make the time he needed to effectively use the program, saying,

I don't know if there's anything that would necessarily make me feel more comfortable, but it might make me feel like I've done a better job with it is perhaps if I did take the time more often to sit down to truly look at maybe who could benefit from this (personal communication, fall 2012).

Time was an issue for teachers outside of the classroom, but also inside of the classroom. Jake from School A discussed how he felt he didn't have enough time within the classroom to correctly identify student struggles quickly enough to be proactive with the program,

Time to analyze student behavior. But we don't have necessarily a lot of time, cause intervention you want to nip it right away, but you're not sure exactly what the problem is. It takes time to diagnose a problem, it takes a test or two (personal communication, fall 2012).

Angelica from School C talked about her struggles with time outside of the classroom, making sure to keep the program a priority and keeping track of all the other programs available to students, "I understand what the process is and it's really just doing it, and staying on top of it is probably the most difficult part. Cause there's a lot of different things we can do" (personal communication, fall 2012).

With a lack of time teachers struggled identifying the correct students, causing them to have discomfort with the program. Jake from School A talked about his discomfort with identifying students, "I'm still somewhat maybe not comfortable, or hesitant, not sure on whether a student should be recommended for intervention or whether it's a worthy candidate or somebody who would benefit from it..." (personal

communication, spring 2012). Lucy from School A indicated having concerns determining the timing of when to refer students, saying, “I think I know about it, my comfort level with it is good. I think my judgment on when to refer students is still not there” (personal communication, spring 2012). Some of the teachers would take so much time making sure that they could identify the correct students for the program they would end up missing their time to actually use the program, such as with Adam from School A, “...as far as still knowing whether or not they’d be a perfect candidate, I don’t know if there’s a perfect candidate for intervention...” (personal communication, fall 2013). This meant that some students were missing out on the opportunity to receive math intervention support because of the discomfort teachers were experiencing with their time management. Fred from School A would refer a few students at the beginning of each semester, but then wouldn’t feel like he had the time to identify more students as the semester progressed, saying, “...I’m comfortable in doing it but maybe if I was to sit back and look at why I exactly didn’t put somebody in there it may be less comfortable” (personal communication, spring 2013).

By not having the time to correctly identify students, this would result in teachers using the program ineffectively, such as Jake from School A who said,

...then I felt I could recommend anybody that had an F, before I was hesitant, but now that comfort level is probably to comfortable and I need to scale back and really think about the kids who it will actually be really worth while for (personal communication, fall 2012).

Patrick from School A also discussed how his discomfort was affecting his use of the program, “The idea and the program I think has always been very comfortable with me. It’s been more of just finding the best way that I could utilize getting the students into it”

(personal communication, spring 2012). But, some teachers were associating their comfort with the program with their use of the program, thinking that if they were not referring many students then they must not be comfortable with it. Jake from School A went on to say, “My comfort level is maybe not as comfortable maybe this semester. I don’t feel the need to refer so many just because of a failing grade” (personal communication, spring 2013).

One teacher, Rose from School A, indicated that she had a discomfort communicating effectively with parents about the program, “The only thing that I think maybe I’m still moderate on is going to be the parent aspect of it and really getting them to understand what it is and why it’s used” (personal communication, spring 2013). This discomfort with communication could be a result of a discomfort in knowledge about the program as well. If teachers are not knowledgeable about the program then they will not be comfortable communicating about it to others. Since contacting parents is a requirement of the referral process, if teachers are not comfortable doing this it may hinder their use of the program.

**Changes in Comfort.** Many of the teachers addressed different things that caused changes, often increases, in their comfort levels. Experience using the program, communication, teachers’ relationship with the interventionist, seeing results and data, as well as being in certain positions were all things that teachers discussed as influencing their comfort levels.

Some teachers needed experience working with and identifying students for the program. Ulysses from School A talked about how his comfort changed from his second semester to his third semester of use, saying, “. . .almost more comfortable because last time I was more comfortable with it but I had the same students. This time around I’m

just as comfortable even though I have completely new students” (personal communication, spring 2013). Fred from School A also discussed how his comfort level changed over his years of use, “In terms of comfortable of putting in the people and things like that I think over the three years or four years or whatever that’s become more comfortable for me” (personal communication, fall 2013).

Applying the knowledge they were given during training to actual classroom situations and experiences allowed teachers to gain comfort. Adam from School A talked about being able to apply the information to his classroom and students, saying,

I’ve become more comfortable in it because it was kind of gray at the beginning because the math interventionist described the students, but I haven’t had the students just yet, I haven’t seen the students in the classroom. And so it was kind of gray, but then the interventionist coming into the classroom, and then me seeing them work maybe two, three weeks actually in the classroom working on the ideas and concepts that we talk about, then hey this student is struggling (personal communication, fall 2013).

Other teachers needed experience talking to students and parents, such as Adam from School A who said, “I feel comfortable now that I’ve made some parent contacts...” (personal communication, fall 2013).

Experiencing the process and steps of the program allowed some of the teachers to increase their comfort through the develop of techniques for using the program. Angelica from School C discussed how through her initial experiences using the program she was able to develop an organizational system that increased her comfort,

I think that's the area that I've improved a lot, because I feel like I'm a lot more organized this semester, and being more organized on my end allows me to keep track of what interventions I've already put in place and if those interventions have worked or not (personal communication, spring 2013).

Zane from School C talked about feeling more comfortable after his experience going through the referral process with one of his students, "I think now after getting a student through and signed up and doing all that stuff, I think I'm pretty comfortable with it" (personal communication, fall 2012). Once a teacher had enough experience it became routine and thus comfortable for them, which Veronica from School A discussed when she talked about her experience referring students to the program,

Since I've filled out so many of those forms I feel like I know everything that's needed, so I know what I need to do beforehand and kind of the things I need to have in mind when I'm typing the intervention...So maybe even more comfortable with it (personal communication, fall 2012).

Patrick from School A talked about how his comfort with the program related to his use of the referral process, "I would say very comfortable. It's very easy to work with the process in terms of getting a student into it" (personal communication, spring 2012).

In the end, sometimes experience was the only thing teachers needed. When asked what she needed in order to increase her comfort with the program, Rose from School A said, "Just probably more experience with it, and that's all" (personal communication, spring 2013).

Improved communication was another factor that teachers discussed as influencing an increase in their comfort levels. When asked about her level of comfort with the math intervention program, Sally from School A said, “Constant communication, so the comfort level is great” (personal communication, fall 2011). Veronica from School A was not as comfortable with certain aspect of the program, but felt a high level of comfort with the communication, saying, “Pretty comfortable...really comfortable with how the communication is and how it works” (personal communication, spring 2012).

Communication occurred between the teachers and the math interventionist, as well as between teachers and students. Tammy from School A discussed how increasing her communication helped increase her comfort with the program as well, “I’m better at communication this year with both the math interventionist and the students about what’s actually going on when they’re in intervention. And so that has made me feel more comfortable” (personal communication, fall 2012). As the program continued to be used the math interventionist was able to communicate more with the teachers about the program and the impact it was having on students. Patrick from School A talked about how receiving increased communication from the interventionist about the program helped his comfort level,

I think more comfortable then I was before, and I think that again goes back to the communication that we have between the interventionist and the teachers, especially in the department meetings we’re sharing the data and showing the impact and how it’s working (personal communication, fall 2012).

Veronica from School A had to experience communicating with the interventionist for a while before she developed a comfort with it,

The beginning I think I just wasn't sure how much the interventionist wanted to know, like how much communication the interventionist wanted from us and what they were doing in the classroom... So I'm more comfortable just telling the interventionist what's going on in the classroom (personal communication, spring 2012).

This experience continued to build as Veronica continued to use the program, eventually developing a high level of comfort, "I think super comfortable... knowing the interventionist wants to do what's best for them too and wants to be consistent and I can communicate that to the interventionist and the interventionist can communicate to me" (School A, personal communication, spring 2013). Being informed allowed teachers to feel more comfortable using the program.

The initial communication from the math interventionist in the form of training helped to establish a foundation for teachers to be comfortable with the program. Adam from School A talked about the impact of his training on his comfort level,

The comfort level is good because I believe the math interventionist made it a good transition and provided the foundation. Once you have the foundation in and what we're looking for and how you go through the process of selecting a student, then I think it goes well from there (personal communication, fall 2013).

Tammy from School A also talked about being effected by the initial training when she said, "I think it was presented well to me at the beginning so I felt fairly comfortable with it even at the beginning" (personal communication, spring 2012). Even after the training,

having other teachers communicate about the program helped some of the teachers become more comfortable with it, knowing that others were also using it. Adam from School A discussed overhearing others talk about the program, “And so hearing other colleagues using it, that makes me a little more comfortable” (personal communication, fall 2013).

As teachers continued to use the program they also developed a stronger relationship with the interventionist, leading to increased comfort using the program because of the trust that had been established. Amy from School B talked about the impact of her relationship with the interventionist on her comfort, “I felt really comfortable. I think the math interventionist makes it that way. I mean, the interventionist is really easy to work with and is always willing to help. And that’s very refreshing” (personal communication, fall 2011). This comfort developed over time, which Amy continued to talk about when she said,

Well I just think getting to know the math coach and the math interventionist better, I mean these last six months or however long its been. That’s made me more comfortable, just getting to know them more. And I feel more comfortable going to them if I need them (personal communication, spring 2012).

Just being able to access the interventionist allowed teachers to feel more comfortable with the program, which Nate from School C talked about, “The math interventionist is a very accessible person. I feel like if I have a question I can come over here to ask the interventionist. So I think that that has helped make me feel more comfortable using it” (personal communication, fall 2012). Being comfortable with the math interventionist



became associated with being comfortable with the math intervention program. This can be seen when George from School stated,

I mean with the math interventionist, working with the interventionist, I feel like I know the interventionist well, and I mean I think I wholeheartedly agree with the intention behind it. And so I feel very comfortable I suppose with the program (personal communication, fall 2011).

Teachers also got better at identifying students for the program, which created a greater sense of comfort using the program. Many teachers expressed concerns with how to identify students for the program, so by decreasing this concern they were able to increase their comfort. Rose from School A discussed how her comfort changed once she determined which students to refer to the program, "I think once I've determined them, then I'm completely confident in that's what needs to be done if it's available" (personal communication, spring 2012). In order to help her identify students for the program better, Tammy from School A began to talk with the students about it and allow them to be part of the decision of whether they would be in the program or not. Tammy talked about how her communication specifically with the students regarding the program caused her to be more comfortable with her use of it,

That made me feel more comfortable that I had extended that resource to all of them, and then it was kind of on their shoulders as to whether to accept it. Which made me more comfortable, because in the past I'd kind of gone back and forth on, oh I need to decide this, not bringing the kid into it, and so it would stress me out, do I ask them or not, I don't know, but now they're doing better, but now they bombed the test. And so I

think that has made me more comfortable, just brining the kids into the conversation more (School A, personal communication, spring 2013).

When asked how her comfort level changed over time, Rose from School A stated, “I’d say being more comfortable with it, that I know who is a better fit for it than other students” (personal communication, spring 2013).

Certain teachers, such as the math department chairs, had greater access to the math interventionist and the data, thus creating a higher level of knowledge as well as comfort level with the program. Karen from School A discussed how her comfort level was higher as a result of being the math department chair, “I got to be comfortable because I got to spend a little bit more time with the whole thing then other teachers” (personal communication, fall 2011). Zane from School B talked about how making the transition to being the math department chair instead of a regular math teacher impacted his comfort, saying, “I think also my role, being the department chair versus being a new teacher, is different enough that I sort of had to be comfortable with it right away and sort of got there” (personal communication, fall 2013).

Seeing positive results helped teachers feel more comfortable using the math intervention program. Knowing that students in the program were experiencing success allowed teachers to be confident that their own students would also be successful, leading to increased comfort and use of the program. Oscar from School A initially had a high level of comfort, but he talked about how that increased once he saw some of the results,

I didn’t really feel uncomfortable using it in the first place, but now I even feel more comfortable cause I know what goes on and I can see that it works for the majority of the students that are in it (personal communication, spring 2012).

Mike from School C also discussed how the positive results impacted his comfort level, saying, “That’s probably the biggest reason I have a comfort level with it, is because we’re seeing the success with it” (personal communication, spring 2012). Seeing the results caused teachers to reflect on their use of the program, which Rose from School A talked about when she said,

Also the end results of the semester helps too, seeing how kids can progress though it, their use of it throughout the semester. At the end of the semester if kind of helps to reflect to increase the level of comfort I have in using it too (personal communication, spring 2013).

**Implications.** Educational leaders, in order to ensure high comfort levels with their teachers, need to provide information and support early on. Information and communication need to be provided to teachers before the initial use of the program, and then remain consistent during their use. If teachers believe in and support the purpose of the program then they will be more likely to be comfortable with and use it. Belief and support could also be developed through sharing positive results and data with the teachers, making sure they are aware of the impact the program is having. Teachers must feel comfortable with a program before they will effectively use it. Addressing the concerns and discomforts of the teachers should be one of the first tasks of school leaders, as well as staying aware, as any future discomforts or concerns occur in order to remedy those as soon as possible. This should maintain the comfort level and use of the program for teachers. Providing teachers time outside of the classroom, and making sure that teachers are not being overwhelmed by their daily tasks, will help ensure higher levels of comfort and use. Leaders need to motivate and encourage teachers to use the program and begin gaining experiences with it. Experience and time will allow teachers

to develop relationships and trust with the leaders of the program as well, allowing them to be more comfortable using it. Often times there is nothing that a leader can provide to a teacher, they must experience what they need on their own in order to grow in comfort. Routine will often breed comfort.

### **Direct Influence**

When talking about the value of the math intervention program, teachers would talk about how the program had a direct connection and influence on them. Since the program focused on and was housed within the math department, and all the users of the program were math teachers, they could see the influence of the program directly, causing them to want to use the program even more. By using the math intervention program, teachers were able to save themselves time and energy that they would not be able to provide to their students otherwise.

**Accessibility.** One of the aspects of the math intervention program that influenced their use of the program was that it was part of the math department. The math interventionist worked within the math office at School A and School C, and worked closely to the math office at School B. This allowed teachers easy access to the math interventionist and the program, the ability to stay in consistent communication and witness the program on a daily basis. They also indicated that they felt the program was relevant to school and district goals.

Some of the teachers described the impact of having the math intervention program as part of the math department. Tammy from School A was a new teacher, and she discussed how her comfort and knowledge with the math intervention program were much higher than other programs in the school,

Definitely higher than a lot of things that I'm supposed to be involved with in the building. I think that's partly because it's part of a program within my own department, so I'm surrounded by the people that use it, the people that run it (personal communication, spring 2012).

Fred from School A discussed feeling a direct connection to the program when he said, "As far as programs and interventions and different things we've tried or done, it's probably obviously the one that's most directly related to me..." (personal communication, fall 2013). Part of the impact of having it as part of the department is that it allows for consistent communication between teachers and the interventionist, which Tammy went on to say, "I feel like there's a lot of communication just simply because it's housed in the math department" (School A, personal communication, fall 2013). This same feeling was felt even at School B, which didn't have the math interventionist working in the math office but in a classroom near it in order to still allow easy access. Dylan from School B talked about feeling an impact of having the interventionist nearby, "One of the things is the math interventionist is part of the department" (personal communication, fall 2011).

School A was unique in that not only was the math interventionist working as part of the math department, but was a regular math teacher at the building prior to becoming the interventionist. Patrick from School A talked about how knowing the interventionist before the program helped him,

Having the interventionist come from our own department really just helped, I mean there was no transition period, there was no getting to know the person, we knew that they had a strong desire to help kids learn,

we knew that they were dedicated to the students and to the math department (personal communication, fall 2012).

The other schools hired teachers outside of the building to become the math interventionists. By hiring from within the building this allowed teachers an immediate sense of comfort and trust working with the math interventionist. Patrick went on to say, “And so all of the kind of things that would take time to figure out, in terms of getting to know them, were already taken care of. And so I think that made a big difference” (School A, personal communication, fall 2012). While teachers from Schools B and C both talked about eventually developing a good relationship and trust with their interventionist, having an already established relationship with the interventionist allowed teachers at School A to speed up the process of developing their comfort and use of the program.

Another reason that teachers felt that the program had a direct influence on them was because the purpose and goals of the program fit directly with the goals of the school and district. Fred from School A discussed how he felt the program fit with the goals of the school, “When our building goal is to raise math scores, then let’s do something directly that’s related to that” (personal communication, fall 2013). One of the district goals was to increase the graduation rate, which this program was focused on contributing to through increasing the success of students in math, and thus the credits they received. School A had a building goal of improving math across the curriculum, which the program related to as well. Thus, teachers felt the relevancy of the program, and therefore the value of using it.

Other teachers didn’t feel any direct influence until they were eligible to use the program. Since some of the teachers taught higher-level courses, which students were

not eligible for math intervention support, the teachers were not eligible to use the program. If teachers weren't eligible then they didn't see any value in spending time and energy learning about the program, and couldn't use it. Those teachers would not experience the impact of the results and changes in student performance either. But, once they taught a class that did have students who were eligible for the program, then it became relevant to them and a direct influence. Oscar from School A was a teacher who was not eligible when the program was first introduced, but later became eligible. He talked about how things changed for him once he became eligible to use the program,

I didn't spend much time figuring out how it works or anything like that.

But now that I was eligible to send students then I looked more into it, talked with the math interventionist more about it, and realized how we could use this to our advantage and stuff (personal communication, spring 2012).

Training was often done before teachers had their new students and began teaching. This was because there was time available during teacher workdays to have those conversations and training sessions before school started. But, many times teachers couldn't feel the relevancy of the program until they interacted with their classes and had some experience within the classroom. Zane from School C talked about getting trained before the school year and how at that time it was not something that he felt was a direct impact for him, "It is very likely at one of the opening meetings someone said something about it. I filed it away as, alright that is not so important for the first week of school, so I will worry about it later" (personal communication, fall 2012). He went on to say, "Maybe part of that is being new enough to School C that I have other concerns on my mind then that" (Zane, School C, personal communication, fall 2012).

**Impact of the Structure of the Intervention Program.** The structure of the math intervention program also had a direct influence on teachers' use of the program. Referral processes, work load of teachers, priority and time were all components of the program that influenced or hindered teachers as they used the program.

For some teachers they felt the direct impact of the results, but didn't place a high priority on using the program. This lower priority was not a result of not liking the program or seeing the value, but mostly was due to lack of time and not recalling that it was a resource available to them. Fred from School A talked about how the program became a lower priority due to the daily work load, saying,

It seems like one of those, and it sounds bad, but one of those pieces unfortunately that can get put on the back burner when you've got a test you got to make up for tomorrow, or a worksheet, or whatever (personal communication, spring 2012).

Since teachers have so many daily demands and priorities, math intervention often gets placed to the side until there is free time available, which rarely occurs for most teachers.

Fred talked about his prioritizing,

Getting prepared for the next day, the next class, making a test, grading papers...other potential meetings...Just your daily planning and preparations...what's the most, what's the closest need, or what's the time frame, what's next that I need to worry about soonest? (School A, personal communication, fall 2012).

When asked if he felt like the math intervention program was a priority for him, Jake from School A responded,



It ranks lower for me just because it's something that we do, but it's not something that I focus and dwell on. At the end of the day I'm a teacher in the classroom and I'm not in here intervening it up with kids (personal communication, spring 2013).

Quentin from School A described an experience with one student who he was going to refer to the math intervention program but became too busy to refer the student at that time, saying,

There was one where I was, I think I was finishing up grading for the quarter and just over swamped, and I think it took me a couple days before I finally sat down and did that, made the referral (personal communication, spring 2012).

As teachers increased their use of the program some of them indicated that it became a higher priority. Tammy from School A talked about how her priority on the math intervention program changed over time, saying, "It's not on my top list of things to do every day, but it's moving up..." (personal communication, fall 2013).

Some teachers felt like helping their students was their responsibility, and they didn't want to place that burden upon others. Angelica from School C discussed feeling like she needed to be the one responsible for her students when she said, "...I kind of feel like they're my responsibility and I'm passing the buck off to the math interventionist, but it should be my job to get them where they need to be" (personal communication, spring 2013).

Time was the biggest factor for teachers not prioritizing the program more, which Fred from School A also discussed, "I mean more time would obviously increase my, would probably increase my enrollment in intervention" (personal communication, fall

2012). Jake from School A also talked about time being a factor for him, “Probably time, but I just need to make the time” (personal communication, spring 2013).

Identifying students to refer to the program and filling out the referral form required time for teachers. Tammy from School A described how taking time to identify students affected her use,

It’s the time piece, not that it takes very much time to refer someone, but I feel like it takes me quite a bit of time to decide, is this person being a good student and doing what they’re supposed to, is this person really struggling or how often are they struggling (personal communication, fall 2012).

Once the program gets put on the “back burner” teachers often decrease in their use of the program. Fred goes on to talk about how this impacted his use of the program,

I say that and I’m like yeah and I still have some of these kids that I haven’t put in there, and it’s like you know all it’s going to take me is 15 minutes. But it’s hard to find sometimes (School A, personal communication, fall 2011).

Instead of recommending students on a continual basis, teachers would instead make a list of students and once they found the time they would refer them all at once. This creates spikes in the math intervention referral numbers. Fred from School A discussed why these spikes occurred,

...daily priorities of making sure lesson plan, things are graded, emails, getting whatever the next stuff ready and then it’s more, I probably feel more like maybe in lump sums, and the interventionist probably gets that a lot, but where alright let’s take time out of the day and do a class or a plan

period of putting people in intervention that should have been in it, where as if that was a little higher priority might be more of a continual thing where you got a kid coming in now a kid coming in next week where I figured out versus more of a reactionary thing where we uh-oh we got five new kids failing, yep they need some help (personal communication, spring 2013).

Angelica from School C also talked about how not prioritizing the program affected her use of the program,

...then you just get going and, it's a terrible excuse to have, but it kind of hits the back of your mind and you forget to assign them and then before you know it, it is almost like it is to late because they have learned the new material but they still haven't done that older test (personal communication, fall 2012).

When teachers are not thinking about using the program on a regular basis then they are not thinking about referring students either. Nate from School C discussed why he was often slow at referring students to the program,

I guess I don't know exactly why it is that I didn't really refer them sooner then I did, other then just the fact that I think sometimes I get caught up in some of the other things that I have going on and I didn't really consider the fact that I needed to be doing something for them as soon as I should have (personal communication, spring 2012).

Once teachers starting taking the time to use the program they often found out that it didn't take as much time as they thought it would. Initially teachers had to fill out paper forms or complete a word document to refer a student, requiring more time for

teachers then compared to the online form. Ella from School C described how completing the recommendation form actually hindered her from using the program,

Our method of referring with the document and the web based is not terribly user friendly for the teacher, because you have to fill it out, then you have to forward it to four different people, you have to look up who this student's administrator is, who their counselor is, it takes 15 minutes just to fill out the paper work to refer a student...So the referral process, the time involved, is kind of prohibitive to getting students referred (personal communication, fall 2011).

In order to remedy this the math interventionists decided to create an online form that had drop down menus, checklists, and other features that made it quicker for teachers to complete. This was received very positively by the teachers and influenced their use of the program. Veronica from School A commented about how nice it was to use the new online form, saying, "...I've found it to be very efficient to sign them up for it. I think that's very efficient with online form..." (personal communication, spring 2012).

Teachers discussed how easy the referral process was for them to use, and how that helped to increase their motivation to use the program. Mike from School C discussed the quickness of referring a student to the program, "I don't think it's real difficult to do, in terms of setting up, which is another nice thing. We just have a Google docs form which takes a few minutes to fill out" (personal communication, spring 2012). Mike attributed the quickness to the online form that was created for teachers to use, stating, "Without the Google docs I don't think it would be as successful. I think it's very important that those things are easy to submit, easy to go through" (School C, personal communication, spring 2012). Patrick from School A also discussed how using the

online recommendation form helped his use of the program, “The online enrollment, or putting in the student information online is very easy, easy to follow, and so that kind of just helps to streamline things even more” (personal communication, fall 2012).

Having a form that was user friendly for teachers saved the teachers time and made the program easier for them to use, which Rose from School A talked about, “The referral, the actual online referral doesn’t take long at all. I would say it’s 20 minutes or less if you know the student. So that didn’t take very long” (personal communication, spring 2012).

Since most teachers don’t have much extra time available, providing a simple and quick process encouraged use of the program. The only thing teachers had to do to refer a student to the math intervention program was to fill out a recommendation form online or email the math interventionist. Becky from School B talked about how easy it was for her to refer a student, saying, “...all I have to do is send the interventionist a name, and the interventionist will take care of everything else” (personal communication, spring 2013). When asked about the referral process, Jake from School A said, “It’s really quite simple on recommending somebody for intervention” (personal communication, fall 2011). Reducing the time and work load for teachers to use the program also reduces the stress on teachers, allowing them to have confidence that they can use the program effectively while still having time to do their regular duties. Oscar from School A discussed how using the program didn’t require a lot of additional time for teachers because of the structure of the program,

The student in your classroom that you’re responsible for is getting much more additional help and it doesn’t take any more of our teachers’ time

and effort to do that, cause the process is made very easy for teachers to use (personal communication, spring 2012).

Some teachers found ways to make the referral process simpler for themselves, such as Angelica from School C who talked about being more organized and how that made the referral process easier for her, "...it takes a lot of time and to get through the whole process it's very time consuming. Where now it's not as time consuming. So I can do it without feeling overwhelmed" (personal communication, spring 2013).

Another part of the referral process that teachers liked was that it was a short amount of time between when the referral form was submitted until the student was being worked with. Oscar from School A talked about this quick process,

So the turn around is very quick, which is I think very good for the student too, cause then they don't forget that we've talked about math intervention and how it's going to help them, and they're not wondering why am I not getting the help then. I think it's been very speedy (personal communication, spring 2012).

Bob from School C also discussed how students would get in to work with the math interventionist quickly after submitting a recommendation, "It is pretty quick I mean, if the math interventionist has room then the interventionist gets them in right away" (personal communication, fall 2011). Karen from School A described how long the process usually took, saying, "...usually within the week they were already receiving the services. So it was very quick" (personal communication, fall 2011). The quick process increased teacher confidence that the program was putting their students as a priority and that results would be seen quickly.

Not only was the process quick, saving teachers time, but it was also customizable for teachers to use as they saw fit. Amy from School B talked about how she and other teacher all use the program differently, “And I think every teacher uses it kind of differently here too. I know what works for me, and I know what the interventionist’s availability is and we just like work our own system out” (personal communication, fall 2013). Teachers were allowed a certain amount of freewill in order to determine whom they wanted to recommend to the program and when they wanted to recommend them. Fred from School A discussed how he enjoyed not being required to put certain students in the program, but instead got to make the decision himself,

...I feel reassured that I can kind of chose who I want to put in there still versus whatever the case is even if they aren’t trying you should have them in intervention, and I haven’t come across that yet and I don’t think I will (personal communication, spring 2013).

This freewill was seen as a positive thing for many of the teachers. Jake from School A also talked about how he liked having the freewill to use the program, “I don’t think we should be forced to do it or not” (personal communication, spring 2013).

A balance must exist between providing structure and guidance, but still allowing teachers to use their judgment and freewill when using the program. Jake talked about how the initial training was done well, allowing teachers time to use the program as they saw fit and as they were ready, “I felt like the transition into it went well. It wasn’t too heavy handed, it was kind of feeling your way in there and it got better and better, and now it’s awesome” (School A, personal communication, spring 2013). Ella from School C discussed how they are required to follow a set procedure for using the program, but are not required to actually use the program, “We’re mandated by our administration to

follow a certain procedure. It is not up to our colleagues to encourage or dissuade us from doing it. It is expected that you follow the procedure” (personal communication, fall 2011). Bob from School C also talked about having set criteria when using the program, “You got to have some criteria to be met in order to even use it. But, if any of those criteria have been met, then you can use the interventionist” (personal communication, fall 2011). Having set criteria and procedures to follow when using the program gives teachers structure and guidance, but not requiring teachers to use the program for certain students or at specific times allows for freewill and judgment.

Allowing freewill applies not only to teachers, but also to the students. Being able to allow students to make the choice of being in the program took stress off of the teachers and created a more positive attitude for students as they worked in the math intervention program. Quentin from School A talked about how allowing students to make the choice made a difference,

Suggesting math intervention to a student as a suggestion, saying ‘I really think it will really benefit you and here’s why’ versus saying ‘you know what, I’m putting you in math intervention and here’s why’, I think that just can change a student’s attitude (personal communication, spring 2012).

Sometimes teachers would feel pressure to use the program, as well as receive resistance from the students who didn’t want to be in the program, putting teachers in a difficult situation, which Rose from School A described when she said, “It’s that struggle between outside pressure to get them into it so that they can get help, but them not really being committed to it” (personal communication, fall 2012).



Another aspect of the math intervention program that teachers expressed they liked was that it required no work from the teachers once the student was in the program. Initially teachers have to identify which students should be in the program and complete the recommendation form, which does require time, but after that the math interventionist takes over. Adam from School A discussed how his job as a teacher was done once the recommendation was placed, “It’s the math interventionist’s after that initial referral process” (personal communication, fall 2013). Sally from School A talked about how she enjoyed not having to supply the interventionist with materials or lessons to do with students,

I mean I just know that, in terms of my end for the intervention program, I don’t have to do anything, which is great...the nice thing is, I mean unless the interventionist needs me to, I don’t have to supply any materials, and things like that, I feel like it’s not a burden at all to me (personal communication, spring 2012).

Once students are in the program the math interventionist writes and delivers passes for students to come and work, and develops the materials that will be used. Jake from School A mentioned how this allowed him as a teacher to not have to worry about the program,

I think maybe it’s because they’re getting the help they need, the interventionist does a good job of getting them passes and getting them out of classes, and I don’t have to worry about doing that. It’s very little work for me to do, so it’s not on my mind a lot. Which is great by the way (personal communication, spring 2013).

Since the math interventionists were all certified math teachers, teachers didn't have to train them or provide materials to teach the content. Patrick from School A liked that the math interventionist had already been a math teacher and had experience with the curriculum, "Especially through a certified math teacher who is familiar with our curriculum and knows how we teach..." (personal communication, fall 2012). This experience with the curriculum shortens the learning curve for the math interventionist, which is another advantage of hiring someone within the building or district that already has experience. Jake from School A liked that he could trust the interventionist to know the material and teach it well, saying,

...I think the interventionist is doing a good job in terms of not having the teacher sit down and go through their whole curriculum. The interventionist is familiar enough to know what we're teaching that the interventionist can go and just do more practice problems with it. Where as it could get really tough if something the interventionist had never taught before... (personal communication, spring 2012).

Teachers could trust that the material was being taught and covered at a high level.

Dylan from School B discussed how he liked knowing that math interventionist was a certified math teacher,

...with a math interventionist who has a background and understanding of math and being able to teach it, I know that they can follow up on concepts, prepare them for tests by knowing what kind of concepts to cover and review (personal communication, fall 2011).

**Teacher Impact.** Teachers discussed a few things that they felt directly impacted them as well as their jobs. Through their use of the math intervention program teachers

talked about developing closer relationships with their students, adjusting their instructional strategies, reflected on student performance more often and at a deeper level, and looked better from an outside perspective because of their increased student performance.

One of the first things teachers had to do in order to use the program was to identify students who were in need of the support. Teachers often don't have the time to normally look at student performance at a deeper level, but in order to correctly identify students for the program teachers had to find and make the time to do so. Fred from School A discussed how he would have to force himself to look at his students at a closer level when deciding who to refer,

I think it's maybe affected me, and it's forced me to at times, in a good way, to sit down and take a second to think about some of these students, in the sense of, okay Johnny has an F, what's going on here, is he an intervention candidate, well look at this Johnny isn't doing any homework...So it's a little bit of that reflexive piece on the students you have and their grades I think is definitely changed me to make me do that more (personal communication, fall 2013).

For most teachers this required them to take time to sit down and look through their list of students and analyze each one. The easiest thing would be for teachers to simply recommend any student that had an F, but the criteria for the program was set up in order to encourage looking at the characteristics of the student and really determining why students were struggling. Holly from School A talked about how she would have to look deeper than just the students with F's, "I start with looking obviously at the failures, and

then I start looking at what I've done for them, and why I feel like they're failing" (personal communication, fall 2011).

During the school year teachers were often required by administration to complete failure forms, listing out the different things they had done to support those students. This again caused teachers to think about the program and their use of it, which Tammy from School A mentioned when she said,

To just concretely have to write every single one down made a big difference in who I was going to focus on. Cause some of them I had already been focusing on, some of them I had focused on at the beginning of the semester and yet from that nothing has changed so they're still on the list, and I hadn't done anything about it for a while (personal communication, fall 2012).

Mike from School C described his thought process as he looked over his list of failing students,

When I look at all my failures I tend to kind of decide what's going on. Do they just need to come in and see me, get some extra help? Is it they're not doing their homework, they're not putting forth the effort? Kind of all of that and I'll proceed from there (personal communication, spring 2012).

Trying to answer the question of why students are not being successful is very powerful and important in order to get students the specific support they need. Quentin from School A discussed trying to figure out why his students were not being successful,

Once it's below that level, it's let's identify what is the student doing to be successful. Are they working on their homework, are they asking

questions, are they participating in class? If they're not doing those things, then that's what I seek to try to remedy first...It's more about, why aren't you getting your homework done, what needs to change to get you to participate in class first, and making sure that they're putting in the effort first (personal communication, spring 2012).

This also challenges teachers to try to remedy some of the issues with students on their own within the classroom before turning to the math intervention program or other supports. Veronica from School A discussed how looking through the math intervention recommendation form helped her find ways to help students on her own before using the program,

...and the questions the interventionist ask help me reflect on whether I've done enough interventions in the classroom before going to the interventionist...I think the math intervention program helps me with that because when I look at the form I'm reminded of all the interventions I could do first. And it forces me to contact home to get that communication going (personal communication, spring 2012, fall 2012).

Once teachers went through their reflexive process and recommended students into the program, they would then talk about how their communication with those students would often increase and contribute to developing stronger relationships. Patrick from School A described how his communication and relationships with his students changed once they were in the program,

So the students I know are in intervention then I'll also make special note to go and talk with those kids as they're doing guided practice and just encouraging them, much like I would the other students, but especially

those students because knowing that they are getting the extra help just to reinforce that they are doing well or to show them that by doing the extra effort it's making a difference, and just trying to encourage them and doing that (personal communication, fall 2012).

Veronica from School A also discussed how she would give certain students in her class some more attention,

I focus more on them I guess... a student that has a D or struggles has a question I'm going to go to them first, I mean I make sure I check for understanding with them a lot more then the students who've constantly been successful (personal communication, spring 2013).

Getting feedback from the math interventionist allowed teachers to then carry that conversation into the classroom and develop relationships with those students even further, which Sally from School A described when she said, "So that again helps with that relationship building where I know what was worked on and I'm not kept in the dark at all" (personal communication, fall 2013).

Within the classroom, teachers would sometimes adapt their lessons according to what they heard from the math interventionist regarding what students were struggling with. Sally from School A talked about how she would adapt her instruction, "I think that helps me even get better teaching wise realizing okay she still struggled with this, and the interventionist has seen that as well, okay let's do some more of that in class today and practice" (personal communication, fall 2013). Patrick from School A also adapted what he was doing in the classroom according to the feedback from the interventionist,

...gives feedback to the teacher about what they covered during the intervention time and what areas still need to be worked on so the teacher knows, maybe has a better idea of what exactly the areas of deficiency are for those students. So then they can look at what they're doing in their own classes to meet the needs of the kids (personal communication, fall 2012).

These adaptations that teachers were making to their instruction were not changing the content itself, but instead helping teachers organize and emphasize different parts of it more appropriately. Rose from School A talked about how the math intervention and her classroom instruction worked together, "It's kind of a supplement to the class instead of a replacement of what they do in class or what they learn in class" (personal communication, fall 2012). Veronica from School A described an experience where she altered her focus within her lesson after receiving feedback from the math interventionist, ...when the interventionist had already worked with those girls on graphing and explained where their troubles were, so today when I taught it to the entire class I really focused on some of the stuff that the interventionist said those students had trouble on (personal communication, spring 2013).

Veronica also mentioned how knowing that some of her students were going to be getting extra support in the near future allowed her to focus on her instruction more, instead of feeling like she needed to be consistently stopping the lesson to help them, "Honestly, I think there's a little less weight on my shoulders to make sure I get those students that extra help" (personal communication, fall 2012).

Students were coming to their classrooms with more knowledge, experience and confidence, which caused changes in how teachers were instructing. Jake from School A discussed seeing changes in his students in the classroom and how that impacted him as a teacher, “I think it’s good for me cause it helps get the kids confidence so they’re more apt to participate in class and try. Definitely impacts me as a teacher” (personal communication, fall 2013). Jake went on to talk about how his student’s performance in the classroom made his job easier as a teacher,

...it helps the classroom environment because the kids are more engaged and more involved and feel more confident. It makes me feel good as a teacher seeing that happen in the classroom...It helps me because I know when I ask a question a few more hands get raised or are participating, so that helps (School A, personal communication, fall 2013).

Creating a more interactive classroom environment through ensuring that students were being supported and knowledgeable was something that Tammy from School A was skeptical about at first, but eventually experienced,

I’ve been appreciating it more and more as the semesters gone on just because, even though I have a co-teacher in there, we have so many kids and it’s crazy just like kids being gone, kids not willing to do anything, it’s a good classroom support I feel like for that, even though I didn’t feel like it would be at the beginning (personal communication, fall 2013).

Veronica from School A also talked about seeing a change in her classroom, saying, “I think that actually there’s been an improvement in the classroom because of the students that have been working with the interventionist” (personal communication, spring 2013). Communication with the math interventionist about student struggles and concerns often



helped teachers develop new ideas and strategies, which Tammy from School A described, "...communication that can go on with me and the interventionist, I can figure things out that I wouldn't have by myself" (personal communication, spring 2012).

Not all teachers felt an impact on their instruction as a result of the math intervention program. When asked if he felt his instruction changed because of the program, Fred from School A replied, "I don't know if it's changed a ton though during the classroom day to day I guess" (personal communication, fall 2013). Amy from School B replied similarly when asked the same question, "No, no, I feel like I would have the same set-up kind of" (personal communication, fall 2013).

Once teachers started seeing results they realized that those results also reflected on them personally as teachers of those students. Jake from School A talked about how the results from the math intervention support reflected on him as a teacher, "Strengths of the program are just getting kids the help they need and, I guess from my position, raises test scores hopefully, and thus reflects highly on me as a teacher" (personal communication, spring 2013). Teachers are now being assessed on their students' performance on state and standardized tests, which Oscar from School A mentioned, "A lot of times we get judged on our math more than anything, with the state testing and stuff like that" (personal communication, spring 2012). This same pressure was also being felt in other areas as well, which Patrick from School A discussed, "Everybody is looking at grades, everybody is looking at passing rates, everybody is looking at graduation rates, so everything is coming back to the whole idea of we need more kids to pass" (personal communication, fall 2012). Thus, if math intervention can help students be more successful on those assessments, passing rates, graduation rates and more, then the teacher will also be viewed as being more successful. Nate from School C talked

about feeling the increase in accountability when he said, “I mean I knew I needed to be held accountable for those students, so in that way I mean it was definitely a help to me” (personal communication, fall 2012).

Math teachers were not the only ones that felt a direct impact from the program. Non-math teachers were also impacted since students were being pulled from their classes in order to work with the math interventionist. Some of the math teachers talked about their concerns regarding non-math teachers’ feelings and the impact that the program was having on them. Fred from School A talked about how the program might be perceived by non-math teachers, “I’m sure there are people less close to it that probably wouldn’t have a hard time seeing it go away. Maybe other teachers in the building where it’s affecting their daily routine because they’re getting pulled out” (personal communication, spring 2013). Non-math teachers might feel like math is being prioritized above their subjects, which Nate from School C discussed, “I think about the feelings that maybe those other subjects, maybe PE teacher, whatever class that they are being pulled out of, that the implied meaning that mathematics is more important than their subject” (personal communication, fall 2012). But, with increased accountability and testing, some of the subject areas are getting more attention than others, math being one of them. Mike from School C talked about this reality, “I don’t want to say math’s more important than PE, but with some of the things at stake it can be that way” (personal communication, spring 2012). Mike from School C went on to talk about the impact of students missing classes, “I get frustrated if kids get pulled from my class too. It’s extra work usually for the teacher at some point” (personal communication, spring 2012). Lucy from School A actually experienced non-math teachers talking about their feelings towards the math intervention program and the effect it was having on them, saying, “...I

know other teachers, about allowing students to leave their class to use that time for math intervention has been a concern. That's been vocalized" (personal communication, spring 2012). Even though math teachers saw the value and success of the math intervention program, they also realized the impact it was having on other teachers, such as Chad from School C who said, "Of course there's the issue of pulling kids out of other classes, and I hate that" (personal communication, fall 2011). With students getting pulled out of their classes it causes non-math teachers extra work to get those students caught back up on the work they missed in class, putting the burden on them.

**Saving Time.** Saving time was something that teachers talked about as having one of the biggest impacts on them personally. By using the math intervention program they were able to save time within the classroom, as well as time before or after school. Fred from School A described all the ways the program helped to save time,

It's both helpful for our students, and after the initial fact of getting the time done to put somebody in, it really saves the teachers time. I mean it does. Maybe that's after school time, maybe that's just in class time that you're not having to sit there for five minutes trying to help this student get through it while everybody else is done or doing whatever (personal communication, spring 2012).

By using the math intervention program teachers were able to fill gaps of knowledge for students that teachers wouldn't have time to fill themselves.

The math coach and interventionist would try to help teachers save time identifying students by observing their classes and providing them support as well. Whenever others observe teachers they get nervous that they are going to be judged. Mike from School C discussed this nervous feeling, saying,

“I think with the coach being in the classroom some of the more veteran teachers were concerned like, is the coach here to help us or is the coach here to kind of observe us and tell somebody what we are doing good or bad” (personal communication, fall 2012).

Teachers need to develop trust through feeling supported in order to alleviate those feelings of nervousness, allowing others into their classrooms to help them.

The success that students were experiencing as a result of the math intervention program could be felt and seen within the classroom. Zane from School B said, “I’m also not spending as much time individually with that kid in class” (personal communication, fall 2013). Teachers discussed how students would come to class more prepared, and thus asking fewer questions. This allowed teachers to save time in the classroom by not having to work as much with individual students. When asked about what the advantages of the math intervention program were, Ulysses from School A replied, “I think that’s one of the biggest ones, students that want help in class but I can’t spend my whole class time working with them, that would be nice to get intervention” (personal communication, fall 2012). Amelia from School A also talked about not having the time to help every student during the regular class time and how the math intervention program helped her with that, “I think it’s been a great experience for me because it allows me to suggest kids to go get help during the day that I can’t always give to them” (personal communication, spring 2013).

Providing students one-on-one attention within the classroom is very difficult, which many teachers do not have the time to provide. Tammy from School A talked about the value of one-on-one attention, “...I refer them to the teacher that is the interventionist and then they basically get extra one-on-one time that I try to give them

during class but I don't always get to give them" (personal communication, fall 2012). Tammy went on to describe a student who required a lot of one-on-one attention in order to answer questions on assignments and such, but just didn't have enough time in class to address them all,

...cause she's very good about doing all of her work and asking me questions, but she doesn't usually get there early enough to ask me the questions and then we got passing period time and I don't get very many of her homework questions answered (School A, personal communication, fall 2013).

Lucy from School A also talked about how important one-on-one attention was for some of her students and how the math intervention program could provide them that,

It's a great chance for the students that need the extra help to get that one-on-one attention. Being a teacher in a classroom of 20 to 25 students you may not get that, so the intervention just allows the in-school help for students (personal communication, fall 2011).

Karen from School A described her experience with a student who had specific needs, and thus required one-on-one attention which she could not provide,

One of them needed word problems and I need sit down and get one-on-one help, I want you to walk me through all of it. I can't do that in a classroom. I mean I can't, not for a full period (personal communication, fall 2011).

Sometimes even having multiple teachers in the classroom still cannot provide enough time and attention to students to give them the help they need, which Karen from School A described when she said, "Well I have 20 on 3, but still there's some students that need

that one-on-one, and 6 to 1 ratio is still too much for them” (personal communication, fall 2011).

Most of the students in the math intervention program were students that had so many struggles and questions that they often required lots of individual time within the classroom. When these same students got help through the math intervention program they now came to class with fewer questions and required less time, allowing teachers to focus on their instruction. Veronica from School A discussed the effects of the math intervention program on the students in her class and how that helped her as a teacher,

“They’ve always come back in the classroom more focused I think, because they feel like they know the material better so they’re excited to start right away rather than usually there’s a lot of prompting for me to give them. But, now in the classroom they kind of start on their own” (personal communication, spring 2012).

Fred from School A talked about how the program saved him time within the classroom,

Can definitely save me time when the kid comes to class, maybe it’s during review time, it hasn’t been two and a half weeks since they saw section one of the chapter, I don’t have to go re-teach them that stuff as much as I would have to, so I would agree yeah it probably saves me time at the end versus the time up front (personal communication, spring 2013).

When asked if the math intervention program was saving him time, Jake from School A said, “It does in terms of a kid that might come and ask me a question but they got it answered in intervention, so it saves me a bit of time that way” (personal communication, spring 2013).

Since students were coming to class with fewer questions and better understanding, often they would start working without having to be continually reminded. Before intervention many of the students would be so confused and lost that they would sit in class and not do the warm-ups or activities due to a lack of understanding. Zane from School B described how math intervention helped his students in class and saved him time, “They have a little better understanding and so I’m not spending five minutes getting them going, it’s just a quick they can start themselves. That gives them a little bit more success in class as well” (personal communication, fall 2013). This not only helped the students who were in intervention, but also the other students in the class who no longer had to wait for others to catch up and lose instruction time.

Amy from School B discussed how the program helped her address the needs of her students when she couldn’t, “The main thing is the really needy student that I can’t give 100% of my attention to during class” (personal communication, fall 2011). She went on to describe an experience where she felt overwhelmed in her classroom trying to address all of her students’ needs,

Right now I am up to like 17 kids in my algebra block class with no co-teacher, and that’s a lot for, you know in the past last year I had 11 with a co-teacher, so we were able to help a lot more kids, you know work one-on-one with them, but this year I feel like, oh my gosh I can’t get around to every single person. That’s when I think it’s most beneficial for referring (Amy, School B, personal communication, fall 2011).

Math intervention can help relieve some of that stress by saving teachers the time required to work with individual students, knowing they will be receiving help outside of the classroom as well.

Not only was the math intervention program saving the teachers time within the classroom, but it was also not taking time away from the class either. Fred from School A discussed the benefits of the math intervention program versus other programs he has used in the past, "...math intervention isn't necessarily time out of my class period, which is a help" (personal communication, spring 2013).

Teachers were also able to save time before and after school since fewer students needed to come in for extra help. Usually if teachers cannot address the needs of the students during the regular class time then students will come in before or after school for extra help. But, if students are in the math intervention program then they are getting that extra help through working with the interventionist, thus not needing to come in for additional help with their regular math teacher. This saves the teachers time, allowing them to focus on getting the rest of their daily duties and requirements completed during those times.

One of the features of the program that many teachers found to be advantageous was the fact that students could get help during the school day. Students were already at school, and thus it required no more additional time for students beyond the normal school hours. Ulysses from School A talked about this advantage, "So that chance to get help while they're in school no matter what, I mean since they're here, then yeah, it's been great" (personal communication, fall 2012). In addition, it allows teachers to provide support to the students who were motivated to get it, but could not due to the inability to come in before or after school. Nate from School C talked about the impact



of being able to provide support during the school day, “And so I feel the best thing is that is allows us to reach a population of students that we normally wouldn’t be able to” (personal communication, fall 2012).

Some students made attempts to come in before or after school, but it was still not enough. When asked which students she looks for when referring to the program, Sally from School A replied,

I think it’s kids that have a really poor grade but are working really hard in class, and they’ve made a couple attempts to come in after school and maybe after that rides don’t work out or maybe they have some other after school activity and I know that they would completely be willing to work with the interventionist (personal communication, fall 2011).

Sometimes students would make a plan with their teacher to come in before or after school to get extra help, but not follow through, which Oscar from School A described,

Coming in early before school, while it worked for a week and a half, it slowly dwindled to where that student’s not doing that anymore and I know that the math intervention it’s just, the student’s already here in school, and to pull them out of a class is easier then sometimes getting them to come before school... (personal communication, spring 2012).

Other times the students required so much help that coming in before or after school was not enough, which Fred from School A described an experience with a student who had this issue, “I mean, for me to go back and try to redo everything with her, and find time honestly for her to come in after school or before school is almost impossible with what her, she’s told me” (personal communication, spring 2012).

When teachers did get students to come in after school it sometimes became an issue of diversity of needs. Most teachers have at least two or three different courses that they teach. This means that students working on completely different concepts are coming in during the same time, before or after school, and asking for help. Zane from School C talked about not being able to give students one-on-one time after school, "...after school really doesn't turn into one-on-one cause there are three other kids that are there all the time..." (personal communication, fall 2012). Teachers have to split their time between students, not being able to give them the time and attention that is needed. Fred from School A experiences this issue, describing it as,

"It's sometimes difficult for us teachers also when you've got, I teach the calculus course and if I got calculus kids coming in for extra help after school, which I do a lot more then geometry students, and trying to balance, well they're working on geometry to get them help and the calculus people help at the same time..." (personal communication, fall 2012).

If students were getting math intervention support then they often didn't need to come in before or after school for extra help, which Amelia from School A talked about, "...I think some kids probably don't come in because they are getting help, and maybe they feel confident and don't need me, but they could use it" (personal communication, spring 2013). This allowed teachers time to focus on the students who were not in math intervention, saving them time because there were fewer students coming in demanding their attention.

Many of the students at these schools had issues getting rides to school or after school, thus not allowing them the opportunity to get extra help outside of the classroom.

Amelia from School A talked about this concern, “Cause I have a lot of kids that cannot come in after school because of work, or because they go home to their families, and so offering something during the day is nice” (personal communication, spring 2013). Patrick from School A felt like the program was a perfect fit for the needs of their students,

When this program started it kind of fit the bill for our kids because a lot of our kids ride the bus and so it met the need to meet during the day and kind of helped with the kids that couldn't come after school or before school (personal communication, fall 2012).

Since teachers only have a limited amount of time within the classroom, if students cannot come before or after school for extra help they're often left with no other options, “...I've had some students who can't come before school, can't stay after school, where they really just don't have an option to get help unless it's during the school day” (Nate, School C, personal communication, fall 2012). Adam from School A talked about how the program helped him as a teacher provide support to the students who had conflicts coming in for help,

And so if they can't come in before or after school, or if they have some other club or something like that, that there is the opportunity for it. And I believe that it makes my life as a teacher a little bit easier (personal communication, fall 2013).

Zane from School B had a similar response, saying,

I guess it impacts me because those kids are able to get some help where I'm not having to find a way for them to stay after school or before school because a lot of them that's not possible for getting rides or having to pick

up little brothers and that kind of stuff (personal communication, fall 2013).

As students get older many of them start getting jobs, requiring them to work after school and thus not allowing them the opportunity to get extra help if needed, which Rose from School A addressed when she said, “And I think the older students get the less availability they have outside of school hours, because they’re working or they’re doing other things and they don’t have that availability” (personal communication, spring 2013).

Some students were simply involved in so many after school activities that they could not come in for the extra help that they needed. Nate from School C discussed the issue of overly involved students when he said,

...we have students that are involved in sports or other after school activities who it’s difficult for them to find time during the school day or after the school day to come in and get help. And I know that that’s one of the big advantages of the interventionist is that it’s a chance for students to get help during the school day (personal communication, spring 2012).

Math intervention focuses on working with students who typically had little success with math in the past, thus they often don’t see the need or have the motivation to get extra help because it has never worked in the past. Zane from School C talked about seeing some of his students frustrated and thus not coming in for help,

...they’re at that point where it’s frustrating for them and so they’re shutting down fairly quickly, and as a junior or senior in advanced algebra, you know 10 or 11 years of frustration with math class, so their first reaction is just I’m not going to do it. So trying to get them to come in

and get help first is definitely a challenge (personal communication, fall 2012).

Providing support for these students during the day prevents teachers from having to fight the battle with students to try to get them to come in for extra help when they are not motivated to do so. Other students don't want to come in, even if they have the ability to do so. Rose from School A discussed how sometimes students, and even parents, are not always honest about whether they can come in for help or not, "I think some students, and I think probably some parents, are a little dishonest about their availability outside of school because it's easier to do something in school" (personal communication, fall 2012).

Because these students struggled for such a long time, they often came to teachers with gaps in their knowledge. These gaps were often a result of never fully learning a concept when it was first taught. Ella from School C described the issue of students with gaps in their knowledge, "The reason they're not being successful with the new material is they lack the prior knowledge and skills to be successful with the new material" (personal communication, fall 2011). Teachers do not have time within the regular classroom to address specific gaps in student learning. But, trying to learn new information that applies to those gaps of knowledge then become very difficult, unless that gap can be filled. Adam from School A talked about how difficult it can be to fill the gaps, and thus why the math intervention program can help, "...they're just struggling on something way past or way before what we're actually dealing with, then I'm like well if I don't have time to remediate and always work with them then that might be a good candidate..." (personal communication, fall 2013). Fred from School A used the

program to help one of his students who had fallen so far behind that he didn't have the time in class to address her gaps,

I guess one change that I'm gonna be doing is maybe even using it to help a girl kind of catch-up on older things and change her grade, or hopefully change her grade. To kind of redo some past things rather than just the things we're working on now (personal communication, spring 2012).

Veronica from School A talked about using the math intervention program to focus on the specific needs of the students, "...really focus on their needs instead of in a classroom sometimes you know we're learning new material and we can't get that one-on-one help with the student" (personal communication, fall 2012). Karen from School A described an experience with a student who struggled with English and needed specific help with learning how to work story problems, saying, "This student in particular, he's a level 2, so his English is okay. It's not fantastic, but he does struggle with the applications, which is 50% of their grade now" (personal communication, fall 2011).

Gaps can also occur when students miss class for extended periods of time. Sometimes students will get sick, be suspended, or just chose not to attend class. These missed days of instruction cause gaps in student learning, and thus struggle to learn new concepts until those gaps are filled. Bob from School C used the program almost exclusively for students who had gaps in their attendance and learning, saving him the time of having to fill the gaps on his own, saying,

I used it when kids got sick. Like if they were gone for about 3 to 4 days. Or if someone was incarcerated, and then they just pop in and try to get them caught up...kids will miss 4 days in a row, come back, they are there for about 4 days in a row, and then they will miss another 3. You're just

constantly playing catch up. The interventionist helps with getting that done at least (personal communication, fall 2011).

Amy from School B talked about using the program for the same reason,

If they do one or two times it's usually because they were absent for a while, so the interventionist will catch up the kids that were ill or maybe they had a five-day suspension, the interventionist will kind of catch those kids up (personal communication, fall 2013).

Fred from School A discussed how difficult it can be to catch students back up,

"...maybe they were gone five or six days, maybe they were sick with all those sicknesses and they missed all that stuff, and try to get them to pick that up as we continue or try to come after school or try to have me find all the time to do all that, we can do all that, the notes and stuff, but for them to learn it all on their own it's probably a little difficult in this situation" (personal communication, spring 2013).

Mike from School C described a situation where a student was added to his class later in the semester, causing a gap in the student's learning, and should therefore be placed into math intervention right away in order to remedy this and assess their current level of knowledge,

I think there's some rare occasions where, right when a student comes in that it just needs to be, alright you're going to meet with the interventionist for three or four meetings to see where we're at, get caught up I think (personal communication, spring 2012).

Chad from School C had a similar situation, “I had a student who was misplaced and came into Geometry, so I asked the interventionist to work with him four times, to basically catch up on the chapter” (personal communication, fall 2011).

Many of the teachers mentioned that they liked having another resource to help them. If students missed school and had to make up tests or quizzes, then teachers could use the math intervention program as a way to get them prepared. Becky from School B said that her students would search out the interventionist on their own to get help, “Like during a quiz or test day beforehand if they have those classes, academic support or interventions and strategies, they’ll go and find the interventionist because they know I’m teaching, I’m busy” (personal communication, spring 2013). This saved the teacher time because they didn’t have to try to work with individual students that were coming in during the school day and wanting to ask questions, allowing teachers to focus on their work instead. Amelia from School A described an experience where one of her students got help on a quiz during math intervention,

...just the other day a student brought in her quiz corrections and I know the interventionist worked through it with her. I mean, it’s not like I don’t have the time to work with her after school, but I know she got help and that was nice, that was good (personal communication, spring 2013).

Math intervention also served as a comfort for teachers, knowing that it was there if they needed it. George from School A discussed how just knowing the program was there if he needed it motivated him, “And so I think it’s motivating to me to kind of have that as saying, okay well I can send them to someone to hopefully get that, not necessarily teach what I’m teaching, but get them to better understand...” (personal



communication, fall 2011). Fred from School A described the math intervention program as a “safety net”, saying,

It kind of feels like you got a safety net or something behind you a little bit, that if I didn't get to Billy today then I think he'll get a chance to have a little more help on this (personal communication, fall 2013).

Some students were not comfortable enough asking questions during class in front of their peers, feeling embarrassed, which Holly from School A discussed, “I think it was beneficial for them to get that time one-on-one to ask any questions that they might not feel comfortable asking in front of the class” (personal communication, fall 2011).

Comfort also came when teachers knew that there was another adult who was looking out for their students, helping them as well, which Fred from School A described when he said, “The ability to have just another person to look after some of these at risk students, or students that you know could do this if they had just a little more support, you know a little bit more time” (personal communication, fall 2011).

Sometimes teachers would run out of ideas on how to teach a concept, but the student was still struggling. Ella from School C described when she would refer students to the program when she said, “It's when the classroom teacher has tried everything, and the student is just not responding, and they need more help than you can provide during class” (personal communication, fall 2011). Math intervention allows teachers to have another resource to explain the concepts to their students in a different way, and by a different person. When asked what motivated her to refer students to the program, Rose from School A responded, “I think that what motivates those decisions is the students who are still struggling regardless of other things I've tried to put in place myself” (personal communication, spring 2012). Holly from School A talked about how

providing new ways and people could help her students, “I liked that they were given an opportunity to learn it from a different teacher who maybe teaches it a little differently, which helps especially the students who struggle to see it multiple ways” (personal communication, fall 2011). Mike from School C mentioned how some students respond to certain people and techniques more than others,

...honestly for certain kids it’s something little that for some reason has always baffled them, or they’ve struggled with, and somebody explained it to them in a way that they could understand it. It’s just kind of like a light went on (personal communication, fall 2012).

Quentin from School A also felt the impact of providing multiple ways for students to learn from multiple people, saying, “That little extra practice sometimes, or just from another perspective, another person showing them the skills or the concepts seems to really click with them so that they would do better” (personal communication, spring 2012).

Jake from School A described how the program can provide teachers extra support, saying,

It can be frustrating to see a student just constantly struggle every day. You keep working with them, but you also have a hundred other kids that are on your list. It’s comforting to know that there’s somebody else out there who can give that kid one-on-one attention more than you can in the classroom (personal communication, fall 2011).

Teachers knew that the interventionist was providing actual instruction and support, which provided comfort to teachers like Nate from School C, “We don’t have somebody

who's just going over the answers, the interventionist is actually doing the instruction as well" (personal communication, fall 2012).

Teachers also saved time identifying students by working with the math coach, math interventionist, or other teachers. Sally from School A talked about working with the math coach, "...our math coach would come into our room a couple times and asked about just kids in general, like what about this student and have you thought about them for interventions" (personal communication, fall 2011). Quentin from School A also discussed working with the math coach and how it saved him time identifying students,

Working with the math coach on that, cooperative learning techniques helped me gather better formative data, aside from things like the homework, to know was it conceptual misunderstanding or was it just laziness so they're just not practicing the skills (personal communication, spring 2012).

By having the math coach make suggestions to teachers about possible students, or help them develop new ideas or techniques for analyzing student learning, teachers were able to identify students faster and get them into the program quicker, saving the time of having to make those decisions on their own. Teachers trusted the suggestions of the math coach because of the amount of experience working with students and teachers, which Patrick from School A discussed, "The math coach I'm sure was working primarily with Algebra students, that they could have helped identify some students earlier that maybe needed some math intervention help" (personal communication, fall 2012).

Some teachers didn't work with anyone else, but talked about how using the criteria for the program helped them identify students faster, "...it has helped me learn to

identify kids that are struggling. Having the criteria that have been set up for the program, it's helped teach me about getting kids help early on" (Tammy, School A, personal communication, spring 2012). Sally talked about using the list of past intervention students provided by the math interventionist,

The math interventionist brought up a student's name at the beginning of the year that got referred by somebody else, and it kind of make me keep my eyes, and she hasn't been referred yet, but it made me keep my eyes open a little bit more and focus on her and what can I do in the classroom first, and then just as an added part I know that the interventionist is there (School A, personal communication, fall 2011).

Rose from School A also discussed how the list of past intervention students helped her,

I would say getting the list of students who've been in it before is helpful. It's definitely helpful to see, because then I'm more aware of looking at their work to see do they need it again or was it something they needed just for that time period. And also to have that conversation and talk to them individually, hey if you want to do it again it's available, but we're going to try this first (personal communication, spring 2013).

By providing clear criteria, or a list of names, teachers can use that information to identify students and use the program faster, thus saving them time.

**Implications.** In order to get teachers to use a program and feel the value and impact of it, educational leaders must make sure that the program has a direct connection and relevancy to them. This connection can come through the content that they teach, proximity to the program, or through the goals of the school or district. The program must be a priority for teachers to use. Proximity to the program should be as small as

possible in order to connect teachers with it. Consistent reminders and exposure to the program will help increase the priority of the program. Leaders should not force teachers to use a program, but instead provide the foundation and guidance needed as well as allowing freewill and teacher judgment. Teachers should be motivated and led to use the program, but allowed to use it at the pace and time that they are comfortable and ready. Use of the program should not be demanding of teachers' time and resources. The process and structure of the program should be such as to allow teachers, once they start using the program, to continue with their daily work and routine without much hindrance from their use of the program. Spending time to specifically set the criteria and structure of the program can challenge teachers to develop and grow professionally, forcing them to reflect on their own practices and student performance. Support over judgment should always be the emphasis when working with teachers in their classrooms and regarding their instructional practices. Putting as minimal burden as possible on non-math teachers as well is important in order to ensure that the whole school is supportive of the program and that student learning is effected as little as possible. Programs must be fit to the needs of the school and the students within it. If many of the students have problems finding time to come in for extra support on their own due to families, rides, work and other issues, then providing a program that offers support during the school day fits that need. If the needs of a school are different, then the program should be modified to fit those needs instead. When teachers feel like they can actually gain something from using the program, such as saving time within and outside of the classroom, then they will be more influenced to use it.

## Experience

Teachers were asked what caused their knowledge, comfort, and use of the math intervention program to increase, and the most popular response was experience. They discussed how the training at the beginning of the year helped them, but the real impact came once they actually used the program and experienced the effect it had on students and themselves. When asked what caused her knowledge and comfort to increase over time, Tammy from School A replied, “I don’t think I could have gained all of it without the actual experience. I think a lot of it has just been the actual experience” (personal communication, spring 2013). Experience with the recommendation process, experience with the program in general, and experience as a teacher all contributed to teachers growing in their knowledge, comfort and use of the program.

**Lack of Experience.** Teachers discussed their lack of experience and how that affected their use of the program. Some teachers had almost no knowledge of the program, and thus never used it, which Chad from School C talked about, “I think that there are people that don’t really know what it’s for or what it’s supposed to be” (personal communication, fall 2011). When asked if there would be anything that he would want to change about the program, Ulysses from School A said, “I don’t know if I’ve been using it long enough to pick anything I would change. Cause I haven’t seen it used in different ways” (personal communication, spring 2013). Thus, after using the program for multiple semesters, Ulysses still didn’t feel like he had enough experience to really know the program. Amelia from School A lacked the experience identifying students and using the program to the point that she still didn’t know when to use it, saying, “I still feel like sometimes I don’t know if I should send them” (personal communication, spring 2013). When teachers have not experienced going through the

process of identifying students and using the program they often lack the knowledge and confidence to do so, such as with Angelica from School C who said, "...I guess maybe that's why I don't do the intervention is because I am second-guessing myself at that time" (personal communication, fall 2012). When asked why he hadn't used the program more often, Patrick from School A replied,

And I think it probably was just a familiarity with the intervention and also working with a student teacher, and so a combination of things, and we didn't take advantage of the intervention. And this year with more students using intervention and more discussions about intervention, how it's used, what's the process and everything else, it's taking more advantage of the program (personal communication, spring 2012).

Therefore, a lack of experience often results in a lack of knowledge and confidence using the program.

Even if teachers felt confident at one location, using one program, if they switched schools, and therefore programs, they would go back to having very little experience and thus very little knowledge or confidence in their use. This occurred for Zane from School B who moved from School C to School B. Zane talked about his adjustments to the new school,

I think I'm starting to figure out how the math interventionist is working a little bit, but again I'm not super comfortable with it at this point where I could feel like I would be able to describe to you exactly how the interventionist is doing that, how that sort of looks in the classroom and that kind of thing right now (School B, personal communication, fall 2013).

This indicated that knowledge and experience do not carry over between programs and locations, and is thus mostly contextually based.

**Experience using the Math Intervention Program.** Before teachers will use a new program, or make a change, they first must have to have their concerns and fears addressed. Some of the teachers talked about their initial fears using the program. Vern from School A feared how long it would take him to refer a student to the program, saying,

Once I actually did it I realized it didn't take to terribly long, but at first I guess I just thought it was going to be this incredibly long process, it was going to suck up an hour of my time for each referral. I was afraid to do it at first (personal communication, fall 2012).

Ulysses from School A feared that students would resist being in the program, "I expected it to take, to be more work to get students into the program, but everyone I talked to was more than willing to get the extra help" (personal communication, fall 2012). Once Ulysses decided to use the program he was fearful because of his lack of experience using the program, as well as his lack of experience as a new teacher, saying, "...I think it felt overwhelming the first time around, but I think again that comes back to being a first time teacher, cause I was just overwhelmed in general that first semester" (School A, personal communication, spring 2013). Nate from School C feared how the program was going to be run and its real purpose,

I remember when I first heard about it my first impression about it was, well gosh isn't this going to be like hey here's a couple quick sessions on this topic and let's retest and kind of pad the grade a little bit (personal communication, spring 2013).



Teachers have a natural fear of new programs, since they are used to them coming and going very quickly. Districts and schools lose funding, cannot support the programs, or are not seeing the results they hoped, causing programs to be cut. Sometimes teachers never even use a program because of the fear that once they get used to it the program will be taken away. Mike from School C discussed this fear when he said, "...I feel like once everybody's finally comfortable with it and have seen the success with it your grant runs out. So is the school going to be able to fund it, or district, or however it's done?" (personal communication, fall 2012).

Another fear teachers often had was the fear of being judged. Some teachers felt like the program was going to be used to judge them as a teacher. The thought was that the math coach and the interventionist were going to come in and observe their teaching and judge them for the mistakes they were making. Mike from School C talked about this possible fear,

I think with the coach being in the classroom some of the more veteran teachers were concerned like, is the coach here to help us or is the coach here to kind of observe us and tell somebody what we are doing good or bad. So with time that's been figured out that that's not what the coach is there to do, the coach is there to help (personal communication, fall 2012).

With experience teachers realized they were not being judged, but instead were being supported by the program, the math coach, and the interventionist.

Without experience teachers were confused on the process and steps to take when recommending students to the program, such as Nate from School C, "The process was a little bit confusing at first, like I talk about last year, but I think definitely it seems very easy now" (personal communication, fall 2012). Jake from School A had a similar fear,

saying, “First it was rather confusing on how to recommend students to the program” (personal communication, Fall 2011). But, with experience this fear went away. When reflecting back on his initial use of the program, Jake from School A said, “I was probably more worrisome the first time” (personal communication, spring 2012). Jake went on to say, “I think it’s going to be kind of an uncomfortable feeling at first anyway, because it’s something new...It’s all about experience” (School A, personal communication, fall 2012). Other teachers were fearful of recommending the wrong students, “I think that my fear from before was that I was going to be referring students that I shouldn’t have been referring, where it wasn’t appropriate” (Nate, School C, personal communication, fall 2012).

Often teachers would wait until they had given their first test before they would recommend students to the program. Sally from School A initially waited until after the first test to refer students, saying, “When I think I first started it, oh I think I’ll wait for that first test, oh you didn’t do well so now let’s see if interventions will work for you” (personal communication, fall 2013). This allowed teachers to have a better understanding of the student’s knowledge, which they could use to give them confidence in their recommendation of the student and use of the program. Ulysses from School A discussed how he initially waited until the first test to recommend students,

...I signed up a lot of recommendations after the first test with Geometry, cause I could kind of get an idea of which students were needing the extra help before that but that was like telling me for sure that I wasn’t over thinking anything before that (personal communication, fall 2012).

Teachers were fearful that they might recommend a student who didn’t actually need the help, doing well on the test with any assistance. George from School A wanted to change

how he was using the program so that he was not responding to how students did on the test, but rather preparing them for the test instead, saying,

So it was really a focus on getting them set up with the interventionist earlier rather than later. So instead of as a response to a poor test grade, it was let's get them prepared to take the test right the first time (personal communication, fall 2011).

Other teachers felt like there was nothing they could have been given before using the program that would have helped them, except for using the program and gaining experience with it. When asked if there was anything that she would have wanted when the program was first introduced, Sally from School A replied, "So I don't think there would have been anything I needed at the beginning, just realizing it's something new and we got to try it out and things will build and grow" (personal communication, fall 2013). Fred from School A was asked the same question, which he said, "I think we probably got enough information, I just don't think probably enough, and rightfully so when it's implemented, we just didn't know how it would look or feel yet" (personal communication, spring 2013). The training provided to teachers when the program first started was seen as being sufficient by the majority of the teachers. Adam from School A talked about his training,

The comfort level good because I believe the math interventionist made it a good transition and provided the foundation. Once you have the foundation in and what we're looking for and how you go through the process of selecting a student, then I think it goes well from there (personal communication, fall 2013).

With the foundation set, teachers can then gain the rest of their knowledge and confidence through their use and experience with the program.

Students also had initial fears about using the math intervention program. Math intervention in middle school was structured differently than the high school, thus some students had preconceived ideas about what the program would be like. Others were fearful of the unknown, not knowing what it would be like. Jake from School A talked about some of the fears that students might have,

You know the kids that have been in intervention, they like it, they want to go back to it. The kids who haven't, they're maybe still uncertain about it, makes them feel like it's going to be more math, which they already dislike, or make them feel like they're dumb. Till you actually get in the room with the interventionist you have no idea (personal communication, spring 2013).

With already having a fear and dislike for math, this caused some students to resist getting additional math support. But, once students experienced the program they often enjoyed it, feeling the effects and success, and building their confidence.

Doubt and lack of confidence were often overcome once teachers started using the program and experiencing the process and results. Ulysses described how experience helped him, saying, "I think the trial and error I kind of had with it was still good to figure out cause now I can make I feel, I feel like I can make recommendations with more confidence" (School A, personal communication, fall 2013). Experiencing the recommendation process was another thing that Ulysses discussed helped alleviate his fears, "This time around I already had a feeling of how long it would take to fill out some of the work, even then it still doesn't take as much work as like it seems like" (School A,

personal communication, spring 2013). He realized that the experience gained through trying the program was something he could not have been given, valuing the experience and struggles that he went through. Veronica from School A was doubtful about the program initially as well, but once she used it and experienced the effects she gained confidence,

Before it was really questionable, like, really how are they going to react to it, is it really going to help? And then after having lots of successes and actually seeing that students really do enjoy it and they don't think that it's a negative thing, I've shown more confidence in the program and know it really does work (personal communication, spring 2013).

After learning from their initial experiences, teachers started becoming better at identifying which students would be best for the program, which Tammy from School A talked about, "I think I used to be really concerned about definitely identifying kids, and that's not as much of a concern just because of the exposure to it" (personal communication, fall 2013). At first there were some teachers who didn't have a very good understanding of which students would benefit the most from being in the program, or what characteristics in students to look for. This caused some teachers to refer students that didn't work well or have the results they had hoped for. Lucy from School A, after her first semester of using the program, set a goal to improve on identifying students, learning from her experiences, saying, "Maybe by second semester hopefully I can pick up on those cues quicker, and red flags faster, that would be a goal of mine" (personal communication, fall 2011).

Experiencing this decision making process was important for teachers to adjust how they were identifying students. Amelia from School A discussed how having

experience identifying students helped her, “I’m kind of using like last years kids, like who...shouldn’t pick somebody like that” (personal communication, fall 2013). Mike from School C talked about how his knowledge changed through his experience, “I think what I’ve gained more knowledge of is the students who are going to be successful in it” (personal communication, fall 2012). Ulysses from School A reflected back on how important his initial experiences were, saying, “After that first semester, that’s probably when I figured it out the most and kind of decided like which students really actually should have had it and which students maybe I shouldn’t have recommended” (personal communication, fall 2013). He went on to explain what he experienced, and how he learned from it,

...I got a better idea of whether or not a student is a good or bad recommendation kind of based on how their grade improves through intervention, based on the kind of work they get done in intervention, and then kind of based on their reaction in class too (Ulysses, School A, personal communication, fall 2013).

When talking about how his use of the program changed over time, Zane from School B discussed getting better at identifying students for the program, “So which kids do I feel like need to go in there I feel like I’m a little more comfortable bringing those kids up, picking those kids out a little quicker maybe” (personal communication, fall 2013).

Amelia from School A worked mostly with freshman students coming out of middle school, which was a big adjustment for them since the expectations and work requirements usually increase in high school. Amelia talked about her struggles identifying students who were not being successful because of their math skills versus adjusting to high school, “That’s why I get so hesitant sometimes at the beginning

because are they not getting it because it's high school and they're not used to working as hard and doing the homework" (School A, personal communication, spring 2013).

Some teachers initially had certain criteria for identifying students, but changed them after they gained experience. Fred from School A talked about how his criteria changed over time,

First I thought well this kid isn't trying, this kid isn't doing their homework, well then he's not trying. I've probably gotten over that in the last year and just said you know a lot of these kids aren't going to do their homework, and I guess where my stance kind of is now is if this kid's putting forth effort during the class period, then you know what he would probably put some more effort in, and rather than doing homework maybe he can be in this math intervention that will kind of take the place of that outside homework (personal communication, fall 2011).

Fred realized through his experiences that his criterion was hindering him from recommending the students that needed it the most. Fred went on to talk about how his experience changed his ability to identify students, and thus use the program, "Maybe I think personally felt a little vague in at the beginning in who I would and wouldn't put in intervention, but as time's gone on I think I've got a little better feel of that" (personal communication, spring 2013).

Jake from School A had a similar experience, initially identifying students ineffectively, looking only for students with F's,

At first it's usually I got F's and I freak out and so I want to recommend everybody for intervention just because I think they need it. But, now it's

more okay for them to have F's, but I really want the kids who intervention's really for to be in here (personal communication, fall 2012).

After experiencing the program and seeing what worked well, Jake was able to adjust how he identified students, stating that, "I had a better realization of kids that should and should not be in intervention..." (School A, personal communication, fall 2012).

In order to improve their abilities at identifying students, teachers not only needed to experience using the program, but they also needed to experience trying new techniques and methods for identifying students and collecting information. Tammy from School A talked about what caused an increase in her ability to use the program, "I guess you could say knowledge of how to identify kids earlier has increased, cause I tried different things to identify those kids" (personal communication, spring 2013). Veronica from School A also changed some of her methods for gathering information on student performance, "I'm identifying the students earlier, using more formatives and quizzes to determine their help, and then I'm also making that communication home a lot sooner" (personal communication, fall 2012). Not only was Veronica doing more in class to gather data on student performance, she was also doing more with that data, saying,

...like my little learning targets or exit tickets or my homework quizzes or quizzes in general or just making sure people do formative assessments more often and actually look at them and grade them, kind of see how the students are doing (School A, personal communication, spring 2013).

Once teachers improved their ability to identify the correct students, they also improved their ability to use the program, often using it faster. When reflecting back on his first semester using the program, Vern from School A said, "I could say, quite honestly I would be comfortable the second year, if I was doing it again, I would be



comfortable identifying them much easier in the school year, getting them started right away” (personal communication, fall 2012). Sally from School A talked about how her timing when recommending students and using the program changed as she gained experience,

But sometimes I feel like I wait to long, and then all of a sudden, oh throw them at the math interventionist and here can you try to work miracles in the next week before our test. I’m trying to get better at that. Sometimes I want to give the kid that chance, but I realize now, even this year as year two, I feel more comfortable with it and I’ll recommend them earlier (personal communication, fall 2011).

Tammy from School A not only improved her timing of when to recommend students, but also increased her use after gaining experience, “I have been using it a whole lot more this year. I tried to kind of get kids in earlier this year” (personal communication, fall 2013).

Other teachers would recommend students based on the number of students that were in the program. Thus, if there were lower numbers of students in the program then the teacher would feel comfortable recommending more students, but if there were higher numbers of students in the program then the teacher would hesitate to use it. Angelica from School C talked about how this affected the timing of her use of the program and how that changed, “I just have to get more comfortable with knowing when I should assign people and just do it, not based on the interventionist’s workload” (personal communication, spring 2013). When asked how she was going to improve on her use of the program, Angelica replied, “I don’t know, I don’t know how I’m going to get better at it. More time” (School C, personal communication, fall 2013). Sometimes the only thing

teachers needed in order to improve their use of the program, gain knowledge, confidence, and comfort, was more time and experience.

As teacher became better at identifying students and using the program sooner, they often use it more often as well. This repetition of use helped teachers gain even more experience, further increasing their comfort and knowledge. Nate from School C discussed how gaining experience using the program affected his use of the program, “I would say I feel more comfortable just because I’ve been through the process for another year...I’m using it more then I was before. I’m referring more students” (personal communication, spring 2013, fall 2012). Fred from School A talked about how going through the process multiple times helped improve his comfort level, “I’m more comfortable in the process as I go, just by doing it more often, that’s for sure” (personal communication, spring 2012). For Fred, the repetition and comfort allowed his use to become routine, “When I think in terms of my process of actually putting students in there, in terms of actually filling out the paper work and stuff like that, I would probably describe that as more routine” (School A, personal communication, spring 2013).

Routine often becomes synonymous with normal, which most teachers enjoy and are comfortable with. Tammy from School A discussed how using the program more often allowed it to become more normal, or routine, for her, “I have so many kids that are in it now that I’m checking in with so many of them that it’s just becoming more and more normal” (personal communication, fall 2013). Teachers could even begin planning ahead in their use of the program once it became routine, which Veronica from School A discussed,

Since I’ve filled out so many of those forms I feel like I know everything that’s needed, so I know what I need to do beforehand and kind of the

things I need to have in mind when I'm typing the intervention... So maybe even more comfortable with it (personal communication, fall 2012).

Bob from School C had a similar response about using the online recommendation form, saying, "Well you had to get used to using Google Docs. Once you got used to that it wasn't to bad" (personal communication, fall 2011).

Teachers need to take that first step in order to build to a repetition and routine level of use. Oscar from School A talked about taking the first steps to using the math intervention program, "I think now after getting a student through and signed up and doing all that stuff, I think I'm pretty comfortable with it" (personal communication, spring 2012). Adam from School A also talked about his comfort increasing once he used the program for the first time, "And so I have become more comfortable once I actually started referring a student to the program" (personal communication, fall 2013). Rose from School A had only recommended a few students, but was already feeling the impact, saying, "I know from the experience of the past two students and the ones that are in it now, how things work" (personal communication, spring 2012). When asked if there was anything else that could have been provided to improve her use of the program, Rose went on to say, "I think experiencing it was the most helpful thing for me" (School A, personal communication, spring 2013).

Repetition is important in order to ensure that teachers remember the program and keep it as a priority, which Angelica from School C discussed when she said,

I know I wanted to try to use it more because it's an intervention that I often forget about, but I haven't used it any more then what I have in the past...practice is all it really is, it's been three years now, three years that

I've been doing it, it's a lot easier when you've been doing it for a while, as with everything (personal communication, fall 2013).

Teachers will also do a better job remembering the program as other teachers use it more often, exposing everyone to it on a regular basis. Tammy from School A talked about how experience and exposure to the program had affected everyone, "We're just all becoming more accustomed to what it is" (personal communication, spring 2013).

Identifying students for the program was one of the hardest things for teachers to learn, and something that the majority of teachers expressed a concern about. As teachers used the math intervention program more often, based on their experiences they were able to adapt and modify their use of the program to their specific needs. Ulysses talked about the difference between his first and second semesters using the program,

...from the first time to the second time, second semester, I used it more in a targeted way. I made sure the students needed it, wanted it, and that they could really use it, and the ones that more students that I couldn't get help to in class as easily (personal communication, fall 2013).

Holly from School A felt like her initial use of the program wasted some of the math interventionist's time due to inappropriate recommendations, and thus changed how she identified students and used the program,

I feel like I've been a lot more picky this year than last year. Because I feel like I almost wasted the interventionist's time with a couple students last year, or they wasted our time just because they just refused to work and they weren't wanting the help even though they needed it (personal communication, fall 2011).

Teachers initially looked only at failing students, but after gaining experience with the math intervention program they were able to adapt the criteria of what they were looking for. Amelia from School A discussed the change in how she was identifying students for the program, saying, “Like I felt like last year my goal was to focus on, okay who has the F’s and who should go to, oh they should try intervention. And I’ve tried to avoid that this year” (personal communication, fall 2013). Karen from School A talked about how teachers initially thought they were going to use the program and how that changed over time to a much deeper level,

Initially I think the thought was if they’re failing they should be on intervention. And that’s probably more of the school and administration piece. But, I think we’ve fine-tuned it a little bit. That it’s more of the students that are struggling but still have a chance to pass, and it’s not just automatically if they’re failing they need it, or if they have a D they need it. There’s more issues there, it’s more cognitively how are they learning (personal communication, fall 2011).

Teachers began using the program in a more customized way that focused on the specific needs of the students. When asked how he used the math intervention program, Jake from School A replied, “Customized to the needs of each individual student... I don’t feel the need to refer so many just because of a failing grade” (personal communication, spring 2013). Fred from School A determined that he was able to use the program to help get his students caught up, “I’ve evolved I think into more of use it for that kid whose hasn’t been to class in two or three days where they can catch up” (personal communication, fall 2011). Tammy from School A initially thought that

students had to be struggling with multiple concepts in order to be in the program, but then realized after some experience that this was not true,

I kind of felt like it had to be a kid that just didn't get anything, and now I'm starting to realize like there are kids that are struggling and they get a lot of it and they're really smart, but they're struggling with certain things and that could be a good reason to send them to intervention as well (personal communication, fall 2012).

With these modifications in their use, teachers talked about being able to see more benefits and results, such as Dylan from School B, "I'm seeing more benefit now because just within that one semester, myself and the interventionist and the other math teachers, are getting a better grasp on how we can utilize the interventionist" (personal communication, fall 2011). Teachers also benefited from making modifications in their work habits, such as Angelica from School C who modified her organizational and documentation process in order to make her use of the program easier,

Me being more organized, I know I've gone through all the processes, or all the steps with them, and then I've done everything that I do, and then I had that extra little push, well send them to the interventionist (personal communication, spring 2013).

Knowledge and confidence were also developed as teachers continued to use the program. Using this new knowledge they were able to modify how they talked to others about the program, expressing more confidence in their decisions. When parents or others would approach teachers about recommending one of their students into the program, initially teachers would usually agree and go with it, but as they gained knowledge and confidence through their experiences they were able to stand up and

speak their opinion more often. Fred from School A discussed how his communication with others changed over time,

I would say the only change in how I've gone about things is probably I would say being a little bit more selective and maybe not being afraid to tell parents or counselors or administrators that yeah you know what there is the intervention program but right now your student doesn't qualify for that according to my standards (personal communication, fall 2013).

**Experience with the Math Intervention Program.** Through experience teachers not only increased their knowledge and comfort with their use of the program, but also regarding the program in general. Ulysses from School A said, "...I'm starting to see the bigger picture and how it's connecting to all the other classes too" (personal communication, spring 2013). Dylan from School B talked about how experience led to increased knowledge, "What is great is, in the first year you have general ideas, all of the teachers and the interventionist. But, as you go forward you start to get ideas and understanding of putting framework and a foundation to it" (personal communication, fall 2011). This increase in knowledge also led to an increase in comfort, which Amelia from School A described, "Because eventually we're going to get to a point where we have more knowledge that we can draw on and know what to do in situations, have more confidence" (personal communication, fall 2013).

Experience was able to provide knowledge for teachers that could not be given to them otherwise, but instead had to be experienced first hand. Amy from School B was asked what could have been provided when the program was first introduced to help her, and her response was, "I don't know, I think it was just kind of...I just grew with the program" (personal communication, fall 2013). Rose from School A was asked the same

question, and her response was, “I think the only thing is going to be more experience with it” (personal communication, spring 2013). When asked what contributed to his growth in knowledge and comfort, Ulysses from School A replied, “So more knowledge of the class and what it requires, more knowledge of the students, and so that all comes with the experience of it too. So yeah, more experience then the extra information” (personal communication, spring 2013). Initially, Amy from School B didn’t have the knowledge needed to use the math intervention program, but with experience she was able to learn, “...I just didn’t really know how to use the interventionist and now that I’ve kind of figured it out over the past three years I feel like it’s really successful” (personal communication, fall 2013). If teachers never gain experience using the program, then they will not gain knowledge either, and thus may never use the program. Tammy from School A talked about the impact of using the program on her level of knowledge,

But, I think having used it, I know a lot more about it now. If I had not had kids in intervention I would probably be exactly at the beginning of the year knowing, okay this is a grant that helps kids, that’s about it (personal communication, spring 2012).

Sometimes teachers needed to see first hand what was happening in the math intervention program, witnessing what the interventionist was doing with the students. Jake from School A discussed gaining knowledge by witnessing the interventionist working with students during the day, “Part of it’s seeing maybe some of the stuff the math interventionist is writing on the whiteboard afterwards, maybe during lunch” (personal communication, spring 2012). Quentin from School A mentioned something similar, experiencing the math intervention program first hand when he said,



During plan time I see the interventionist working with students, I hear what they're talking about, going through their tests, saying 'now in class you learned this', 'tell me what you did today, 'how are you doing on your homework' (personal communication, spring 2012).

Zane from School B also talked about the impact of witnessing what the interventionist was doing on a daily basis, "I think at the end of last year I sort of figured out what the math interventionist was doing and sort of within that how the interventionist was dealing with things" (personal communication, fall 2013).

Experience takes time to develop, sometimes years. Teachers need to be given sufficient time to gain the experience needed to learn about the program and develop their use of it. Fred from School A talked about how valuable this time was for his use and the program,

I think because it's been around longer people get more familiar with it, and the more people get familiar with it and the more the interventionist shows us things about I think the better it becomes. I think that's one of the big reasons it's been successful (personal communication, fall 2013).

When programs are cut after only one or two years, teachers don't have sufficient time to effectively use the program and make it successful or see the benefits. Angelica from School C discussed the value of having enough time to see the benefits of using the program, "But the more I use it, and the more benefits that I start to see from it, the more I'm going to use it" (personal communication, fall 2013). Patrick from School A also talked about the relationship between time, results, and comfort, "As time progresses and we get more comfortable with it and see more results then I think we'll begin to utilize

the intervention program more and more as we get more comfortable with it” (personal communication, spring 2012).

Seeing and experiencing positive results was a major influence on teachers’ continual and increased use of the program, such as Nate from School C who said, “After that first semester, seeing that student and how they did and how they improved, made me realize that it was an asset and that I needed to be utilizing it a little bit more...I’m more likely to refer someone to the interventionist now than I would have been a year ago (personal communication, spring 2012).

Patrick from School A also talked about how experiencing positive results motivated him to increase his use of the program, “As I become more comfortable with the program and kind of see the benefits of it then I’ll submit more and more students” (personal communication, spring 2012). Once teachers begin experiencing the program then they can begin experiencing the results of it, which Lucy from School A discussed, “I feel like more teachers are accepting this program, and understanding the benefits of it” (personal communication, spring 2012). Experiencing positive results developed a trust and belief in the program, influencing teachers to continue, or even increase, their use. Veronica from School A described the impact of these experiences, saying, “Positive experiences with it, and seeing that there is growth in my students and so I really believe in it” (personal communication, fall 2012).

Changes with the math intervention program also occurred due to increased experiences with it. Jake from School A talked about how the math interventionist adapted the recommendation process to make it easier for teachers after experiencing initial struggles,

It's gotten better this year. The math interventionist is I think a year in and has a little bit more, the interventionist has figured out some of the quarks and holes and loop holes, not loop holes, but holes that we had to jump through and made it easier for teachers to recommend somebody for intervention (personal communication, fall 2011).

As teachers gain experience with and knowledge about the program they are able to discuss it more in conversations with others. Sally from School A discussed how gaining experience changed her communication with other teachers,

So I would say its been a big increase in terms of talking with other teachers for me personally, because before it was just me and my kids, and now that I know more about the program and know more teachers that have kids in there I feel like I can have those conversations (personal communication, fall 2013).

Teachers also communicated more with students as they gained experience and knowledge about the program. Sally from School A talked about how her communication with students changed after using the program, "...I'm talking to kids more about it, or they hear it, and we have those discussions of oh this could be something good for you" (personal communication, fall 2013). Students in the math intervention program would often talk with their math teachers about what they learned or did when they were in math intervention, giving teachers a better understanding and knowledge about the program. Tammy from School A described how her conversations with her students influenced her use of the program, "I guess I feel more comfortable with just the whole process and more confident with the kids that I've referred because of the conversations I've had with them" (personal communication, fall 2012).

Communication with counselors and administrators also changed as teachers gained experience and knowledge. When teachers were inexperienced and had lower levels of knowledge they would often have very brief conversations with administrators and counselors about the program, sometimes never communicating with them at all besides a short email. If a counselor or administrator talked to a teacher about putting a student in the program they would often do it because they felt like they had to, lacking the knowledge and confidence to speak their opinion. But, as teachers gained experience they also gained knowledge and confidence, allowing them to speak their opinions more often, such as Fred from School A who said, “I’m definitely more comfortable in that sense to of before I would be like counselor said intervention, okay I guess I better, and now I wouldn’t have any problems saying no, make them earn it” (personal communication, fall 2013).

Increased use, experience, and communication all led to developing and strengthening relationships. Many teachers talked about how important having a good relationship with the math interventionist was for them and their use of the program. The math interventionist at School B was brand new to the school, and thus had no prior relationships with the teachers. Amy from School B discussed the process of developing a relationship with the interventionist and coach and how that affected her use of the program,

Well I just think getting to know the math coach and the math interventionist better, I mean these last six months or however long its been. That’s made me more comfortable, just getting to know them more. And I feel more comfortable going to them if I need them (personal communication, spring 2012).

When asked what the reason was for her increased level of comfort with the program, Amy from School B replied, “The relationship I have with the math interventionist...” (personal communication, fall 2013). Amy from School B was then asked what she would need in order to increase her comfort, which she said,

I just think it comes with time, and just like as my relationship with the math interventionist developed that helped and so I think you feel more comfortable with people as you know them more, and more comfortable with your students, more comfortable with the material (personal communication, fall 2013).

Zane from School B also talked about his experience developing a relationship with the math interventionist and the influence on his use of the program, “Definitely getting to know the math interventionist throughout the year definitely helped in sort of my comfort level in saying is this somebody I should be referring to you” (personal communication, fall 2013).

Teachers at School C also had to develop a relationship with the math interventionist when the program first started, because the interventionist had not taught at the school prior. Mike from School C described some of the difficulties that occurred initially because of the lack of a relationship, and therefore trust, between the math interventionist and the teachers,

And then in terms of the math interventionist just being new was part of it, so I think that’s a tough situation when you’re new and you’re having to tell people who are wanting to refer students for help, for example this kid can’t be referred because you haven’t done this, this and this (personal communication, fall 2012).

Even after a couple years some of the teachers still had not developed a relationship with the interventionist due to their lack of use, such as Angelica from School C who said, “The math interventionist, I’m still getting to know the interventionist. I mean I worked with the interventionist a little bit two years ago, but this year, if I had referred kids more I would probably know the interventionist more” (personal communication, spring 2013). Thus, through their use of the math intervention program teachers will also develop their relationship with the interventionist, which will influence them to use the program even further. Part of the reason teachers use the program more once they have an established relationship with the interventionist is because of the trust that is developed along with it. Angelica from School C went on to talk about how her relationship with the interventionist impacted her use, “The more I get to know the math interventionist probably the less guilty I’ll feel about sending my kids as well” (personal communication, spring 2013).

School A was the only school that hired the math interventionist from within, transitioning a math teacher into the role of the math interventionist. This allowed teachers to have an established relationship, trust, and experience with the math interventionist. Patrick from School A talked about the impact of having a relationship and experience with the math interventionist,

Having the interventionist come from our own department really just helped, I mean there was no transition period, there was no getting to know the person, we knew that they had a strong desire to help kids learn, we knew that they were dedicated to the students and to the math department...And so all of the kind of things that would take time to figure out, in terms of getting to know them, were already taken care of.

And so I think that made a big difference (personal communication, fall 2012).

Veronica from School A also described the importance of having prior experience and a relationship with the math interventionist, specifically her communication with the interventionist, stating,

Because I think again that fact that I know the math interventionist already as a person, as a teacher, and now just being in math intervention doesn't change who the interventionist is and my comfortableness with talking to the interventionist about students and my teaching and what's been going on with a student and stuff (personal communication, fall 2012).

Veronica was then asked how it would have been different if the math interventionist had been someone she didn't know, which she replied, "Unless you're a brand new person I'd have to get to know you first before I could probably be comfortable telling you about what I'm having trouble with a student and problems solving with you about helping the student" (School A, personal communication, fall 2012).

Teachers seemed to associate their trust and comfort with the interventionist with their trust and comfort with the math intervention program. Therefore, if teachers were comfortable with and trusted the math interventionist then they would be more likely to be comfortable with and trust the program. Having this trust and comfort in the math interventionist because of previous experiences influenced teachers in their use of the program, which Rose from School A discussed,

There's a certain degree of like trusting, that this person is going to help the students, and I think there's a certain just trust of this person can do

this, is willing to do this, has a good rapport with the students here (personal communication, fall 2012).

**Experience as a Teacher.** Sometimes teachers just needed experience as a teacher, not specifically with the math intervention program. When asked what caused her increase in comfort with the math intervention program, Amy from School B replied, "...just my experience teaching, one more year of experience" (personal communication, fall 2013). Many of the teachers hired at these schools were new young teachers who had very little experience in the classroom. This made it difficult for them to identify struggling students, predict some of the struggles students might be having, as well as being comfortable with the curriculum and pacing of the courses. Tammy from School A talked about the value of having experience as a teacher and how that impacted her use of the program,

I think it's experience with the intervention program and experience with teaching. I think if I had been teaching for three years, five year, ten years, and then became part of a school where I had the opportunity for intervention I think at that point I would have learned how to do it faster (personal communication, spring 2013).

Often first year teachers become overwhelmed with the workload due to the steep learning curve of all the new curriculum and content. New teachers have to develop lesson plans, assessments, and other classroom resources for the first time. Also, as a first year teacher they often don't know the pacing of the class, when tests and assessments need to be given, and how to organize everything. With experience these often settle down and teachers develop a much more routine method of instruction. Once they reach this point they also tend to have some more time to work on other things, such



as using the math intervention program. Thus, many new teachers struggled to use the math intervention program effectively because of the lack of time and stress they were experiencing. Ulysses from School A was a first year teacher when he was hired, and with time he discussed how things, such as using the math intervention program, became easier, “A better idea on how grades change this semester and how it changes as the different tests...and how it changes as the material changes and as the year goes on” (personal communication, spring 2013).

Once teachers are able to gain enough experience to become comfortable in the classroom, they can then allow themselves to focus on other things, such as the math intervention program, and put them at a higher priority than before. Veronica from School A talked about how her focus changed as she gained experience in the classroom as a teacher, “Just my experience with the math intervention program and then the knowledge of it there and then just my comfortableness in the classroom it is more at the top of my mind when I’m helping my students” (personal communication, fall 2012). Veronica went on to discuss the changing of her priorities as she became more experienced as a teacher,

Prioritizing actually I think, cause I always put that on the back burner and I finally kind of realized that’s not good for students, you need to do what’s good for the student and then do all the other tasks that you need to do (School A, personal communication, spring 2013).

When the math intervention program became a higher priority teachers adapted their use of time in order to use it, which Veronica described, “So it was experience again, finding the time management to fill it out and actually call the home and talk to the kids and stuff” (School A, personal communication, spring 2013).

Even veteran teachers will experience stress similar to new teachers if they are faced with teaching a course that they have never taught before. Amy from School B was teaching a course called Geometry Plus, which she taught for the first time the previous semester, and talked about how it became easier to teach as well as easier for her to focus on the students once she had experience with it,

I feel really comfortable with the curriculum. Last year I was a little iffy about it because I had never taught Geo Plus before, and so now it's my second time through I think in the back of my mind, okay you still have seven test left this semester, that's a lot, so you know I got to get these kids now helped so we don't have two tests left and their grade's not going to change kind of thing (personal communication, fall 2013).

Tammy from School A talked about how her diversity of experience teaching different courses helped her use of the math intervention program, "I would say that it's increased probably just a little bit in just because I've had so many different types of classes now, and need for intervention might look different in different classes" (personal communication, fall 2013). Having so many different experiences allows teachers to have a wider variety of ideas on how to support students when needed.

With increased experience with the curriculum teachers also develop increased organizational skills, which helps in their use of the math intervention program. Angelica from School A discussed what influenced her use of the program, "It's not so much the program really just you have to be organized to be able to tell when it's going to be a good time to assign a student and all the interventions you've already tried" (personal communication, fall 2013).

As teachers gained experience in the classroom they also developed skills at identifying struggling students and developing relationships with them. Amelia from School A talked about her struggles identifying students due to her lack of experience with them,

Like second semester, and even at the beginning of first semester, I just didn't know them as students. But if I recommended students that I had last semester I think it was easier to say if they needed it or not because I kind of knew who they were as students (personal communication, spring 2013).

With time Amelia was able to use her experiences as a teacher to help her identify students sooner, "I think I'm understanding my kids a little bit better this year, and who they are as students, and recognizing students that are struggling and need the help versus struggling because they're not doing anything" (personal communication, fall 2013).

When asked what contributed to her increase in knowledge, Angelica from School C replied, "More experience and just knowing my students better..." (personal communication, spring 2013). Once teachers developed their skills at knowing students and developing relationships with them, they were able to use the program sooner, which Mike from School C talked about,

...probably why I've had real success with the interventionist personally is because I'm pretty well aware of my students when I've reached kind of a point where we need additional help, where it's not for example just that I don't want to stay after and work with them or something like that (personal communication, fall 2012).

At the beginning of each semester teachers got new students, which they often had no prior experience or relationship with. This required teachers' time to develop relationships with their students and gain experience working with them. Oscar from School A described what he did at the beginning of the semester to identify students, "I watch them progress through the first two or three weeks of the semester and try to establish a baseline of like what type of student I have, what their background is" (personal communication, spring 2012). Amy from School B talked about time needed at the beginning of the semester to identify students for the program, "Cause throughout the semester you get to know the students a little bit better, and I was more familiar with like what the math interventionist was doing down there" (personal communication, fall 2011). Jake from School A also discussed needing time to correctly identify struggling students,

If you want to get intervention going right away, which is what you want to have happen, you have to really diagnose the problem accurately, but it's really had to diagnose it accurately at the beginning, without time. Time shows. Time shows which students will participate and not participate, and who will use it and will not, who will be productive by using it and who won't (personal communication, fall 2012).

Some teachers waited until at least one test had been given in order to gain enough experience and knowledge to confidently recommend students to the program, such as Rose from School A who said, "I waited until there was at least one test to try to see what those tests actually looked like and what their understanding of the material was. Try to give them any opportunity to show me what they know" (personal communication, spring 2012).

Even when the math interventionist talked with teachers about incoming students, teachers still needed time and experience working with them in the classroom before they were comfortable recommending them into the math intervention program, which Adam from School A discussed,

I've become more comfortable in it because it was kind of gray at the beginning because the math interventionist described the students, but I haven't had the students just yet, I haven't seen the students in the classroom. And so it was kind of gray, but then the interventionist coming into the classroom, and then me seeing them work maybe two, three weeks actually in the classroom working on the ideas and concepts that we talk about, then hey this student is struggling (personal communication, fall 2013).

Adam went on to talk about how communication often helped, but the actual experience of working with the students was what he needed,

I think you can do all the communicating and everything, and the interventionist is very good at that in keeping the communication on key, but I guess I need to think about what students I should be looking for and actually put a physical person in that, and then once I see that actually in my classroom then I can feel a little more comfortable (School A, personal communication, fall 2013).

Once teachers knew their students well, the use of the program became easier for them. Veronica from School A talked about how knowing her students better allowed her to communicate more effectively with the math interventionist about them, "I've just been more knowledgeable about what my students struggles are, so I've been able to tell

the interventionist more about them so the interventionist can help them better”

(personal communication, spring 2012). Completing the recommendation form was also easier once teachers knew their students, which Karen from School A discussed, “The referral itself doesn’t take that long if you know your students. Which is usually why we wait a while to refer them, cause we don’t know them yet” (personal communication, fall 2011).

In order to get to know their students better most of the teachers talked about having conversations with their students’ previous teachers. But, very few teachers would talk to anyone other than the previous teachers, and the conversations would rarely focus on the math intervention program. When asked if having conversations about the math intervention program would be valuable, Sally from School A replied,

I haven’t really had a conversation like that, but that would definitely be something to take advantage of, because even if the other teacher doesn’t have the student they know a math background enough to you know say hey you know this kid could probably use a recommendation (personal communication, fall 2011).

Confidence in their use of the program was developed as teachers gained experience, which led to increased knowledge. Knowledge and confidence also contributed to some of the teachers helping other teachers in their use of the program as well. Inexperienced teachers were often hesitant to use the program because of their lack of experience and knowledge. Thus, teachers who had used the program could share their experiences and knowledge with others in order to try to increase their confidence and comfort with it. Sally from School A talked about experienced teachers helping inexperienced teachers get over the initial hesitation,

I think some teachers are hesitant to get into it just because of timing or they realize ‘hey, I could try this on my own’, but, continuing because I know it works, and I’ve been a part of it, and I know that it’s something that you should try (personal communication, spring 2012).

Mike from School C discussed having inexperienced teachers asking him for help and recommendations on using the math intervention program, “But we’re better at telling them, here are things to look for...” (personal communication, fall 2012). Teachers started sharing strategies and techniques with each other on how they used the program, such as Veronica from School A who said, “I’d say maybe higher because now I have strategies that I could share with people about how to determine who should be in intervention right away...” (personal communication, spring 2013).

**Implications.** A lack of experience can be toxic to the use of any newly implemented program. Without experience it will be difficult for teachers to gain the knowledge and confidence in order to use the program. Leaders need to motivate and guide teachers to their initial use of the program, giving them experiences in order to begin their use and knowledge. More experienced users can also share their experiences with the inexperienced users in order to help encourage and develop their use of the program. Training at the beginning needs to be focused on the details, facts, and procedural information, providing the foundation needed in order to allow teachers to begin their use of the program and gain experience with it. Through their experiences teachers will further develop their contextual knowledge, comfort, and begin to customize their use to fit their needs. Eventually teachers should build repetition and routine into their use. Early and consistent support needs to be initially provided to teachers, prior to their own experiences, and then can be tapered off as teachers increase

their use and gain more experience. Experience takes time, so programs need to be implemented long enough for teachers to gain sufficient experience and time with it. Even after teachers begin using the program it will take a few years before teachers can develop a routine use of it, customized to their needs. Trust and relationships are also developed through experience and time, which are foundations required before teachers will use a new program. If teachers have prior experience and relationships with people associated with the program before their use of it, then they will be more likely to use the program, and use it sooner.

### **Seeing Results**

Teachers talked about being able to see the results within the classroom as they used the math intervention program. They mentioned how once they could see their students' grades improving, confidence being built up, and attitude changing within the classroom, it motivated them to continue or even increase their use of the program.

**Results in the Classroom.** Confidence was the most popular response when teachers were asked about the results they were seeing in their students from the math intervention program. This confidence was seen within the classroom, causing students to improve their behaviors and work ethic. Vern from School A talked about seeing a change the behavior of one of his students as a result of an increased confidence,

...he has a lot more confidence in the classroom at least, where as before he really wasn't to confident in himself and never really wanted to work completely independently, but now he's kind of taking over some of that on his own, trying to figure some things out (personal communication, fall 2012).



Students had more confidence to share their ideas within the classroom as well, which Becky from School B described,

Well if they know what they're doing, they're not lost anymore, of course they want to show off their stuff to their peers... That boosts their confidence level, yep I know how to do this, so he's putting on his little swagger and be like, oh year I can factor this quadratic (spring 2013).

The increased confidence that teachers, such as Amelia from School A, were seeing in their students who were in math intervention was sometimes even higher than students who were normally successful in math and didn't need extra help,

...even just seeing my kids improve because they've been working with the interventionist... I think every kid that's worked with the interventionist has a lot more confidence than they either started with or if I compare them to their peers too (personal communication, fall 2013).

For most of the students in the math intervention program, having confidence and knowledge in their math skills was something they may never have experienced before. Amelia from School A talked about the confidence that one of her students gained as a result of being in math intervention, "So it kind of changed him I think, working in intervention. I think it gave him confidence that I don't think he ever really had" (personal communication, fall 2013). Amelia also discussed one of her other students in the program who didn't end up passing his math class, but was still able to see results, "It wasn't enough to get him to pass, but, a student like him, he needed that confidence so that he continues to stay motivated" (School A, personal communication, spring 2013). Hearing that they were doing well and receiving positive feedback about their work was something that many of the students in math intervention were not used to. The power of

this positive feedback was something that Amy from School B discussed when she said, “And so that kind of gives them that confidence too. Cause these are kids who have never been good at math, so they don’t hear that a lot” (personal communication, fall 2013).

Students realized the impact of getting support, and as a result started to learn how to be successful in the classroom. Becky from School B describe an experience with a couple of her students in math intervention learning how to be successful,

...last year in Geometry I had several kids that were successful because all of a sudden their confidence rose, and once their confidence in math rises they’re starting to pay more attention, they’re starting to say, oh I focus a little bit here and I get it, and if I don’t get it then I can see the interventionist down here and figure it out (personal communication, spring 2013).

Veronica from School A talked about how students learned the value of asking questions, “I really think they’re more confident, I think they know what needs to happen, they need to ask questions and they need to ask them right away rather than the day before the test” (personal communication, spring 2013).

Even early in their use of the program teachers noticed differences in their students, which Sally from School A discussed when she talked about one of her students that recently started getting help from the math interventionist,

...the interventionist has been working with this student for 2 to 3 weeks, and so far it’s been going pretty well, and he’s kind of making a little turn around in class and working a little bit harder for me (personal communication, fall 2011).

Tammy from School A talked about seeing a difference as soon as the day after students worked with the interventionist,

But then I often notice a big difference like the day after they've worked in intervention, they come back and say 'oh, oh, I can tell you the answer to that one, I learned it yesterday', and it sticks with them, and they feel good about what they're doing even though they still might not get what we did that day (personal communication, fall 2012).

Mike from School C discussed the different ways that he saw the results of the support provided by the math intervention program in his students right away,

...once the student gets in the program it's fairly quick in the sense that after several meetings you can see a change in the students ability, you start seeing gaps filling in and you kind of see a difference in attitude...when they're actually in your class they pay a little more attention, they do a little more work (personal communication, fall 2012).

Instead of feeling like the stupid kids in class and embarrassed, students now felt like they were capable of being successful and that they fit in with their peers in the classroom. Amy from School B talked about how the success that students were experiencing effected them in the classroom,

I think they enjoy feeling success, so when they feel that success one-on-one they take it back to the classroom, and then they feel like confident, they feel like the smart kid in the class because they had that extra time and the extra help (personal communication, spring 2012).

Zane from School B discussed the change he witnessed within the classroom as a result of the math intervention program and the increase in student confidence, saying, "A

couple of them just their confidence to answer questions in class, where the first couple weeks they wouldn't say a word because they didn't feel like they knew what was going on and didn't want to embarrass themselves" (personal communication, fall 2013).

Motivation was seen as being connected to confidence, "The boost in the confidence, which often turns into boost in motivation" (Tammy, School A, personal communication, fall 2012). Rose from School A talked about the connection between confidence and motivation within her students, "I'd say as of recent it's been helpful in changing I think the motivation level and confidence of some of my students in class" (personal communication, spring 2013).

As students gained confidence, and thus motivation, teachers discussed seeing an increase in participation within the classroom. Vern from School A talked about the improvements he was seeing in his classroom from the students that were in the math intervention program,

I have in a majority of the students some significant improvement in the classroom... most of the students that are working with the interventionist right now are doing everything they can in class to do well, and still asking questions too (personal communication, fall 2012).

Ulysses from School A described how student behavior and work in class changed before and after getting math intervention support,

I see them coming, like, you know, they get up the point before they work with the interventionist again and they get a little bit more frustrated, they get a little bit more, I guess frustrated is the word, and then they come back and you can kind of see that they are breathing a sigh of relief

because I know this, and so they are answering questions in class a lot more quickly (personal communication, fall 2012).

Fred from School A discussed seeing similar results in his students,

I've seen a couple of students who've come in after intervention a little more charged up...he comes in that day of class a lot more, hey let's go, I'll answer questions cause I know what I'm doing since I just had that (personal communication, fall 2013).

Students became more open and willing to participate in classroom discussions and activities after receiving help from the math interventionist, which Rose from School A talked about seeing in her students, "Getting that individualized help sometimes helps them to get the confidence to kind of speak up a little bit more, to try the things, and then they're more open in class" (personal communication, fall 2012).

This change in behavior and work ethic that teachers were seeing in the classroom was also extending outside of the classroom, with students attempting and completing more assignments on their own. Tammy from School A talked about receiving more work from her students as a result of the math intervention program, "Kids that didn't use to do their homework maybe go and do it because they feel like they can now" (personal communication, spring 2013).

Students even started helping other students in the classroom as a result of the success they experienced and the confidence they gained through math intervention. Becky from School B discussed seeing her students helping each other, saying, "I've even had kids helping other kids, being like, I got this, this is how the interventionist did it" (personal communication, spring 2013).

Another impact on the classroom environment was that teachers no longer had to spend extended periods of time assisting struggling students. This opened time for teachers to focus on instruction of the material and addressing the needs of the entire class. Zane from School B addressed how he was able to save time because of the increased abilities of the students in math intervention, saying, “They have a little better understanding and so I’m not spending five minutes getting them going, it’s just a quick they can start themselves. That gives them a little bit more success in class as well” (personal communication, fall 2013). Veronica from School A also discussed not having to spend time getting students to begin working,

They’ve always come back in the classroom more focused I think, because they feel like they know the material better so they’re excited to start right away rather than usually there’s a lot of prompting for me to give them.

But, now in the classroom they kind of start on their own (personal communication, spring 2012).

Prior to receiving math intervention support many of the students didn’t show much effort in class due to a lack of understanding and confidence. Fred from School A discussed how after being in math intervention the work ethic of his students changed,

I would say during the class period it could be helpful in that sense at least in that student that day he’s fired up ready to kind of go during class, where if he showed up and looked at the board and probably saw things he didn’t understand he’d probably, who knows what he would do, sit back down and crawl under his shell I guess (personal communication, fall 2013).

But, teachers would see a change in student participation in class once they received help from the math intervention program, making it easier on the teacher and the rest of the students in class to learn. Ulysses from School A talked about how the change in the behavior and work ethic effected everyone in the classroom, not just the students in math intervention, “They feel more comfortable in the classroom. It helps them, it helps their peers, helps me...” (personal communication, spring 2013). Jake from School A felt an impact on the whole classroom environment, saying, “...it helps the classroom environment because the kids are more engaged and more involved and feel more confident. It makes me feel good as a teacher seeing that happen in the classroom” (personal communication, fall 2013). Veronica from School A also described how the effects of the math intervention program could be felt on her whole classroom environment, saying, “I think that actually there’s been an improvement in the classroom because of the students that have been working with the interventionist” (personal communication, spring 2013).

Before working with the math interventionist students would be reluctant to attempt problems on their own for fear of being wrong. But, once they experienced some sense of success and built their confidence students were more willing to try things on their own and even make mistakes, which Rose from School A discussed,

They have confidence, and once they’ve bought into the use of the program they have confidence in what they can do after that. Or they’re more willing to try it, just to look at it and try it even if it goes completely wrong (personal communication, spring 2013).

When asked how he would define success for the math intervention program, Jake from School A replied,

I would say an increase in confidence level of a student in the classroom, and that would be demonstrated just by answering questions, completion of problems we do in class, overall the end all grade is usually the thing that matters the most, but even then I mean if I can see just a really impact on a kid that wants to, that does better, even though they might still struggle, I think that would be a success (personal communication, spring 2012).

Many other teachers, such as Patrick from School A, also defined success as seeing confidence in their students, “I think defining success for the intervention program would entail kids gaining more confidence in their math ability...and obviously passing” (personal communication, fall 2012). Rose from School A said that the best thing about the math intervention program was, “I think it’s confidence that the kids get” (personal communication, fall 2012).

Grades are what most people look at when determining if a program is being successful, but many of the teachers felt that the confidence that students gained and the change in their behavior as a result was a more powerful result,

Cause it’s easy to say that it’s helpful for your grades, but I think that’s the bigger piece is making them confident so that later on they are able to try those things that are maybe a little more difficult cause they have some confidence or basic skills or some other kind of math skills (Rose, School A, personal communication, spring 2013).

Sally from School A talked about how grades often didn’t show the whole picture of how a student improved, “I mean some people always say success, let’s look at grades, but if they improved, that’s great, but sometimes great on a piece of paper doesn’t really show that... I think it’s more than just grades” (personal communication, spring 2012). Tests



are important, but in order to achieve real success you have to work on the skills that contribute to achieving a successful test grade, which Veronica from School A discussed,

I know that tests are usually what we determine success on, but I think there are so many other factors that go into tests, like test anxiety or if they had a good day or bad day, so I don't think I can rely on that, but just their demeanor in class and just how much they are working on the problems, their confidence on working on them (personal communication, fall 2012).

For some of the students they were experiencing for the first time not only confidence in their math skills, but also passing their math classes, "They haven't always passed math class, but now they are passing" (Zane, School B, personal communication, fall 2013).

Increased grades and confidence were often seen as being connected, "...I would attribute increased confidence as success too, but since their grade goes up their confidence goes up, so it goes together" (Ulysses, School A, personal communication, spring 2013). Jake from School A discussed seeing increases in both confidence and grades for his students in the math intervention program, "But some kids it improves their grade, improves confidence, they know it better, get more homework in from some of them" (personal communication, spring 2013). Tammy from School A also saw results in both her students' confidence and grades, "Definitely seeing the boost in kids confidence, but I think seeing a boost in their grades too" (personal communication, fall 2012).

A passing grade alone does not signify depth of understanding and knowledge, which Rose from School A discussed,

I think that probably saying that they passed is not necessarily success, because it doesn't mean that they know what they're doing. But if they

feel more confident and they're able to do more, then I think that's definitely the success in the program (personal communication, fall 2012).

Ella from School C questioned whether a passing grade was enough to ensure that students were going to be successful in the future, "Was that really a success if that student was able to get a 60%? Are they going to be ready for that next class without the support of the interventionist?" (personal communication, fall 2011).

The goal of the grant that provided the funding for the math intervention program was ultimately to increase the graduation rate of the district, specifically focusing on these three schools. Thus, student performance and grades were used as one of the main factors for determining whether the program was being successful. Tammy from School A discussed the importance of looking at student grades, not just focusing on increasing student confidence as a means of assessing success,

I think it is successful most of the time in helping students understand more and therefore do better on assignments and tests. I do think there needs to be a measureable part of the success, besides just they feel better (personal communication, fall 2012).

When Amy from School B was asked how she would define success for the program she replied, "A higher pass rate and a higher graduation rate" (personal communication, spring 2012). Amy went on to say that she felt a direct impact on her passing rates as a result of the math intervention program, "I don't think my pass rate would have been as high without the math interventionist" (School B, personal communication, fall 2013). Jake from School A also talked about seeing increases in student grades, leading to an impact on the graduation rate, "I've seen an increase in scores in student performance. So, get my test grades up, cause increase graduation rate" (personal communication, fall

2012). Grades, passing and graduation rates, are what schools and teachers are judged upon, and thus Patrick from School A said, “Everybody is looking at grades, everybody is looking at passing rates, everybody is looking at graduation rates, so everything is coming back to the whole idea of we need more kids to pass” (personal communication, fall 2012).

Dylan from School B discussed seeing results in his students’ work, even associating the benefits of the program with his students increased performance, “...I am seeing good results when I look at their assessment, so I think it is beneficial” (personal communication, fall 2011). Fred from School A defined success for the program as,

Success would be when a student doesn’t get a concept, or something we’re doing, and you refer them, and then it comes back and you take a test or a retest and they’ve now, not necessarily mastered the concept, but are proficient enough in the concepts to get a passing grade, or even a lot higher (personal communication, spring 2012).

When asked how she would define success for the math intervention program, Angelica from School C replied, “To me it’s just to get them to passing, because they go in not passing and come out passing, that’s success, even if it’s just a 60%” (personal communication, spring 2013).

Even if students didn’t end up passing their math class, teachers could still see the impact of the results of the math intervention program. Mike from School C didn’t feel that the success of the math intervention program was connected to a student’s grade, saying, “I don’t know if I would call a kid that had a 20% that ends up with a 55 a, I guess they failed the course, but I don’t think that means the program itself failed” (personal communication, fall 2012). Teachers talked about the importance of

developing the skills in order to be successful in the long term, filling the gaps so that students can learn and focus on new content more than trying to look back and catch up. Nate from School C talked about how the results of the math intervention program are sometimes long term, "...even if those students aren't successful, perhaps the next time around they'll have those pieces in place to be successful the second time" (personal communication, fall 2012). This impacts future classrooms and teachers that these students will go to, making their future learning hopefully easier and less demanding. Mike from School C also discussed the longer term results when he said, "It's a success if a kid came in with a real low grade and came close to passing, because next time they take that class there's a much better chance of them passing that class than there was before" (personal communication, fall 2012).

Not all teachers indicated seeing wide success from their students in the math intervention program. Ella from School C talked about her first semester using the program and how the majority of her students recommended for the program didn't end up passing,

Seven of them still failed. Two of them dropped because by the time they actually got to work with the interventionist they were so far gone, as far as being behind and ability and skill level, that it was recommended for whatever reason by their administrator that they drop the class. And then we had 2 successes (personal communication, fall 2011).

Mike from School C was not convinced that the math intervention program was creating significant results, stating, "The kids that went, I don't think it changed anybody's lives, but when they went I got a lot of work from them then" (personal communication, fall 2011).

Increased student performance and grades also reflected well on the teacher, influencing them to use the program in order to be viewed more highly as a teacher. Jake from School A talked about how the increased results of his students reflected well on him as a teacher, “Strengths of the program are just getting kids the help they need and, I guess from my position, raises test scores hopefully, and thus reflects highly on me as a teacher” (personal communication, spring 2013).

Not only were teachers impacted by increases in student performance, but the students themselves were also impacted. As students experienced increased performance and grades, this often led them to be more motivated in continuing and maintaining their performance level. Nate from School C discussed how students would be motivated as a result of their work in the math intervention program, “They knew that it helped them pass, and so they wanted to be in it again” (personal communication, spring 2012).

With an increase in confidence and motivation, teachers indicated seeing an increase in the number of students self-advocating for wanting help. Ulysses from School A discussed seeing students who originally would be shy and not ask for help now wanting to get help after they experienced success with the math intervention program, “...there’s been a few students that might be a little hesitant to start, but they’ve really enjoyed the success in the classroom following it. I think that keeps them going back” (personal communication, fall 2012). Sometimes students would be advocating for help, but not specifically talking about the math intervention program, allowing teachers the opportunity to talk with their students about the program and using it,

And I think, and maybe it’s just that relationship-building piece, but some kids have voiced to me, where can I get some extra help to work with, and

then we say oh well this could be an option for you and letting the kids vocalize that (Sally, School A, personal communication, fall 2013).

Teachers were receiving very positive feedback and responses from students when they discussed the program, which Nate from School C talked about, “I’ve never had a student say no I don’t want to do that” (personal communication, spring 2013). Veronica from School A also talked about the positive feedback she received from her students, “No student has ever come back to me saying they didn’t like it” (personal communication, spring 2012).

Students started asking teachers if they could be in the math intervention program, which Nate from School A experienced, saying, “I had some students this fall who specifically asked me, ‘can I go work with the interventionist?’, ‘will you refer me?’” (personal communication, spring 2012). Amy from School B also experienced students asking to work with the interventionist, saying, “...and they want to use the interventionist, they’re like ‘can we go to the math interventionist?’” (personal communication, fall 2013). As Fred from School A continued to use the program he discussed seeing an increase in the number of students asking to be in it,

I would say over the years for sure there’s an increase of students, not that it’s been a huge increase, but I would say going from nobody actually asking me for it to students actually saying, yeah can I get put in that intervention program, either because they’ve had it in the past or because the interventionist has come in and talked with them about it or they know it exists (personal communication, fall 2013).

Ulysses from School A talked about having multiple students approach him, advocating for help, “...three or four of them that came forward to me that were asking for the extra

help” (personal communication, fall 2012). Having students asking for help was often seen as a positive thing, “...this semester I have had a couple kids request to be in intervention. So that’s been a positive thing that students are seeking out the extra help” (Tammy, School A, personal communication, spring 2013). Teachers noticed that the students who were advocating for the help were often the ones who were being successful in the end, which Mike from School C experienced, stating, “Students who are willing to do something, advocate for themselves, they’re being really successful” (personal communication, fall 2012).

Parents would also talk with teachers about getting their student into the math intervention program. Amelia from School A talked about how both her students and parents would talk with her about the program, “A lot of my students, well a couple of my students I should say, have asked to be in interventions. Parents have as well” (personal communication, spring 2013). Fred from School A also discussed experiencing both students and parents advocating for help, but also mentioned how that seemed to motivate him to use the program,

I actually had a few kids this semester, which is actually new to me, express interest that actually did need it, and obviously that gets you going a little bit. I actually had one parent mention it to me, so that helps (personal communication, spring 2013).

Nate from School C also indicated that students advocating for the program was a result that demonstrated the influence and impact of the math intervention program, saying, “...I could just see that that’s a pretty powerful program, a student’s requesting it kind of helped I think” (personal communication, fall 2012).

Students in the math intervention program would talk about it during their class time. This would sometimes cause a ripple effect, influencing other students to think about getting help and advocate for themselves as well. Rose from School A discussed how her students in the program would often talk about it during class,

Because I have a lot of students that are just vocal with, yeah I worked with the interventionist, they don't care, it's not a big deal, I just get extra help. So other kids look to them and say, well it's not a big deal I can ask for the extra help too (personal communication, spring 2013).

Tammy from School A felt that students were seeking help due to the influence of other students talking about it, "I do think that it does sometimes create a wave of it's okay to get help, even if not everybody asks for intervention" (personal communication, fall 2013).

Teachers often felt that if their students were asking for the help then they needed to provide that support for them, referring students because they asked for it, such as Angelica from School C who said, "I want all of my students to be successful so if they've been there before and they ask for it I'm going to continue to use it, if they were there with a previous teacher" (personal communication, spring 2013). Some students would even take the initiative to go find the math interventionist and seek additional help themselves, which Becky from School B mentioned seeing when she said, "I've noticed that they've been hunting the interventionist down" (personal communication, spring 2013). Amy from School B talked about why she felt students were advocating for help and eager to work with the interventionist, "I think they get the help for two reasons, and I think one of them is because I think they like the math interventionist, and the second is I think they liked being successful" (personal communication, fall 2013).



One of the advantages of the math intervention program was that students were able to choose whether they were in it or not. Teachers would identify students and make recommendations, but in the end it was left to the student to make the choice whether they wanted the help or not. Quentin from School A discussed how he felt allowing students to make the choice to be in the program contributed to its success, compared to the middle school level where students were placed in the math intervention program without their consent,

This is much more voluntary, and I think can often be a more positive difference for those students. Cause I remember a lot of struggling students; ‘I don’t want to be here’, and it was very hard to get them to try the stuff... So because they’re willing and want it, then they’re more eager to learn and retain the material and then see the results as a result of it (personal communication, spring 2012).

Allowing students to make the choice also created a degree of accountability for students to work with the interventionist and get help, “So there’s a level of accountability where we’re saying you’ve identified that you need the help, you’ve said that you want the help, so we’re helping you, so let’s really follow through with getting the help” (Patrick, School A, personal communication, fall 2012). By having students make the choice it took some pressure off of the teachers, knowing that the student wanted the help and were willing to use the program.

Once students were in the program they started asking teachers when they would get a chance to work with the math interventionist next, eager to get help again, “...I have had a few students that said at certain times now, they’re asking ‘why haven’t I seen the interventionist?’” (Ulysses, School A, personal communication, fall 2013). Jake from

School A talked about his students who were in the program wanting to continue going back, “You know the kids that have been in intervention, they like it, they want to go back to it” (personal communication, spring 2013). Instead of students viewing math intervention as more time working on something they hate, the results they experienced from it motivated them to continue using it despite their usual dislike for math, which Rose from School A talked about seeing in her students, “...even the students that are involved in it seem eager to work in it instead of it being oh I have to do an extra math day. So they’re a little more eager to participate” (personal communication, spring 2013). Students sometimes sought out additional help beyond just math intervention once they started receiving support from the program, which Tammy from School A discussed seeing from her students, “I’ve noticed that several of them then seek out more help on their own” (personal communication, fall 2012).

Even though teachers were excited that their students were eager to get help and use the math intervention program, they were also concerned that students were becoming dependent upon it. Zane from School C discussed an experience with a student who advocated for help from the math intervention program before they even started learning new material for the semester because she had been in it before, “...I had a girl in off geometry who had used it last year and like on the second day of school asked if she could start working with the interventionist” (personal communication, fall 2012). Zane went on to talk about how his student relied on the program to save her and teach her everything she needed, “...I think she thinks the math interventionist is that quick easy fix to all her math troubles, and then all of a sudden she’ll know every formula there is to know in geometry and like it will just happen” (School C, personal communication, fall 2012). Once students were in the program they expected to be worked with and

continue to be in the program even if they no longer needed it, which Tammy from School A experienced and didn't like, stating, "If they've started in intervention at the beginning of the semester they just count on having it, and so I think in that way it can be kind of negative" (personal communication, spring 2012). Tammy went on to say that she felt that there was a tendency for students to create a dependency on the support they were receiving from the math intervention program (School A, personal communication, spring 2012).

Some teachers discussed students' effort in class decreasing, waiting until they would work with the math interventionist to learn the material instead of paying attention and learning it in the classroom, such as Oscar from School A who said, "But there's always those, there's a few that now think, 'okay, I got it with the math interventionist and now I don't need to do this in here in the classroom'" (personal communication, spring 2012). Fred from School A felt his students were at times relying on the support from the math intervention program, saying, "...and maybe students who have had it, maybe potentially lean on it to much in the sense that, well I'm not figuring it out now so I will go into intervention and get everything ironed out" (personal communication, spring 2013). Teachers sometimes felt that students were relying on the math intervention program to be their classroom, replacing their actual math class, which Tammy from School A discussed, "Because it's almost like two classes where they're learning the same stuff, and if they can learn it in the one that they prefer, then why do anything in the other class" (personal communication, spring 2012).

With time some of the teachers said that they were no longer experiencing the lack of effort in class as a result of getting help from math intervention. Tammy from School A talked about seeing a change in her students,

I know last year I talked about students kind of saying like, they would just learn it in intervention. They didn't have to do stuff in class because they were taking that time. I haven't had that concern this year... (personal communication, fall 2012).

This caused teacher concerns to decrease, and thus they felt more comfortable using the program knowing that students would not be dependent on it and ignore them in class.

Some of the students wanted to be in the program as long as they could, continuing their use throughout the entire semester. Other students were wanted to leave the program once they were caught up and comfortable again. This put teachers in a tough situation when there were students that they knew didn't need to be in the program but were asking to still be in it. Patrick from School A experienced this problem, saying,

I've had one student specifically that did the intervention for a while and then also at a point felt comfortable with their grade and then kind of pulled themselves out of the intervention. Other students have asked to stay in it once their grade improves or they get to the point where they're comfortable, but they still want to stay in it because they feel it's helping them (personal communication, spring 2012).

As students progressed to higher levels of math, and no longer eligible to receive math intervention support, some of the teachers expressed concerns about how they were going to provide support for those students at the level they were used to. Students in Advanced Algebra were asking to still be part of the program, which teachers had to tell students that they were no longer eligible. Tammy from School A experienced this with some of her Advanced Algebra students, saying,

...you have to phase out of the program, and so teaching Advanced Algebra I've had kids come to me and say, 'well I want to do intervention', and I have to say to them you can't, you have to figure something else out now (personal communication, fall 2013).

This put stress on the teacher to try to supplement the support that their students were now no longer receiving due to being ineligible. Teachers might be less likely to use the program knowing that it will be more difficult for them later on when students phase out of it.

In order to help avoid this issue, Mike from School C talked about only providing as much support as was necessary in order for students to be successful but not become dependent upon it,

The goal being to get those kids caught up to the rest of the class so they can leave the program. Not in the sense that they stay in the interventions for the whole semester, so kind of a catch-up program (personal communication, fall 2012).

Lucy from School A also discussed making the decision of whether students should stay in the program or not,

The goal is to keep them in the program until we see positive change, and then at that point we can decide if we want to keep them in the program or transition them out to be back in class (personal communication, spring 2012).

**Results from the Math Intervention Program.** Results were seen not only inside of the classroom, but also outside. Teachers talked about being motivated by the results of the program. Data and results were shared with teachers on a regular basis,

providing them with a complete view of the program and its impact. Some of the concerns discussed by teachers were about money and funding, as well as the long-term effects of the program.

The math interventionists shared results and data with the teachers on a regular basis. Monthly department meetings often contained information about the current status of the program. At the end of each semester data would be shared on the passing rate of the students in the program and how much improvement they showed in their final grades as compared to when they first entered the program. All of this information gave teachers a bigger picture idea of the value and impact of the program. Fred from School A talked about feeling the impact of the whole program once he saw the data,

...the interventionist shared some numbers from last year, and to just see the kids that would have failed, that with some extra support, extra practice, and just maybe as much as anything just someone kind of keeping up tabs with them a little bit has helped a bunch (personal communication, fall 2011).

Fred later said, "I think we really see the what the interventionist does, and how it definitely makes a difference for our group of students here" (School A, personal communication, fall 2013). Jake from School A felt like the program was making an impact not only on the students but also the whole math department, "I think it's a really good program, for our math department, and for kids, I think it's really helpful" (personal communication, fall 2013). Ulysses from School A enjoyed seeing that the whole math department was using the program,

It has been fun to see...I guess I see it as fun...but to see that it's being used more, just in the whole department, and how that's effected how

students are getting help...but that it works not just for my students but others too (personal communication, fall 2013).

Some teachers used the data as a way to reflect on their own personal use of the program, such as Rose from School A who said,

Also the end results of the semester helps too, seeing how kids can progress though it, their use of it throughout the semester. At the end of the semester it kind of helps to reflect to increase the level of comfort I have in using it too (personal communication, spring 2013).

Rose also discussed using the data to help her have better conversations with her students regarding the program,

I think that at the end of the semester the interventionist shows us the information of these kids passed and this is the percentage of at least the following year, so I'm able to articulate that to students cause it helps them to buy in, getting that data out... (School A, personal communication, spring 2013).

Data allowed teachers to justify their use of the program and see the relevancy of the program as a whole,

...all of the data that the interventionist shared with us that the percentages continue to go up, if this percentage was failing now it's only this percentage, and so those are good positive things that we share with the whole team and it kind of makes everything make sense that this is a good thing that we need to keep doing (Sally, School A, personal communication, fall 2013).

Positive results were what Mike from School C said caused teachers to use the program, “I think the success rates really good, which is obviously probably the most important thing for everyone, otherwise people wouldn’t use it” (personal communication, fall 2012).

Amy from School B talked about wanting to share the positive results not only with the math department, but also the entire school staff,

At the end of the year we had like a school meeting, and we talked about successes in our school that year, and I mentioned to our department chair, you should talk about like the fact that we got some of these kids to pass who have never passed Algebra before. So, that was like a success I thought (personal communication, fall 2011).

Patrick from School A discussed using the information and data gathered from the math interventionist and sharing it with people outside of the school as well,

The data helps with that, and then explaining how we do things and then also justifying the fact that intervention has been successful, or showing that intervention has been successful for a lot of the students. So that has been helpful to kind of have numbers to go with the program or go with the data and explain to others (personal communication, fall 2012).

Sharing positive results with the whole school, as well as the public, helps provide wide spread support for the program in order to ensure its continued success and use, which Lucy from School A discussed the effects of sharing the data when she said, “I feel like more teachers are accepting this program, and understanding the benefits of it” (personal communication, spring 2012).



Even before data was shared with teachers, many of them felt that there were going to be positive results in the end, which Amelia from School A discussed when she said, “Where I see the intervention program as being successful, even without the data” (personal communication, fall 2013). After only one semester, Dylan from School B talked about being able to see positive results, “I mean, it is making an impact, it is helping” (personal communication, fall 2011). Lucy from School A was still in her initial use of the program but was already confident that there were going to be positive results, saying, “This being my first full year of really using it, I’m waiting to see those results occurring. But I know that they will happen” (personal communication, fall 2011). Chad from School C was also confident that there would be positive results from the math intervention program even before he ever saw any data, stating, “I haven’t used it much, but I’m impressed by the math interventionist, and it seems to work, I don’t have any data that it works but it seems like it’s effective, that’s my guess” (personal communication, fall 2011).

Positive results were often seen by and shared with math teachers. When teachers knew that the math intervention program was being successful and having a positive impact, then they were more likely to be motivated to use it due to an increased confidence. Angelica from School C discussed how experiencing the positive results of the program influenced her use of it, “But the more I use it, and the more benefits that I start to see from it, the more I’m going to use it” (personal communication, fall 2013). Tammy from School A also felt that seeing positive results motivated her to continue using the program, saying, “Seeing the positive results makes me feel like I’ll keep having positive results... the more that I refer the more will be successful” (personal communication, spring 2013). Nate from School C described how seeing the results after

the first semester of using the program impacted his use, “After that first semester, seeing that student and how they did and how they improved, made me realize that it was an asset and that I needed to be utilizing it a little bit more” (personal communication, spring 2012). Lucy from School A was also impacted after her first semester of use, saying, “First semester, seeing the two students I referred, and just seeing their growth, not only in their class work, but just in their own comfort level and confidence, shows me that it is positive and that it’s working” (personal communication, spring 2012).

Becky from School B talked about the impact of positive results, “Well, if you have good numbers you always feel good, right” (personal communication, spring 2013). Teachers indicated that seeing the improvements in their students’ motivated them to use the program, which Ulysses from School A felt, stating, “I mean it’s a motivator because it shows improvement” (personal communication, fall 2013). Mike from School C felt similar, saying, “Then the other thing that’s helped that is there’s been success, I think is probably been the biggest thing that’s helped” (personal communication, spring 2012). Adam from School A liked seeing the positive results, “I’ve really been fascinated and really enjoyed the benefits so far from the program, as a classroom teacher and working with the math interventionist” (personal communication, fall 2013).

After seeing the results, and once teachers were motivated to use the program, having the confidence they needed, teachers were also more likely to share those feelings with others, influencing them to use the program. Sally from School A talked about how she could influence others, “But since I know that it works, I know what it’s all about and the process works, I’m much more apt to tell teachers ‘hey, here’s what you should try, and let’s try it early’” (personal communication, spring 2012). Teachers were more comfortable advocating for the math intervention program knowing that it was working

and producing positive results. Amy from School B talked about how this increase in comfort due to experiencing positive results in her students influenced her ability to talk with others in the school about the program,

I think I'm more proactive with approaching them (administration, counselors, etc...), just because I'm more comfortable around them, and I've seen it work and I've seen it be successful and so I feel like they trust me when I place students in there (personal communication, fall 2013).

Personally experiencing the results of the program first hand was important for teachers in order for them to also feel the impact of the program first hand, building their confidence in the program. If teachers never saw or experienced the results, then there would be no motivation to continue or increase their use. Fred from School A talked about his motivation to use the math intervention program compared to other programs and supports, "Maybe I can see the benefits of it better would be why I would say it's been better that way versus some other NeSA prep stuff" (personal communication, spring 2013). Veronica from School A discussed how experiencing the results in her students influenced her confidence in the program, "Positive experiences with it, and seeing that there is growth in my students and so I really believe in it" (personal communication, fall 2012). Veronica went on to say,

Confidence in the program to be honest. Before it was really questionable, like, really how are they going to react to it, is it really going to help? And then after having lots of successes and actually seeing that students really do enjoy it and they don't think that it's a negative thing, I've shown more confidence in the program and know it really does work (School A, personal communication, spring 2013).

Some of the teachers also discussed having parents approach and tell them how much of an impact the program had on their children. Amy from School B talked about parents approaching her during parent-teacher conferences, “I’ve never had more parents too, like at parent teacher conferences say ‘they love going to math this year’, and so I’m like that’s great because they’re getting the support from the interventionist” (personal communication, fall 2013). This positive feedback towards the teachers about the program served as a motivator to continue their use of it.

Sharing the data could help teachers who had not used the program due to lack of confidence or doubt, which Sally from School A talked about,

...I think the more you know it can’t hurt, and just for people that don’t use it that much it’s still in the back of their mind, like hey I can use this and look at these numbers and look how much we are improving (personal communication, fall 2013).

Students were also motivated by the positive results they were experiencing. Sally from School A talked about receiving positive feedback from her students who were in the math intervention program, “All the kids that I have in it are all very positive about it and they enjoy coming and getting some more practice when they hopefully remember to come” (personal communication, fall 2013). Amelia from School A discussed how some of the students were sharing their positive experiences with others, not only motivating the teacher to continue using the program but also motivating other students to use it as well,

But I think word of mouth I’m assuming has gotten around, and it’s helpful, and students have done well, cause I’ve seen a lot more positive attitudes about it second semester, and I’m assuming it’s because students

did well and words going around that it is helpful and it's not like middle school (personal communication, spring 2013).

Attitudes changed once students experienced the positive results, allowing themselves to feel like they could be successful,

I just think that an overall, maybe kids change their attitude a little bit about math. Kind of like change their mind set, 'oh I can do this, I can do it'. Before, a lot of kids, 'Arg, it's just math, I can't do it' (Amelia, School A, personal communication, fall 2013).

Students still may not love math, but after experiencing positive results from the math intervention program they now knew they were capable of being successful, which Tammy from School A talked about, "I don't know if it makes them any more excited about math, but it makes them more excited about being successful" (personal communication, spring 2013).

Experiencing positive results motivated teachers to use the program, but also caused teachers to have some concerns. Teachers expressed concerns about whether the program would continue to be funded beyond the term of the grant. Also, teachers showed concerns about whether the math intervention program was showing long-term results with the students who had been in it.

Now that teachers were becoming more comfortable and confident with the program after experiencing positive results, the fear of losing that support and those results became evident. The math intervention program was funded through a five-year grant that the district received. After those five years nobody knew what would happen to the program. Many time programs get cut due to a lack of results, but now that the

program was producing positive results would it be supported and funded by the district so that it could continue?

Becky from School B talked about she felt that the positive results justified the money spent on the program,

My guess is they are putting a lot of money into that teacher down there, so if it's not doing any good you might as well get rid of the interventionist...But, the interventionist has been doing awesome, so we're seeing success in these kids, so obviously the money is being well spent (personal communication, spring 2013).

Becky went on to express her fear about the program being cut in the future due to lack of funding, "And I'm hoping the money stays in there so that we can keep it. It's a little scary when the grant's starting to run out" (School B, personal communication, spring 2013).

Veteran teachers had experienced many programs coming and going within their schools. This caused teachers to be fearful of using programs and of the district providing the support needed to maintain them. Fred from School A talked about his experience with programs in the past,

I'm not necessarily up for all these different wild programs, maybe call me old school more, even though it's only been 12 years. It's something that's working I would say. It definitely has been worth the interventionist's position there at School A (personal communication, fall 2011).

Even though Fred was leery of new programs, once he was able to experience the results of the math intervention program he was supportive of it. Fred went on to say, "There's

plenty of programs out there that I'm maybe not a fan of, or seeing why the money goes there, but this isn't one of them" (School A, personal communication, fall 2011).

A few teachers expressed confidence that the positive results the math intervention program was producing would be enough to convince the district to fund the program after the grant was over. Sally from School A talked about her confidence that the district would support the program,

...but I feel like the interventionist has set up such a great foundation so far with it, that after five years and for some reason we don't have grant money, then I feel like this would be a really strong program that they would supply the funds that we needed to continue the program (personal communication, fall 2011).

Jake from School A felt that the results being produced might be enough for the district to support the program long-term, "I feel like it has a chance of being around. I think it's making a difference" (personal communication, spring 2013). Patrick from School A also expressed a hope for the district to continue the program after the grant funding runs out, "...it's a very valuable program and it's been very successful and helpful for helping students, and so I hope it continues after the grant is gone" (personal communication, fall 2012).

Just because teachers felt like the program should be maintained and funded, they also knew that in the end it would not be their decision. Often higher-level educational leaders make the decisions on whether or not to fund a program and continue supporting it. Those people also are rarely involved with the program directly, causing them to make decisions based on numerical and measureable data that is collected and shared with them. This was a fear that Jake from School A expressed when he said, "But other

people might not who are not involved, who aren't teachers, who aren't involved with the program and just see numbers. If their numbers aren't meeting their standards and they don't feel like that's worth while" (personal communication, spring 2013).

Many teachers experienced positive results, but those results were experienced in the immediate and short-term. Teachers rarely had students beyond one semester, thus limiting their ability to witness any long-term effects of the program. Were students retaining the knowledge and confidence that they had built while in the math intervention program, or did they eventually fade, leaving students back where they started? This was a question that Sally from School A expressed, saying, "...where have the students gone after they got out of the program, or if they're still with it how are their grades progressing over time" (personal communication, spring 2012).

Some teachers felt that the math intervention was producing long-term success for the students, such as Amelia from School A who said, "But I've noticed that with the kids that did interventions and maybe even graduated out of it are still performing well" (personal communication, spring 2013). Amy from School B was able to keep the same students for multiple years, allowing her to see the longer term effects of the program, saying, "I think it's long term, cause I had the same kids for two years, I had them in block and then I had them in Geo Plus, and now that I see them now they're still plugging away" (personal communication, fall 2013). Nate from School C talked about seeing the results of the math intervention throughout the entire semester,

I've had a lot of students who have really come back from those one-on-one teaching times and not just did well on a test one time but really remember and retain that information and know it. It's not just a quick fix (personal communication, spring 2013).



Other teachers feared that the results of the math intervention program would fade away, thus requiring students to continually be supported in order to maintain their confidence and performance levels. Amelia from School A talked about one of her students who had been in the program before but seemed to be fading back to his original confusion and work ethic after being out of it for a while, “I think he grew dependent on it last year, because he’s not as confident to do his homework on his own” (personal communication, fall 2013). Sometimes the results that were experienced in the short-term were misperceived, resulting in problems in the long-term, which Oscar from School A discussed, “...their confidence level goes up, which is fantastic, however, sometimes their confidence level is up and they still don’t understand the concept, and yet they think they do, which in turn ends up leading to more frustration later on” (personal communication, spring 2012).

Results from the math intervention program were not the same for all students who used it. For some it resulted in significant improvements and changes, while for others it didn’t change anything. Zane from School B discussed how he felt that for some students the program could produce long-term results, while not for others not,

Those kids that are legitimately using it and seeing the interventionist on a regular basis it’s going to have that long-term effect. For some of those kids that are just getting that quick study session I don’t know how much that’s going to carry over for them (personal communication, fall 2013).

**Implications.** Results are sometimes in the eyes of the beholder. Some people might view increased confidence and participation in class as the most important result of the math intervention program. Others will focus solely on the students’ final grades, passing rates, and graduation rates to determine whether the program has been successful.

Educational leaders need to make sure that they can see the value and worth in both the measurable, as well as the un-measurable, results. Success in the eyes of the public and other outsiders will always rest on the measurable results such as passing rates and grades, but the educational leaders need to make sure that the stories and experiences that are not able to be measured are also being told and shared with the public. Leaders need to create a shared vision of what success looks like for the program. Use positive results as a motivator for experienced users to continue and even increase their use of the program, but also to motivate the inexperienced users to begin their use, possibly for the first time. Programs need to be allowed sufficient time in order to determine not only the short-term but also the long-term effects. Teachers need to feel that if the program is successful and producing positive results that it will be supported by the educational leaders with funding so that it can continue. In the end, success may only be measured one student at a time, "...and even if you can save like one student in your class with it I think that's a success" (Amy, School B, personal communication, spring 2012).

### **Motivators**

Teachers were asked what their motivators were for using the math intervention program, or continuing their use, referring students, and deciding which students to refer to the program. Factors before using the program that influenced teachers were the students themselves, low grades, not enough time, other people, and the fact that there was another resource available to them. After using the program teachers were motivated by the results they were seeing, the participation in class, increased confidence and grades, as well as the bad referrals they had made in the past.

**Motivators Before Using the Math Intervention Program.** Before teachers initially used the math intervention program there were certain factors that influenced

them to use it. Teachers often didn't have enough time in the classroom to provide the support their students needed. Students who were failing motivated teachers to find ways to support them. Other people would influence teachers' use of the program by making suggestions to them. Many of the teachers just wanted to do what was best for the students in order to allow them to be successful.

The students themselves were often the motivation for many of the teachers to use the math intervention program, "I'm definitely motivated by the students themselves" (George, School A, personal communication, fall 2011). Fred from School A talked about how most teachers just wanted their students to be successful, "But I think the motivation probably for most people is that their students do well..." (personal communication, fall 2013). This was the same feeling that Jake from School A had when he said, "I want to see my students do well, and I want to see them pass" (personal communication, spring 2012).

If students were working hard in class and trying everything they could to be successful, but were still falling short, then teachers indicated that they were motivated to find a way to provide support for those students to be successful. When asked what motivated him to use the program, Patrick from School A replied, "What motivates me most is trying to identify the students that are trying to be successful, are working but just have hit a road block or a stumbling block in their learning and just need that additional help" (personal communication, spring 2012). Fred from School A had a similar motivation, saying, "I suppose what motivates me the most is to see a kid who's putting forth effort in class at least and is maybe not getting the desired results" (personal communication, fall 2011). Angelica from School C was also motivated by students who

were trying but still not succeeding, stating, "...when you see a kid that really wants to do well and they really are just struggling" (personal communication, fall 2012).

Teachers wanted to help the students that would often not receive it otherwise, "...reaching the students that might fly under the radar otherwise" (Ulysses, School A, personal communication, spring 2013). Students that were falling behind might never recover their grade, therefore teachers knew they had to do something to support them, which Tammy from School A discussed, "I guess feeling like someone's going to get behind really quickly, or seeing that they are already really behind" (personal communication, spring 2012). Students were not motivated to work in class due to the struggles they were experiencing, "Usually students that I see who just are struggling. They're not motivated in class" (Lucy, School A, personal communication, fall 2011).

Sometimes teachers realized that certain students needed specific help with certain needs or skills. Ulysses from School A talked about wanting to help his students become more self-sufficient (personal communication, spring 2013). Karen from School A indicated that she was motivated by looking at the specific needs of each student (personal communication, fall 2011).

Within the classroom teachers often didn't have the time needed in order to address all of the needs of their students. This was something that Ulysses from School A experienced, saying, "...really wanting to help a student in class but not having the time to or had other people asking questions" (personal communication, fall 2012). Often teachers would try to support their students in the classroom as much as possible, but would run out of time and options, such as Amelia from School A who said, "...I was motivated by just the fact that she couldn't get it even working with her in class" (personal communication, spring 2013). Rose from School A had a similar motivation,

saying, “I think that what motivates those decisions is the students who are still struggling regardless of other things I’ve tried to put in place myself” (personal communication, spring 2012).

Teachers would try to arrange times to work with students, but many times students would not be able to come due to conflicts or would simply forget. When asked what motivated her, Sally from School A replied,

I think it’s kids that have a really poor grade but are working really hard in class, and they’ve made a couple attempts to come in after school and maybe after that rides don’t work out or maybe they have some other after school activity and I know that they would completely be willing to work with the interventionist (personal communication, fall 2011).

Time was especially an issue for classes that had higher needs, with larger numbers of students who struggle in math and have struggled in the past. Amy from School B talked about how her use of the program increased due to the fact that she was teaching a class that had higher numbers of students that struggled, “I think that I use it more now. Part of the reason is because I teach Geometry Plus kids now and that’s the main class that I use it with” (personal communication, fall 2013).

Often the students that required the majority of the teachers’ time in class were also the students who had the lower grades. When students were failing, or close to, teachers would talk about being motivated to find ways to support their students and raise their grades back up. When asked what motivated him to use the math intervention program, Ulysses from School A replied, “But I guess their overall grade then, the ones that are closer, like the ones that are really close to passing that just need that little bit of

extra help” (personal communication, fall 2012). Fred from School A felt pressure from the fact that many of his students needed to pass the class in order to graduate, saying,

But I think I also feel the pressure of, hey I realize this student’s failing and needs this class to graduate, but at the same point I kind of feel the pressure of well, I guess we better find a way to try to get him passing almost (personal communication, spring 2012).

Even though Fred realized there were many advantages of using the program, in the end the students’ grades were the real motivator,

...it motivates me that here’s something they can do during school, it’s more of a one-on-one, it’s from a different teacher, a different perspective, has maybe different problems, a different way of teaching it, with just the goal of getting those kids to pass, or getting them above passing (personal communication, fall 2012).

Angelica from School C was also overall motivated by the chance to increase the grades of her students, stating, “I just want all my students to pass. So whatever we can do, then I want to do it, and that’s really it. I mean the end goal is that our students pass” (personal communication, fall 2013). All of the classes that were eligible for math intervention were classes that were required for graduation, and thus teachers were motivated by the fact that students needed to pass in order to graduate, which Amy from School B discussed, “...also the graduation requirements are also more motivating” (personal communication, fall 2013). Passing the class served as a strong motivator for many of the teachers to use the program, “I mean that influences me, that they pass” (Amelia, School A, personal communication, fall 2013).

Teachers are held accountable for the grades of their students, and thus if their students can increase their grades through the use of the math intervention program then it will also reflect well on them as the teacher. When asked what motivated him to use the program, Jake from School A replied, “My motivator would probably be my grades, how it reflects on me” (personal communication, fall 2012). Fred from School A realized that as a teacher he would look better if he used the program,

But again maybe some external motivation in the sense of you don't want high numbers of failures staring at you. You want to be able to, if someone comes and says how come he is failing, what have you tried, that you have at times an answer for them (personal communication, fall 2013).

There was a sense of assurance that even if students struggled, and possibly didn't pass, teachers had tried to use all available resources, including math intervention, in order to help their students be successful.

After receiving initial training and information, some of the teachers were motivated to use the math intervention program by their belief in it, such as Sally from School A who said her motivation was simply, “Because it's a great program” (personal communication, spring 2012). Other teachers were motivated by the fact that there was another resource available to them to support their students, such as Zane from School B who said, “My students needed help and it was something that was available to them” (personal communication, fall 2013). Bob from School C talked about students who missed class and needed to get caught up as being his motivation to use the program, “It was pretty much if they've been gone and they need some help” (personal communication, fall 2011). Patrick from School A was motivated by the fact that he

could provide support for his struggling students, “Just the opportunity for those students to receive extra help” (personal communication, fall 2012). Nate from School C felt motivated to use the program because he knew it was easy to use, “Just the ease of being able to refer somebody to the interventionist” (personal communication, fall 2012).

During training teachers were given set criteria for when to use the program and what types of students should be in it. Chad from School C talked about being motivated to use the program by the fact that students met the given criteria, “What would motivate me to I guess would just be if they meet the criteria...The criteria is the criteria” (personal communication, fall 2011). For some teachers this made using the program easier because their decisions were not ambiguous, but instead based on solid evidence and criteria.

Other people, such as administrators, counselors, or parents would also contact teachers and request, or suggest, recommendations for certain students to the math intervention program. For some teachers this served as a motivator, keeping them reminded about it. Fred from School A talked about how when others talked to him about certain students struggling it served as a reminder that the program was there for him, “...maybe a little bit of pressure from the outside maybe makes me get on it more, meaning oh yeah Billy is failing and I haven’t really thought about intervention for them...” (personal communication, spring 2013). Knowing that others agreed certain students needed the extra support served as a reassurance and motivator for teachers, which Fred from School A discussed, “What else has influenced me to use it is just wanting them to do well, and administrators, counselors, people, parents even wanting it” (personal communication, spring 2012).



When teachers were able to witness other teachers using the program it motivated them to use it as well. Oscar from School A described how he was motivated by seeing others using the program, “Just seeing everybody using it, almost everybody anyway, makes you feel even more comfortable about using it” (personal communication, spring 2012). Often teachers simply got so busy that they forgot about the program, and thus seeing other teachers using it reminded them that it was there, such as Tammy from School A who said,

When I saw that other teachers had referred kids in the first couple weeks and I hadn't, I was like oh, okay I should be. Cause sometimes at the beginning of the year sometimes it gets pushed to the back of my mind... (personal communication, fall 2013).

The math interventionist would talk to teachers during meetings and in casual daily conversations about the program, serving as a reminder and motivator for some of the teachers. Oscar from School A talked about how the communication from the math interventionist motivated his use, “Of course when the math interventionist is already like seeking out and doing more to try to get more involvement in the math intervention, it makes it easier too” (personal communication, spring 2012). Nate from School C was also motivated by the reminders from the math interventionist, saying, “Like I can remember the math interventionist talking about the intervention program and saying, ‘hey, if you have students keep me in mind.’ And that was some of the initiative that I had to get students into the interventionist” (personal communication, spring 2012). When asked what motivated her to use the program, Sally from School A replied, “The math interventionist telling us all the time to use it” (personal communication, spring 2012).

Some of the teachers felt that other people's suggestions were intrusive, and felt obligated to then recommend the student. Amelia from School A talked about a parent who wanted their student in the program, but she didn't necessarily agree, "...that motivation came from the parent getting her in, even though I didn't think she quite needed it, but she kind of needed some extra help, but she could have done it after school with me" (personal communication, spring 2013). Tammy from School A felt like she was required to use the program at first, saying, "...administrative pressure to, phone calls and what not, and so I started doing it just because I was told to, but it worked" (personal communication, fall 2013).

**Motivators After Using the Math Intervention Program.** After teachers used the math intervention program they discussed being motivated through their use. Experiencing the results of the program and seeing their students' grades, confidence, and participation in class all go up helped motivate teachers to continue using the program.

After the first test teachers started to feel more motivated, such as Amelia from School A who said, "...a lot of my motivation has been grades after the first assessment. Like if a student is not doing well, and it's because they're trying, it's like their failing grade that's motivating me at first" (personal communication, spring 2013). Teachers felt pressure to help their students increase their grades, and thus motivated to use the math intervention program.

Often once students were in math intervention their grades would increase. Increases in student performance, specifically in student grades, was something that many teachers discussed as being a motivator in continuing their use of the math intervention program, as well as possibly increasing their use. Ulysses from School A discussed that he was motivated by seeing student test scores improve, helping many of

his students with their test anxiety (personal communication, fall 2012). Jake from School A saw increases in this student grades as well, which he also connected to increasing the graduation rate, saying, “I’ve seen an increase in scores in student performance. So, get my test grades up, cause increase graduation rate” (personal communication, fall 2012). Nate from School C said his biggest motivator was seeing increased grades for his students in the program, “I think the success, I’ve had a lot of success in students, if they were referred, having their grades come up. So I think that’s the biggest thing” (personal communication, fall 2012).

As a result of increased grades, students also increased their confidence and attitude. When asked about his motivators, Ulysses from School A said, “The success I see in the students...the confidence I see with them too...the positive attitudes that the students have about it” (personal communication, spring 2013, fall 2013). Sally from School A discussed the changes she saw in the students and how that motivated her,

I just think again I really have seen the kids’ confidence levels increase, and just the kids that I have in it and some of the kids that I have seen in here working and every time I walk by they look like they’re getting something out of it and they want to learn (personal communication, fall 2013).

Students came back to class with a greater sense of confidence, which Tammy from School A discussed when she said, “Some of them like to come in and tell me, ‘hey I learned this’, ‘hey I did this today’” (personal communication, spring 2013). Rose from School A talked being motivated as a teacher after seeing her students come back from math intervention with increased focus and confidence,

...to see that confidence that is built up in those students that are generally quiet or have other things going on is really, it just motivates me to keep using it and to keep passing on that this is helpful to you (personal communication, spring 2013).

Angelica from School C was able to see success in her students and changes in their mentalities, stating, “Seeing students successes, and students that ask to go realize, hey I can get some help here” (personal communication, spring 2013). These positive responses from students about the math intervention program served as motivators for teachers to continue using the program, knowing that their students enjoyed it and were having a positive impact.

Students would also come to class more willing to participate and focus on the lesson. Becky from School B discussed what she saw in her students after they went to math intervention, “...when they get back to the classroom they’re more willing to work” (personal communication, spring 2013). Fred from School A talked the changes in his students’ performance and participation serving as a motivator for him,

When you see that the student, a) either comes with more homework done or is, b) getting a little bit better test grades, is a little more confident in themselves and the work that they do, and seeing that it makes them a little bit happier is also a motivation I would say (personal communication, fall 2012).

Sometimes just experiencing the results of the math intervention program motivated teachers to continue, or increase, their use of the program. When asked what motivated him to use the program, Fred from School A replied, “...the achievement level of some of the students” (personal communication, fall 2013). Tammy from School A

responded to the same question, saying, “The difference it’s made for my kids” (personal communication, fall 2012). Mike from School C answered, “Just the success we have seen from it” (personal communication, fall 2012).

When asked if the data shared at math department meetings served as a motivator, Ulysses from School A said, “It’s a motivator to keep using it if I think it’s useful... The success that it shows” (personal communication, fall 2013). Amelia from School A also talked about seeing the data when she said, “...I know it’s benefits, and I’ve seen the data the interventionist shown...” (personal communication, fall 2013). The motivation caused due to seeing the data was talked about by Sally from School A,

...all of the data that the interventionist shared with us that the percentages continue to go up, if this percentage was failing now it’s only this percentage, and so those are good positive things that we share with the whole team and it kind of makes everything make sense that this is a good thing that we need to keep doing (personal communication, fall 2013).

First hand experience with the program also motivated teachers. Amy from School B talked about being able to experience the program and how that influenced her use of the program, “I’ve seen it work and I hear the things that the interventionist does down there and it just makes me want to keep using it” (personal communication, fall 2013). When talking about what motivated him to use the program, Fred from School A simply said, “I see it work” (personal communication, spring 2012).

Once teachers knew the program was effective for some of their students, they became more comfortable with the program and motivated to refer even more students, increasing their use. Rose from School A talked about how she was motivated to increase her use of the program, “So I know that if it can benefit a few, it’s definitely

worth it if other students want to try it as well to allow them to try it and see if it will work for them also” (personal communication, fall 2012).

One of the teachers, Amelia from School A, even talked about how unsuccessfully using the program also motivated her. She described a student who she referred to the program but was not successful, saying, “I’m disappointed that I selected him because I feel it wasted your time” (Amelia, School A, personal communication, fall 2013). This could have caused her to lose motivation, thinking that she made a mistake and fearful of making the same mistake. But, it could also serve as a motivator, challenging her to not make the same mistake and learn from her experience.

**Implications.** Educational leaders need to find ways to motivate teachers to use the programs available to them. Teachers can be motivated before using the program through initial training and knowledge, knowing that the program is designed to help them and make their jobs easier. If teachers feel a direct need for the program, such as struggling students, then they will also be motivated to use it. Providing consistent reminders through information and communication so that teachers do not forget about it will serve as a motivator. Reminders could also come by seeing other teachers using the program, serving as a motivator for teachers to use it as well. Sometimes just setting clear requirements and standards that teachers must follow will also motivate teachers to use the program. Once teachers experience the program they will be motivated to continue their use if they are able to see the positive results. If the changes in student performance and attitude positively affect the classroom then teachers will be more motivated. Even mistakes can be sources of motivation, learning from them and trying to eliminate future mistakes from occurring.

## Changes

Aspects of the math intervention program changed in order to make it easier and more effective for teacher use. Even though teachers were experiencing positive results and expressed they were happy with the program, there were still some things that they discussed they would also want to change about it. Teachers talked about expanding the program, allowing students in higher-level math classes to use it, or using it for other subjects. Two interventionists in the same building was something that teachers mentioned might be needed. Modifying the criteria for the program was another topic that teachers brought up. But, there were also teachers who indicated that they didn't feel anything needed to be changed with the program. Some mentioned that they were fearful about possible changes and the future of the program.

**Changing the Math Intervention Program.** After using the math intervention program teachers started figuring out ways that they wanted to change or modify the criteria for it. When asked what he would want to change about the program, Fred from School A replied, "You know, the only thing, and I don't know if I've ever thought about changing it, is who it's available for would be maybe something that we would discuss or look at more" (personal communication, spring 2012). Fred went on to say, "...when a student's failing, almost like they were almost required to be in intervention or something like that" (School A, personal communication, fall 2012). The idea was that if students were required to be in the program once they were failing, and automatically placed in the program, then it would make the teacher's job having to identify and refer students much easier. Fred later discussed the issues with requiring students who are failing to be in the program,

And in a perfect world, if we had ten interventionists, and we could say that every kid with an F we are going to put into an intervention class, they are going to have to work their way out of it, but then that becomes like a punishment, and I like where it is right now where it's not viewed as man I'm failing I'm going to get put in intervention. It's viewed as, we have students that are passing that are still in intervention, we have obviously students who are failing that are in intervention but are doing it for the right reasons (School A, personal communication, fall 2013).

Thus, there's a fine line between making it easier for teachers and supporting all students who are struggling, versus using teacher judgment to recommend only the students that are going to work hard and be successful. Karen from School A talked about how her mentality shifted from all failing students should be in the program to a more individualized approach,

Initially I think the thought was if they're failing they should be on intervention. And that's probably more of the school and administration piece. But, I think we've fine-tuned it a little bit. That it's more of the students that are struggling but still have a chance to pass, and it's not just automatically if they're failing they need it, or if they have a D they need it. There's more issues there, it's more cognitively how are they learning (personal communication, fall 2011).

Other teachers, such as Jake from School A, also talked about changing the criteria so that it was stricter on which students should be in the math intervention program,



...maybe more of a detailed description of the kind of kids who should be in there, and just really trying to, I mean but it's so tough, especially when emotions get involved, in terms of like wanting kids to do well, regardless of whether they're willing to put forth the effort or not (personal communication, spring 2012).

The emotions of the teacher, wanting all students to be successful, caused conflict when students who are struggling were not trying in the classroom or showing that they cared. Therefore, providing clearer standards that take out the emotional aspect, teachers can use the program in a more regimented way.

Some of the teachers discussed wanting to increase the standards for recommending students to the math intervention program, requiring students to do more in order to qualify. Fred from School A discussed having to require that students were working in the classroom before they could work with the math interventionist, saying, "...still a concern that there should be some sort of accountability in the classroom before they can enter intervention" (personal communication, spring 2013). Jake from School A also talked about wanting an accountability component to the program, "I just wish there was some more accountability tied into it for students. More accountability in terms of they have to do this much practice, they have to meet these goals in order to still be in it" (personal communication, fall 2013). Since student effort would sometimes decrease after being in math intervention, relying on the math interventionist to teach them all the content instead of learning it in class, teachers wanted a way to hold those students accountable for still working in the classroom in order to continue receiving support from the program. Tammy from School A described how she would change the criteria,

It might be kind of cool if students had to do something like, so they get on day with intervention each week, okay they have to go see their teacher another day during that week. Or, they have to turn in 50% of the assignments for that week... (personal communication, fall 2013).

Teachers were sometimes using the math intervention program to try to remedy non-math related issues, such as missing class and choosing not to work. Fred from School A felt that there needed to be another intervention program set up in order to deal with the non-math related issues, "...we need a different intervention for your attendance and your behavior in class" (personal communication, spring 2013).

The referral process was something that teachers initially discussed took lots of time and wanted to change. School C required multiple levels of support to be attempted before a teacher could recommend a student for math intervention. Because of these requirements teachers felt frustrated that they could not get a student into the program right away, having to wait to try the other supports first. Angelica from School C talked about her frustrations with the referral process,

It's a very lengthy process to get a student referred if you think it would be beneficial for them. It would be an ideal world if I could send in a referral today and that kid could be pulled tomorrow, but it's just not realistic (personal communication, spring 2013).

By the time the students were able to get into the program it was sometimes too late to address the original concerns and issues seen by the teacher. Ella from School C talked about the impact of losing time, "...there's a lag from when you refer them and when they actually start working with the interventionist, and in the mean time they have gotten that much farther behind" (personal communication, fall 2011). Mike from School C

expressed similar concerns when he said, “The only frustration I’ve had is sometimes when you know that’s what a student needs there’s been kind of hoops you have to jump through before you can get to that point” (personal communication, spring 2012). Even though Mike was frustrated that the referral process was taking time, he also understood why the criteria was in place, “I still wish there were times where we could expedite the process a little more, but yet I understand why we don’t” (personal communication, fall 2012). Teachers wanted the criteria to be changed so that for special cases teachers could bypass the initial requirements and get a student into the program right away.

Another part of the criteria required that students needed to be failing, or close to failing, in order to be in the math intervention program. Teachers sometimes felt that students who were passing still needed support at times, but didn’t feel like they could use the program for them, which Zane from School C talked about,

...or a kid that has a D, is working pretty hard to get that D and could use some extra, but well you’re not failing so I can’t put you in this program. I’m sure if I talked to the interventionist, if the interventionist had time something could be worked out (personal communication, fall 2012).

Thus, teachers wanted to change the criteria so that students who were struggling, but still passing, could also receive support from the math interventionist.

Programs at each school were run slightly different in order to accommodate for the needs and wants of the teachers, students, and school. School B was not strict in its criteria, letting teachers refer any students that they felt needed it and not requiring any formal recommendation form to be completed, instead just sending an email to the interventionist with the names of the students they wanted to be worked with. School C was strict in their criteria, setting a very clear three-step process that teachers were

required to follow, and then completing a required recommendation form that would be sent to the math interventionist. Zane was able to experience both programs and felt that ideally there should be a balance between the two, being strict where it was needed but not so strict that special cases and other exceptions couldn't be allowed. While at School B Zane compared the two programs, saying, "I think finding a balance between that School C way of sort of being regimented and this is where we need to be heading" (personal communication, fall 2013). As the new department chair at School B, Zane was attempting to make changes to the program, using his experiences from School C to help, "...take some stuff that I liked about how School C did things and try to bring some of that here I guess. At least talk about some changes maybe" (personal communication, fall 2013).

Communication was another part of the program that teachers discussed wanting to change. Initially communication between the math interventionist and teachers was very casual and didn't always go both ways. The math interventionist communicated with teachers when recommendations were placed, gathering information about students, but after the recommendations were placed communication became very casual and sporadic. Tammy from School A discussed how she wanted to have information about what the math interventionist did with her students in order to help in her use of the program, "I kind of felt like I wanted to know like what actually happened when the kids were in intervention...I don't know if it really would have, but I felt like that would have helped me identify who needed it" (personal communication, spring 2013). Nate from School C talked about the confusion he experienced when he first used the program due to a lack of communication,

The math interventionist has access to them as well, so that's streamlined the process a little bit. That actually helped me because there were a couple times that I didn't realize I hadn't sent that on to the interventionist, and so there were students that I thought had been referred to the interventionist, but then the interventionist didn't get any notification of that (personal communication, spring 2012).

In order to remedy the issues with communication the math interventionist at School A created an online log that documented everything that was done each time a student was worked with. The log was filled out after the math interventionist worked with a student, and then it would get sent to the student's math teacher so that they could be informed about what was done during the intervention. Sally from School A talked about how the log was useful for her,

We have a log that we can go look at and see what happened every time they met with the interventionist, and we can see that, and it's a visual. It's like, okay before, maybe, well the interventionist worked with somebody, what happened? Some teachers might be like, 'oh, well, are we seeing any results?' (personal communication, spring 2012).

It is easy to quickly forget what was discussed in a conversation, so this change in communication from casual face-to-face conversations to documented emails and logs was something that teachers, such as Sally from School A, expressed helped them to focus on what was done,

I know in the past, and the interventionist changed different things as the program has gone along, but in the past we kind of talked face-to-face about okay what's going on or this or that, but when I read those then I

can really see hey this is what so-and-so did with this (personal communication, fall 2013).

The recommendation form was also changed, adapted as teachers used it and provided feedback on the things they liked and disliked. Dylan from School B talked about the changes made in the recommendation form at their school,

Last year we didn't have a questionnaire or sheet to fill out, and so one of the first things that the interventionist brought to all the teachers was a form that we use to fill out that gives an idea of okay why is this student going to be in there (personal communication, fall 2011).

Jake from School A discussed how the math interventionist changed the recommendation form based on the issues teachers were having,

It's gotten better this year. The math interventionist is I think a year in and has a little bit more, the interventionist has figured out some of the quarks and holes and loop holes, not loop holes, but holes that we had to jump through and made it easier for teachers to recommend somebody for intervention (personal communication, fall 2011).

At School A the recommendation form was originally a Word document that teachers needed to complete, save, and then email to the interventionist, counselor, administrator and social worker. Teachers indicated that this required too much time and was tedious. As a response the math interventionist changed the recommendation form to a Google form that teachers could bookmark and access online, and once it was submitted it would automatically notify the math interventionist. This change was very well accepted and influenced teachers in their use of the program, which Lucy from School A expressed her feelings towards the change, "The modifications the

interventionist made from the referral process, of going from paper to online Google Docs, I thought was a great change” (personal communication, spring 2012). Fred from School A also talked about the change to the Google form, “I mean the forms are different, or the online thing’s different, that parts nice, I like that” (personal communication, spring 2012). Patrick from School A liked the change that was made, “The online enrollment, or putting in the student information online is very easy, easy to follow, and so that kind of just helps to streamline things even more” (personal communication, fall 2012). Changing to the online Google form saved teachers time, which Rose from School A talked about when she said, “The referral, the actual online referral doesn’t take long at all. I would say it’s 20 minutes or less if you know the student. So that didn’t take very long” (personal communication, spring 2012).

Even after the form was converted to a Google form, within the form the math interventionist changed parts of it to make it even more user friendly, such as drop down menus and checklists. Fred from School A discussed some of the changes that were made to the Google form, “I’m obviously more familiar with at least the form and the questions...has gotten easier with just some simple things such as the scroll down menu and pieces like that for counselors and what not” (personal communication, spring 2013).

School C also used a Google form for their referral process. Mike from School C talked about how using this type of form influenced his use of the program, “Without the Google docs I don’t think it would be as successful. I think it’s very important that those things are easy to submit, easy to go through” (personal communication, spring 2012). Most teachers felt using the online Google form was convenient and influenced them to use the program. But, some teachers, such as Ella from School C, didn’t like the online form and actually talked about it being prohibitive to their use of the program, saying,

Our method of referring with the document and the web based is not terribly user friendly for the teacher, because you have to fill it out, then you have to forward it to four different people, you have to look up who this student's administrator is, who their counselor is, it takes 15 minutes just to fill out the paper work to refer a student... So the referral process, the time involved, is kind of prohibitive to getting students referred (personal communication, fall 2011).

Even though the counselor, administrator and social worker were all initially contacted when a recommendation was placed, very little communication continued past that point. This made it difficult to work as a team to support the students. The idea was for all of them to be able to communicate with each other about the issues they are seeing, and then have continual conversations with the student about their progress and how they were doing in math. Rose from School A talked about wanting to change the communication so that everyone was working together,

Because sometimes I feel like maybe it's just me and the interventionist that are really on this with the student, like this is what we're going to do, and then there's the administration trying to do other things with them that are kind of separated, so it would be nice to get their feedback so I didn't necessarily feel like I'm the only one here with them on this one page of what we're doing (personal communication, spring 2013).

Teachers would occasionally communicate with other teachers about students, gathering information on how they did in previous math classes in order to help them make a recommendation, but it rarely continued past that point. There was not a lot of value placed on communication between teachers regarding the math intervention



program, mainly due to the fact that each teacher individualized their use of the program to fit their needs and the needs of their students. Teachers didn't want to tell others how to use the program, feeling like they would be insulting or intruding.

One way that School A tried to help teachers identify students, taking some of the emotions out of it, was by communicating with them a list of students who were previously in the program. This gave teachers a "heads-up" on some possible students that might struggle. Neither of the other schools indicated using a similar type of list. Ella from School C discussed her frustrations about not knowing which students might need the help, instead having to wait until they struggled to identify them, "There's no pre-identified students who the interventionist is working with, it's all reactive to the situation" (personal communication, fall 2011). When asked if a list of students would be helpful, Nate from School C replied,

I mean I can see the benefit of having a list of students that I'm getting that have worked with the interventionist...Because I think that to often it's just you don't realize until it's too late what students really need that help, cause you got 50 new kids you're trying to sort out (personal communication, fall 2012).

Instead of having the math interventionist lead the training for new teachers, Rose from School A discussed changing the training so that experienced teachers were sharing the information and their experiences with the new teachers, "It just needs to be maybe the teachers reaching out to others that have used it and having that conversation with them about what's the best use of it might have been helpful" (personal communication, spring 2013). Veronica from School A also mentioned the value of sharing experiences between teachers, "Come from teachers who did it maybe would help to better explain

kind of how their process, how they thought of this kid and how they processed whether they should be in intervention or not” (personal communication, spring 2013). This communication would not need to continue long-term, but be provided just during the initial stages of use, which Rose from School A talked about,

I would say collaboration on the use of the math intervention program, I don't know now that I've experienced I necessarily need it...I'd say at the beginning it might have been helpful for me to ask a few people, get feedback, how'd you use it, not necessarily how do you feel about it, but how'd you use it, who was it beneficial for, those kinds of things (personal communication, spring 2013).

Having someone to help during the initial use of the program was important for many of the teachers. Veronica from School A discussed some of the things that would have helped during her initial stages of use, “...some ideas for teachers to use to determine if a student should be in intervention. Like doing more formative assessments at the beginning, quizzes or exit tickets, even those small indicators would be good indicators for intervention or not” (personal communication, spring 2013). These things are often difficult to implement on your own if you never have, so having someone else in the classroom to help was something that teachers indicated made their use of the program easier. Nate from School C talked about the value of having the math coach or interventionist available to communicate with,

Even if there's not a math coach for every class, having an interventionist that you can talk to about which and what types of students to refer. I guess that would have probably helped me initially to use it more often (personal communication, spring 2013).

Having an experienced and trained person to assist teachers who are in their initial stages of use will help them use the program quicker and more effectively. This assistance only has to be short-term, long enough to allow the new users to become comfortable and confident in their use.

As teachers' use of the math intervention program increased, so did the number of students that the math interventionist needed to work with. Some teachers were not sure how many students the program would effectively handle, which Ulysses from School A discussed, "...I would be curious if we reach kind of a limit on students..." (personal communication, fall 2013). Tammy from School A talked about how overloading the program could cause it to lose its effectiveness, "...I guess there's a concern in the back of my mind for reaching a maximum capacity and still having it be successful" (personal communication, fall 2013).

Fred from School A was concerned that teachers would start overloading the program, and thus didn't want to change it, "...making sure it's kept that way before it gets to be a race to see who can get their 15 students in first, and you know with 15 teachers or whatever you can't do that" (personal communication, fall 2013). Fred knew that if the numbers increased too much then the effectiveness of the individualized and small group instruction would be sacrificed,

To make it better for me I guess would be knowing that if I wanted to put more people in, or if other people wanted to put more people in, that it was still going to stay some how at the one, two, three max kind of per session. I know that's the way the interventionist tries to keep it, and that's great, but if numbers kept increasing it wouldn't happen (School A, personal communication, fall 2013).

When asked what he would want to change about the program, Fred replied, “I couldn’t think of many changes besides making sure it doesn’t explode into, lets put everybody in intervention, and making sure that it doesn’t seem like a right of students to be able to be in intervention” (School A, personal communication, fall 2013).

Teachers talked about the possibility of changing the program in order to accommodate the increased numbers. One suggestion teachers had to change the program was to hire on a second math interventionist at each location. Fred from School A talked about the need for a second math interventionist,

The only other thing I would say is I know the math interventionist gets overwhelmed I think, in the sense of, we could probably if we had all the money in the world, could use more then just the interventionist (personal communication, fall 2011).

Fred went on to talk about what a second math interventionist would be able to do for the program,

With another interventionist you might be able to, and myself included, could open up your qualifications maybe a little bit more, or I might not feel, which I don’t mind feeling this way, but might not feel as wait a minute I don’t want to put in eight people cause I know that will all of a sudden put a spike in it, if I put in eight people well then eight other people aren’t getting it... (School A, personal communication, fall 2013).

Having a second math interventionist would allow teachers to recommend as many students as needed while assuring that they could still maintain the individualized support that was so important to the success of the program, which Tammy from School A discussed, “...I would want to see it expand so that kids could really get one-on-one

time” (personal communication, fall 2012). When asked what she would change about the math intervention program, Amy from School B replied, “Just another interventionist I guess. Just so that they could spread themselves even thinner with the kids I guess” (personal communication, spring 2012).

Many of the teachers talked about wanting to expand the program to higher-level math courses. Amy from School B felt that there was a need for math intervention at the Advanced Algebra level, saying, “...I know there are still some kids that are in like the Advanced Algebra classes that would really benefit from it also...” (personal communication, spring 2012). Having two math interventionists would allow the program to expand into Advanced Algebra due to the fact that it could then handle the increased numbers. Amelia from School A talked about needing a second math interventionist in order to open up Advanced Algebra,

But at the same time it is considered like an advanced level class and so there’s that exception changes a little bit as far as kids coming in and getting help on their own and going to homework zone or going to the tutoring. But I think it would be beneficial, but I think that would probably only happen if there was two interventionists (personal communication, fall 2013).

Patrick from School A discussed having another math interventionist just to focus on Advanced Algebra, “I mean we have plenty of kids that need the extra help that would benefit to have another one. Maybe have one that is more for Advanced Algebra” (personal communication, fall 2012). One teacher, Sally from School A, even talked about wanting to expand it into other subject areas, “I wish that they could have

interventions in English, and Science, and every subject” (personal communication, fall 2011).

Part of the reason why schools started advocating for Advanced Algebra students to be in the program was due to a change in the graduation requirements for the district. When the program first started students only needed 20 math credits to graduate, equivalent to 2 years of math, thus the program only supported Algebra and Geometry. During the study the district increased the graduation requirements, now requiring 30 credits of math to graduate, equivalent to 3 years of math, forcing some students to now go through Advanced Algebra. Before the change in graduation requirements, Tammy from School A describe the problem they would face at the Advanced Algebra level,

...you have to phase out of the program, and so teaching Advanced Algebra I've had kids come to me and say, 'well I want to do intervention', and I have to say to them you can't, you have to figure something else out now (personal communication, fall 2013).

Rose from School A also talked about the issues teachers were facing at the Advanced Algebra level, "...the only thing outside of coming to me individually for help once they get to Advanced Algebra is the tutoring, which students tend to have really poor feedback on, they don't like it" (personal communication, spring 2013).

This change in requirements motivated some of the teachers to use and adapt the program, such as Amy from School B who said,

And just with like the graduation requirements change too in the last four years, and so now it's like pressure is on, we got to get these kids through, so it's like let's use all of our resources that we can (personal communication, fall 2013).

Zane from School B discussed why the program might need to change in order to include Advanced Algebra due to the change in graduation requirements,

Yeah because those are going to be those kids that are going to be seniors who they have to pass that class in order to graduate. And so I think we're going to see counselors be a little bit more pushy, and administrators be a little more pushy about getting those kids help (personal communication, fall 2013).

Schools B and C eventually changed their criteria, allowing for Advanced Algebra students to be in the program. Amy from School B was affected by this change, saying, "...the interventionist works with two or three of my Advanced Algebra students" (personal communication, fall 2013). Bob from School C mentioned how he initially wanted to use the program for Advanced Algebra, and how eventually he was able to, "I wanted to use more of my Advanced Algebra kids, but at that point we couldn't. I think now we are able to" (personal communication, fall 2011).

The math interventionists at Schools B and C were both new to the buildings when they were hired. Teachers were asked if their use of the program would have changed if the math interventionist was someone they already knew, which Nate from School C replied, "...having somebody that you know, that you're comfortable going right up to and asking questions is sometimes nice" (personal communication, fall 2012). Mike from School C also talked about how having the math interventionist be someone nobody knew required extra time and affected the use of the program,

And then in terms of the math interventionist just being new was part of it, so I think that's a tough situation when you're new and you're having to tell people who are wanting to refer students for help, for example this kid

can't be referred because you haven't done this, this and this (personal communication, fall 2012).

**No Changes Required.** When asked what they would change about the math intervention program, some teachers responded that they would make no changes. Teachers felt confident about the way the program was being operated, such as Amelia from School A who said, "But I really like interventions this way, a lot" (personal communication, spring 2013). Sally from School A also felt the program didn't need any changes, saying, "No big changes. Everything's fine" (personal communication, spring 2012). Tammy from School A couldn't think of any ways to really improve the program by changing anything, "I haven't thought a lot about it, but I can't think of anything that I would change, to make that easier or better" (personal communication, spring 2012). Nate from School C felt similarly, having no suggestions on ways to change the program,

I don't think that I have any suggestions right now for changes. I feel like it's run pretty efficiently as far as the referral process and how things go. I think there's good communication in all parts. I don't really have any suggestions (personal communication, fall 2012).

The only change that Lucy from School A would make would be her own personal use of the program, not wanting to change the program itself, saying, "I don't think I would change, as of right now, anything, except for what I would change for myself on referring kids" (personal communication, spring 2012).

Other teachers didn't want to change the program, but feared the possibility of future changes and what the future of the program might look like. Sally from School A wondered what would change with the math intervention program once the grant funding ran out, saying, "And then sometimes I always think about down the line when we have a



grant and the money's up, then what happens" (personal communication, fall 2011).

Not knowing what changes might occur in the future scared some of the teachers, such as Oscar from School A who saw the value in the program the way it was,

Cause I think it's a valuable system. And I think it's helped a lot of us teachers and I think it's helped a lot of students. I like having the math intervention, but I don't know how it's going to change or if there's suggestions for changing it (personal communication, spring 2012).

Mike from School C shared this same fear, feeling like they might lose a successful program due to lack of funding, "...I feel like once everybody's finally comfortable with it and have seen the success with it your grant runs out. So is the school going to be able to fund it, or district, or however it's done?" (personal communication, fall 2012). This fear of the future was also expressed by Patrick from School A who said, "What is going to happen when the grant is over? I guess that would be the biggest question, cause then how do we continue a program that has been shown to help students be successful...what happens for those kids?" (personal communication, fall 2012).

**Implications.** Educational leaders need to be aware of the concerns of the teachers who are using the program in order to make the appropriate changes to remedy them. Making sure that the use of the program is efficient and user friendly will influence teachers to use it. Hiring experienced people, or people that teachers have an established trust and relationship with, will help teachers initially use the program. Educational leaders need to make sure that they do not allow the fear of the future to hinder teachers from using the program. If the program is successful, educational leaders need to be prepared to expand and grow the program to accommodate the increased demands. This could require additional time, resources, and money. Instead of always

looking for a way to change the program, sometime not making any changes is what's best, allowing a successful program to be as is. To much change can frustrate and confuse users more then help them, possibly causing them to decrease or even stop using the program.

### **Change Agents**

The most influential change agent that teachers discussed was the math interventionist. Continual communication and strong relationships between teachers and the interventionist were factors that contributed to teachers' use of the program. The math interventionist was viewed by the teachers as the expert on the program, and thus if they had questions or concerns about their use they would go to the math interventionist for answers and support.

Math coaches and department chairs were also found to be change agents for teachers. Both provided teachers additional resources that they could go to for answers and support when using the program. Coaches and department chairs regularly worked directly with the math teachers, establishing relationships and trust. Often they had greater years of experience as a teacher as compared to others in the department, allowing teachers to value their opinions and recommendations.

The math interventionist, math coach, and math department chair worked together as a leadership team. As a team they would discuss the program and what was occurring. They supported each other's positions, sharing duties and roles within the departments. Since they worked closely together they had a higher level of knowledge regarding the program, thus allowing them to be a resource for others if needed.

### **Converging SoC Questionnaire and Interview Concerns**

Teachers expressed their concerns regarding the math intervention program through their completion of the Stages of Concerns (SoC) Questionnaire, as well as voluntary interviews. When comparing the results of each there were similarities between the concerns indicated in both. The side-by-side joint display table can be found in Appendix L.

According to Tables 4.10, 4.11 and 4.12, every school ranked the unconcerned stage as the highest concern for teachers each year of the study. Percentile scores for the unconcerned stage were significantly higher than any of the other stages, scoring a low of 85 and a high of 96. George, Hall and Stiegelbauer (2006) say that the unconcerned stage is when users have little concern about or involvement with the innovation. Data showed that the majority, if not all, of the teachers were using the math intervention program. Thus, concerns were not regarding their involvement, but simply having little concern about the program. Interview responses agreed with SoC questionnaire results in that many teachers discussed how the program was not a high priority for them. Since the math intervention program was not something that they directly worked with on a daily basis, it would often either get forgot about or put aside in order to address more important daily tasks. There are so many daily demands that teachers already have to go through, finding the time to insert another is difficult and takes time. As time went by, and teachers become more knowledgeable and comfortable with using the program, they seemed to remember the program more often and use it on a more consistent basis, but still indicating that it is was not high on their priority list.

Initially, during Fall 2012, School A ranked informational concerns as their second highest stage (see Table 4.10), while School C ranked it as their third highest stage (see Table 4.12). Even though these concerns were ranked high, with percentile

scores ranging between 35 and 51, they were significantly less than the unconcerned scores, which were in the 90's, and much more similar in score to the lower ranking concerns. While School A showed a decrease in their informational concerns during Fall 2013 (see Table 4.10), dropping two ranks to fourth highest, School C showed an increase in the ranking, now ranking second highest (see Table 4.12), but a decrease in their percentile scores, going from 45 to 41. School B also ranked the informational stage as their second highest concerns during Fall 2013 (see Table 4.11). George, Hall and Stiegelbauer (2006) say that informational concerns are focused on the general awareness of the innovation and the users interest in learning more about it. Part of it also includes interests in learning more about the requirements of use. Awareness of the math intervention program was not a concern indicated by teachers interviewed during the study, but there were concerns about learning more about it. Teachers discussed how one of their main concerns about using the math intervention program was their ability to identify the correct student for it and knowing when to recommend them to the program. Inexperienced teachers were beginning to experience the program for the first time, and thus needed time and gain experience to learn how to identify the best possible students and when the best timing would be. Even experienced teachers who had used the math intervention program multiple times still expressed concerns regarding identifying students for the program, but also said that they were getting better at it and feeling more comfortable as they gained experience.

Schools B and C ranked personal concerns as their third highest concern both years (see Tables 4.11 and 4.12), while School A ranked it third during Fall 2012 but increased it to second the next year, Fall 2013 (see Table 4.10). According to George, Hall and Stiegelbauer (2006), personal concerns are when users are uncertain about the

demands of the innovation and their role with it. The demands of the math intervention program were not concerns that the teachers indicated during their interviews, actually saying that the use of the program was very quick and easy for them once they gained experience going through the process. Once the math interventionist adapted the recommendation form to fit the needs of the teachers, many of the teachers responded positively and talked about how it made the use of the program even easier. Concerns that teacher did address were regarding their role with the program. Once teachers made the recommendation to the math interventionist their role with the program is essentially over. Teachers did talk about how it was nice that they didn't have to do anything once their students were in the program, but at the same time this can cause teachers to also feel separated from it and uncertain about what was happening. Communication was important to keep teachers connected to the program once their students were in it. Students sometimes would come back to class after receiving math intervention support with a decreased work ethic and attitude about their math class, thinking they would just rely on the math interventionist and the program in order to learn everything. Teachers talked about how this concerned them, making them possibly feel like they were no longer needed. Many of the teachers did mention that they didn't feel like the math intervention program effected how they taught in the classroom, showing little personal effect on them. Sometimes teachers didn't always know who was in charge of the program beyond their own schools, knowing who was making the decisions and running it. This at times caused teachers concerns, not knowing what the future of the program would look like and what decisions were being made about it.

Management concerns were ranked higher during Fall 2012, fourth for School A (see Table 4.10) and second for School C (see Table 4.12), compared to Fall 2013, which

School A dropped to sixth and School C dropped to third. While School A (see Table 4.10) showed a more significant drop in ranking compared to School C (see Table 4.12), fourth to sixth compared to second to third, their change in percentile score was less than School C, going from 27 to 25 compared to 52 to 36. School B ranked management as their fourth highest concern (see Table 4.11). George, Hall and Stiegelbauer (2006) say that management concerns are when users are concerned with the process and tasks involved with the innovation. When teachers first used the math intervention program they had concerns about identifying the correct student, finding time to complete the recommendation form, and keeping good communication with the math interventionist. Once teachers gained experience using the program, many of them started to say that the process and tasks were simple and quick to complete. Changing the recommendation form to an online Google format helped teachers become more comfortable with the process, as well as saving time, which in turn should lower their management concerns. Some teachers started to adapt some of their practices in order to make their use of the program more individualized and easier, such as becoming more organized with documentation of strategies, or giving more formative assessments and assessing them more closely to help identify students for the program sooner and easier. School C had a more complex process for recommending students, involving more steps than the other schools, which means that their concerns originally were much higher due to complexity of the process, but their change was more significant as they become more comfortable and knowledgeable with it. These changes agree with the SoC Questionnaire results, showing that as teachers used the program longer their concerns regarding managing the process and tasks of the program decreased.

Positive results from the math intervention were something that many of the teachers talked about seeing as they used the program. They could see results quickly in their students, such as increased confidence and participation in the classroom, as well as increased grades. Students enjoyed getting help and would even advocate for it, knowing that it helped them and they too could see the results in themselves. Teachers were thus influenced to continue, and even increase, their use of the program, knowing that their students would be successful. This agreed with the results from the SoC Questionnaire which indicated that consequence concerns were the lowest ranked concern almost every time for all schools, with percentile scores in the single digits for Schools B and C and in the 20's for School A (see Tables 4.10, 4.11, and 4.12). Consequence concerns, according to George, Hall and Stiegelbauer (2006), are focused on teachers concerns regarding the impact of the innovation on students in their immediate sphere. Thus, since teachers felt that the program was successful, experiencing positive results, they had very little concerns recommending their students into the program.

Collaboration concerns were also ranked very low, ranked sixth for Schools B (see Table 4.11) and C (see Table 4.12) but fifth and third for School A (see Table. 4.10). Percentile scores for School B were the lowest with a 9 (see Table 4.11), followed by School C with 19 and 15 (see Table 4.12), and then School A with 25 and 47 (see Table 4.10). Almost all of the teachers interviewed indicated a lack of concern regarding communication with other math teachers, or people, about the math intervention program. The only person they talked about communicating with was the math interventionist. Communication with the interventionist was seen as positive and consistent. Many times teachers would communicate with the interventionist in the method they were most comfortable with, mostly either face-to-face conversations or emails. School B was the

only school that the math interventionist didn't work in the math department office.

Also, teachers at School B indicated that they didn't have a formal recommendation form that needed to be completed, but simply sent the name of the student to the interventionist. Conversations between the interventionist and the teachers would often be casual face-to-face communication. This could be why the concerns for communication were the lowest, since the opportunity to communicate was much more infrequent and informal. In addition, School B had the fewest number of teachers in the math department office, mostly working within their own classrooms. School C had more teachers in their math office, allowing for more opportunities for them to communicate with each other, but still had some of the teachers in their rooms most of the day. Since the math interventionist worked in the office, the teachers also had more opportunities for communication with the interventionist. There was also a formal recommendation form for both School C and A that teachers needed to submit when they referred a student to the program, creating a more structured and formal form of communication. School A had a working space for every math teacher in the math office, allowing for the most opportunities out of all three schools for teachers to communicate with each other. Also, the math interventionist worked in the math office, allowing teachers quick access and consistent communication with the interventionist. School A also used a math intervention log, which the math interventionist completed after each session with a student, describing what was done and how the student progressed. The log was then sent to and shared with the teacher of the student who was worked with, causing even more communication to occur. This could be why School A ranked and scored the highest for communication concerns, seeing more need for it, having greater experience with it, and having the most structure and formal



communication out of all three of the schools. After using the program for a while some of the teachers started to discuss how communicating with other teachers could be valuable. A few of the teachers even talked about having teachers with more experience using the program to communicate with new, or inexperienced, teachers regarding how they use the program, how they identify students, and providing mentoring and training.

Refocusing concerns were consistently ranked fifth. Even though School C ranked it fifth both years (see Table 4.12), their percentile score decreased from 34 to 26. School A increased in both rank and score, going from seventh to fifth and from a score of 20 to 28 (see Table 4.10). School B ranked it fifth (see Table 4.11). George, Hall and Stiegelbauer (2006) say that refocusing concerns occur when users begin exploring ways to modify or replace the innovation. Part of the reason these concerns were ranked lower was because teachers often didn't see a need, or want, to change the math intervention program. Since they were experiencing positive results and were pleased with the program as it was, teachers had no concerns about modifying or replacing the program. The only concerns for changes to the program were focused on teachers' use and the criteria for selecting students. Teachers wanted to change how they were personally using the program, using it quicker and more effectively. Also, some teachers wanted to see more accountability for students who were in the program to be doing their work and showing effort in the classroom. Instead of replacing the program, teachers often responded that they wanted to expand it, hiring another interventionist so that more students could be worked it.

## CHAPTER 5

### Discussion

Even though this study focused on a specific program, a math intervention program, at specific schools, the results can be applicable to similar programs, or innovations, being implemented in any type of school. Educational leaders can take the findings from this study and use them to help teachers use programs sooner and more effectively.

If we can identify influential factors early on, then those factors can be enhanced and focused upon in order to further increase the use of the program. This could speed up the process by which teachers progress through their levels of use, and even allow for the hardest of teachers, laggards, to start using the program. By progressing teachers to higher levels of use, more reflection on the program and its impact will occur, increased levels of collaboration between teachers will begin, and the program itself will be adapted to the needs of the teachers and students, creating an even stronger and more effective program. In order for this to occur, schools must be given sufficient time to implement and work with the innovation. This will require the school district to provide the time, money, and resources to allow for sufficient use and time to occur.

Most innovations, if immediate results are not evident, do not last. Thus, by speeding the rate that teachers progress through their levels of use by increasing their knowledge and experience, identifying influential change agents, a stronger program that is adapted to student and teacher needs can be achieved, demonstrating quicker and more impactful results. But, as Fullan (2001, 2010, 2011) states, teachers and administrators must keep their vision on long-term goals and not focus on short-term results in order to achieve a successful change process.

This study could be very useful for future administrators or people that are implementing a program, or any other innovation, into their school to better understand how to get their teachers and users of that program to adopt and use it quicker. By knowing what some of the more influential factors are that need to be in place, less time and money will need to be spent trying to discover them on their own. That saved time and money can then be spent on other resources or further development of the program itself. Also, if the school has been labeled as PLAS, then immediate results are required in order to avoid further consequences. Faster results will be achieved if teachers are willing to adopt change and innovations faster, which could save the jobs of the educational leaders, principal, and possibly the entire teaching staff.

#### **Factors for Increased Program Use**

No matter what program is being established or used; teachers need to feel a value and direct influence in order for them to use it. If the program had no direct connection to what a teacher does, then there is no reason for them to use it. Connections can be made through the curricular area that teachers are teaching, as well as through school or district wide goals and initiatives. The closer the connection to the teacher and their daily work, the more reason and incentive the teacher will have to use the program.

Educational leaders need to encourage and motivate teachers to begin their use of the program, gaining initial experience. Taking the first step in using a new program is often the most difficult for teachers, so having someone who can motivate, educate, and support them as they begin their use will help teachers become more comfortable and willing to use the program for the first time. During the initial stages of use teachers need to feel supported. Providing another person who can be present in the classroom will help teachers as they struggle through the process of identifying and working with

struggling students. This support does not have to continue long-term, but only as long as the teacher needs in order to develop a sense of comfort and confidence with their use of the program.

Two of the most influential factors for teachers' use of the program were knowledge and experience. Teachers indicated that experience was invaluable to their use of the program and development of their knowledge, often seen as the most influential factor to their continual use of the program. Knowledge was gained during the initial training stages, but mostly through the experiences that teachers gained while using the program. Experts and leaders, or anyone considered a change agent, within the program can provide initial training, sharing their knowledge with the teachers on what the program is and how to use it. If there are experienced users of the program, having them share their knowledge and experiences will help teachers become more motivated to use the program as well. If teachers know that others are using the program, and can witness their use of it, then they will be more likely to use the program themselves. Without experience teachers have no foundation or reference to base their knowledge upon and influence their use of the program. Contextual knowledge has a greater influence on teacher use than factual knowledge.

One of the most motivating factors that teachers can experience is positive results and impact from the program. If teachers are having positive experiences using the program, and realize that it is making a positive difference for themselves and their students, then they will be more motivated to not only continue using the program but also even possibly increase their use. Leaders need to make sure to share those positive results with all teachers, making sure the even teachers who are not experiencing the program are able to see the positive results as well, which in turn may influence them to

use the program. Along with this, leaders need to make sure they are aware of the negative experiences and results as well, addressing them as they come up and making sure that they do not spread and become toxic to the rest of the teachers.

Other factors that contributed to increased teacher use, comfort, and knowledge of the program were people that they worked with, or change agents (Fullan 2010, Rogers 2003). Department chairs, or leaders within teacher groups, are often considered the people that must approve of an innovation before the others can fully adopt and implement it. Thus, if the leaders at each school adopt the program quickly, then a greater majority of teachers will also adopt the program sooner, serving as a change agent for others. Leaders can also provide continual exposure and communication about the program to the teachers, providing a continual reminder that the program is available.

Instructional leaders, or coaches, can also serve as change agents. These leaders tend to have a higher level of knowledge and experience with the curriculum as well as the program, allowing teachers to trust their opinion. Due to working more individually and building stronger rapport with the teachers, as well as being viewed as an expert, the coach is able to influence change in use because of the trust that teachers have.

If the program has someone who is the leader, or director, of it then that person will be the most influential change agent for teachers. Teachers will not use a program if they are not comfortable with the person that they will have to work with. Educational leaders can help with this by hiring someone that has a positive pre-existing relationship with the teachers that will be using the program. This will eliminate the time required for teachers to develop a relationship and trust with the person, and instead will allow them to focus on their use of the program from the very beginning.

Clear and consistent communication is vital to successful teacher use. People often forget about things that are not part of their daily routine. Thus, consistent communication is important in order to provide a continual reminder to teachers, making it part of their routine. In order to allow for consistent communication, the leader or director of the program should be located near the teachers who are using it. Access to people who can provide clear answers and support to the teachers who are using the program is important in order to maintain use of the program. If teachers cannot access the information needed, then they may become frustrated with the program and stop using it. Communication also provides another direct connection between the teachers and the program.

Educational leaders need to establish a culture of change. Teachers and leaders cannot be afraid of change, but be willing to accept it and actually search for opportunities to make change. Leaders need to be aware of teacher concerns as they use the program in order to adapt and make changes as needed. As teachers express their concerns about the program and their use of it, leaders need to be willing to make the necessary changes in order to accommodate those concerns. Then, leaders need to assess the concerns and changes in order to determine which of them will add value to the program. Teachers need to be supported during the change process, notified why changes are being made, and given the opportunity to be a part of the process. Not all opportunities for change will need to be implemented. Sometimes the best change is no change at all.

**Levels of Use:**

**Ineligible/Non-use**  
Teacher is not eligible or not using program



**Exploratory**  
Teacher is beginning use of program, exploring how to use it and gaining knowledge and experience.



**Over-use**  
Teacher has become dependent on the use of the program, not fully understanding its purpose and criteria.



**Comfortable**  
Teacher has used program multiple times, has gained experience and knowledge, using program in a routine manner.



**Customized**  
Teachers have developed their own personal method of using the program according to their needs and the needs of the students.



**Stages of Concern:**

**Teacher-impact**  
Teacher is concerned with how the program will affect them directly (time, work load, requirements)



**Student-impact**  
Teacher is concerned with how they can impact their students through the use of the program.

*Figure 5.1 - Theory on Stages of Use and Concerns for teachers using a newly implemented program*

### **Levels of Use and Stages of Concerns**

Based on observations, interviews with teachers, and the SoC questionnaire results, levels of use and stages of concerns were developed, seen in Figure 5.1, to represent how teachers progressed in their use of the math intervention program.

Teachers do not have to progress through the levels or stages sequentially, but could skip levels and stages or even go backwards. Each level or stage is connected to the others, allowing for teachers to move from any level or stage to any other level or stage at any point. These levels and stages could be applied to teacher use of similar programs.

#### **Levels of Use**

**Non-Use/Ineligible.** Most teachers who didn't use the math intervention program were not eligible to use it. Teachers who didn't teach Algebra or Geometry were not able to use the program because of the criteria. Thus, instead of choosing to not use the program, they were not allowed to use it because of the courses they taught. Other teachers, who were eligible to use the program, were choosing to not use it. Teachers who were choosing to not use the program were doing so because they were not comfortable with it, had no experience using it, or did not feel the need for it. Sometimes teachers were using their own supports and methods to help students be successful, and thus had no need to use the math intervention program. A teacher could go from a high level of use to non-use due to a change in courses being taught, now being ineligible to use the program. Therefore, teachers who leave the non-use level may return to it due to choice or content they are teaching.

**Exploratory Use.** During the first semester(s) of use, many of the teachers began exploring how to use the math intervention program, gaining knowledge, comfort and experience. Teachers at this level are often hesitant to use the program due to their lack of direct influence from it. Results are unknown, so teachers are not sure what kind of



impact the program is going to have on their students or themselves. Use of the program may be seen as an inconvenience, taking time away from daily routines and tasks. Exploratory users will often search out advice from others, such as the math interventionist or experienced users, on their use of the program. Usually if teachers move beyond the exploratory level of use they will not return to it.

**Over-Use.** Once teachers have gained experience using the program they could develop a dependency on it. Some teachers do not have a complete understanding of the purpose and criteria for the program, and thus over-use the program. This over-use could be a result of realizing the positive impacts on their students and thus wanting to provide that opportunity for as many as possible. Teachers want to do what is best for their students, therefore if a student is wanting help sometimes the teacher will put them into the program without going through the set process and fully thinking about other resources that may be available. Over-users are often searching for a balance in their use, going from very little use to over-use in a short period of time. They have not gained the knowledge or experience with identifying the best students for the program, thus causing them to refer students to the program that should not be in it. With time and experience teachers will often move beyond of this level. Some users may not experience this level, skipping it all together.

**Comfortable Use.** Teachers who have gained a higher degree of experience and comfort with the program will often develop a more routine pattern of use. As a result of their experience, teachers become comfortable using the program in a set way. This could be a teacher using the program for only a certain set number of students, and once that number is reached then they no longer feel a need to use the program. Some teachers wait for certain periods of time during the school year, using specific assessments, to

determine which students to put into the program. Use of the program has become so comfortable and routine that teachers sometimes no longer have to think about it. Teachers in this level are often not looking to change their use or explore new methods or techniques, but enjoy the program just the way it is and want to keep it that way.

**Customized Use.** Some teachers will customize their use the program to fit the needs of their students and themselves. Through their experience using the program, teachers are able to learn from those experiences and make modifications in their use as they progress. This also increases their knowledge of the program. Teachers realize that not all students will use the program for the same reasons, looking for special cases and ways that they can use the program to fit the needs of those students. Criteria are not seen as black and white, but more gray, allowing for creative use of the program. This would be considered the highest level of use for a teacher, demonstrating the greatest knowledge and comfort of the program. Even though teachers enjoy using the program and experience positive results, they are also looking for ways to improve it even further.

### **Stages of Concerns**

Not only do teachers go through levels of use, but also stages of concerns. Concerns that teachers experience as they use the program are either focused on the impact on the teachers, or impact on the students. Teachers may experience concerns within both stages at the same time, or may switch between stages. Stages of concerns are not directly associated with any given level of use. These stages of concerns can be found in Figure 5.1.

**Teacher Impact.** Teacher impact concerns are focused on the direct influence that teachers experience through their use of the program. Time, organization, and workload are examples of teacher impact concerns. Teachers experience concerns about

accomplishing all of their daily tasks due to the additional time that is required to go through the process of using the program. Increased workload, even if it is small, will often cause stress until it becomes routinized. In order to remedy the concerns about time and workload some teachers will develop new organizational patterns.

**Student Impact.** Student impact concerns are focused on the influence that the program has on students. Teachers are concerned about how they can impact their students through their use of the program. Putting the needs of the students before their own and worrying about student work ethic and performance are examples of student impact concerns. Taking time out of their daily schedules to use the program is not seen as an inconvenience, but as a necessity in order to ensure the success of the students.

### **Future Research**

This study focuses mainly on the use of the program. Just because people are using it, and those people have fully adopted and implemented it, does not guarantee that the program will be successful. Future studies could focus on the success of similar programs, focusing on the long-term effects and results. Even though positive results and progress were seen within the first three years of the use of this program, future studies could follow a program even longer in order to determine the longevity of program effectiveness.

Schools that choose to adopt the program instead of having it given to them and mandated by their district, would be another future study that could be conducted. Does teacher use change when the program is something that they were a part of choosing and developing versus being required to participate in?

Also, this study focuses mainly on the teacher use, concerns, and experiences. Future studies could also focus on the perspectives and experiences of the student, as well

as the teachers who do not directly use the program. By interviewing the students and trying to determine their experiences with the program a researcher could gain a perspective of the program from the eyes of the student instead of the teacher. This would be valuable in order to better develop a program that fits the needs of the students within it. Programs also indirectly affect certain teachers, and thus by studying these teachers this could allow researchers to focus on the indirect effects of a program.

Achievement gaps are currently a highly talked about and debated issue within the realm of education. Future studies could look at the effects within the different ethnic and racial categories, investigating whether the program could help to close the achievement gap.

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## APPENDIX A

## Interview Informed Consent Form



COLLEGE OF EDUCATION AND HUMAN  
SCIENCES  
Department of Educational Administration

## Informed Consent Form

**Title of Project:**

Diffusion of Math Intervention at a Secondary Level

**Purpose of the Research:**

This research project will be a longitudinal assessment on the diffusion of math intervention at a secondary level. Information gathered will be reported in my dissertation, journal articles and presentations at professional meetings. You are invited to participate in this research because you are a math teacher or interventionist.

**Procedures:**

Participation in this study will require data on numbers of math intervention participants, both teachers and students. Teachers will also take part in a voluntary interview each semester for three years, as long as they are still eligible, which will require 30 minutes each time to complete. Interviews will be done at the time and location that is convenient for the teachers, and will be audio taped. Questions in the interviews will focus on the teacher's reasons for using math intervention.

**Risk and/or Discomforts:**

There are no known risks involve in participating in the study.

**Benefits:**

You may gain new insights to personal and professional experiences that are meaningful through your participation in this study. You will also be part of a meaningful contribution to an area of educational research where a gap exists in the literature.

**Confidentiality:**

Any information obtained during this study that could identify you will be kept strictly confidential. The data will be stored in a locked cabinet in the investigator's office. The data will only be seen by the investigator during the study. The information obtained in this study will be published in scientific journals and/or presented at scientific meetings, but the data will be reported as aggregated data.

**Compensation:**

None

**Opportunity to Ask Questions:**

You may ask any questions concerning this research and have those questions answered before agreeing to participate in or during the study. Or you may call the investigator at any time, office phone (402) 436-1305 ext. 65159, or the investigator's advisor, Dr. Marilyn Grady, office phone, (402) 472-0974. If you have any questions regarding your rights as a research subject that have not been answered by the investigator or to report any concerns about the study, you may contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965.

**Freedom to Withdraw:**

You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with the investigator or the University of Nebraska. Your decision will not result in any loss of benefits to which you are otherwise entitled.

**Consent: Right to Receive a Copy:**

You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

\_\_\_\_\_; Check indicating that you agree to be audio taped during your interviews.

\_\_\_\_\_  
Signature of Research Participant

\_\_\_\_\_  
Date

**Name and Contact Information of Investigator(s):**

Stuart Lenz, M.A.  
Graduate Student  
Department of Educational Administration  
[slenz@lps.org](mailto:slenz@lps.org)  
402-436-1305 ext. 65159

Marilyn Grady, Ph.D.  
Professor  
Department of Educational Administration  
[Mgrady1@uni.edu](mailto:Mgrady1@uni.edu)  
402-472-0974



## APPENDIX B

## Questionnaire Informed Consent Form



COLLEGE OF EDUCATION AND HUMAN  
SCIENCES  
Department of Educational Administration

## Questionnaire Informed Consent Form

My name is Stuart Lenz. I am conducting a study on the diffusion of the math intervention program, focusing on teacher use and concerns. If you are 19 years of age or older and teach math at one of the schools of study, then you may participate in this research.

**Procedures:** Participation in this study will require approximately 10 minutes. You will be asked to complete a voluntary questionnaire regarding your perceptions of the math intervention program. Participation will take place once a year during the fall semester, and will be completed during my personal visit to your site. Based on the results, individual and site user profiles will be created.

**Risks and/or Discomforts:** There are no known risks or discomforts associated with this research.

**Benefits:** You may gain new insights to personal and professional experiences that are meaningful through your participation in this study. You will also be part of a meaningful contribution to an area of educational research where a gap exists in the literature.

**Confidentiality:** Your responses to this survey will be kept confidential. The data will be stored in a locked cabinet in the investigator's office. The investigator will only see the data during the study. The information obtained in this study will be published in scientific journals and/or presented at scientific meetings, but the data will be reported as aggregated data and names of participants and schools will be changed.

**Opportunity to Ask Questions:** You may ask any questions concerning this research at anytime by contacting myself, Stuart Lenz, office phone (402) 436-1305, email: [slenz@lps.org](mailto:slenz@lps.org). You may also reach Dr. Marilyn Grady, office phone (402) 472-0974, email: [mgrady1@unl.edu](mailto:mgrady1@unl.edu). If you would like to speak to someone else, please call the Research Compliance Services Office at 402-472-6926 or [irb@unl.edu](mailto:irb@unl.edu).

**Freedom to Withdraw:** Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

**Consent, Right to Receive a Copy:** You are voluntarily making a decision whether or not to participate in this research study. By completing and submitting your survey responses, you have given your consent to participate in this research. You will be given a copy of this consent form to keep.

Stuart Lenz, M.A.  
Doctoral Student  
Department of Educational Administration  
[slenz@lps.org](mailto:slenz@lps.org)  
402-436-1305

Marilyn Grady, Ph.D.  
Professor  
Department of Educational Administration  
[mgrady1@unl.edu](mailto:mgrady1@unl.edu)  
402-472-0974

## APPENDIX C

## List of Participants

Participant (Pseudonym)	School (A, B, or C)	Years of experience as a math teacher	Years at their current building	Participated in an Interview (# times interviewed)	Participated in a Stages of Concerns Questionnaire (Gave name)
Adam	A	1	1	✓ (1)	✓
Amelia	A	1.5	1	✓ (2)	✓
Amy	B	5	4	✓ (3)	
Andre	A				✓
Angelica	C	4	3	✓ (3)	✓
Becky	B	6	6	✓ (1)	
Betty	C				✓
Bob	C	16	16	✓ (1)	✓
Bridgette	A				✓
Cathy	C				✓
Chad	C	24	21	✓ (1)	✓
Derrick	B				✓
Dylan	B	6	6	✓ (1)	
Ella	C	8	8	✓ (1)	
Emma	B				✓
Fred	A	13	9	✓ (5)	✓
George	A	2	2	✓ (1)	✓
Holly	A	3	3	✓ (1)	
Jake	A	8	7	✓ (5)	✓
Karen	A	9	9	✓ (1)	
Lucy	A	6	6	✓ (2)	
Mike	C	2	2	✓ (2)	✓
Nate	C	12	6	✓ (3)	✓
Ned	A				✓
Oscar	A	7	6	✓ (1)	
Patrick	A	15	8	✓ (2)	✓
Quentin	A	4	1	✓ (1)	
Rose	A	1	1	✓ (3)	✓
Sally	A	13	7	✓ (3)	✓
Tammy	A	1	1	✓ (4)	✓
Tina	C				✓
Ulysses	A	1	1	✓ (3)	✓
Veronica	A	3	2	✓ (3)	✓
Vern	A	1	1	✓ (1)	✓
Violet	C				✓
Wendy	A				✓
Zane	C & B	13	1	✓ (2)	✓

Averages:

6.87

5.15

## APPENDIX D

### Interview Questions

#### **Initial Interview Questions and Protocol**

##### Introduction:

My name is Stuart Lenz and I am a doctoral student at UNL. Thank you for taking the time to meet with me and conduct this interview. I will be asking you some questions regarding your experiences with the newly integrated math intervention program at your school. Your information is valuable in order to better the program and aid others in their work with the program as well. All of the information you share with me today will be kept confidential, and neither your name nor the school's name will be used within the study. Please feel free to indicate at any time if you are uncomfortable with the interview or need a break. Your responses will be audio taped and then transcribed by myself for future analysis. I will now read through the informed consent form with you, and then will have you sign it if you comply with the agreement.

- Do you have any questions about the interview?

Interviewer: \_\_\_\_\_

Interviewee: \_\_\_\_\_

Date: \_\_\_\_\_

Surname: \_\_\_\_\_

Location: \_\_\_\_\_

#### **Initial Interview Questions**

##### **Profile:**

- 1) How many years of experience do you have as a math teacher?
  
- 2) How many years have you been working in your current building?
  
- 3) Currently, which math classes do you teach?

**Interview Questions:**

- 1) Describe your experiences with the math intervention program so far.
- 2) How would you describe your comfort level with the math intervention program?
  
- 3) What would you consider your level of knowledge of the math intervention program?
  
- 4) How does the referral process for math intervention work in your building?
  - What are the criteria for referring a student?
  - What contacts do you have to make to refer a student for math intervention?
  - How long does the referral process take before the interventionist sees and works with the student?
  
- 5) Describe what motivates you when deciding who and when to refer a student to the intervention program.
  - Have your motivations changed over time?
    - If NO; no more questions
    - If YES; how?
  
- 6) Tell me about a time when you struggled with whether or not you should refer a student to math intervention.
  
- 7) Has a colleague influenced your decision to refer students to math intervention?
  - If NO; no more questions
  - If YES; Can you describe how that colleague influenced you?
  
- 8) Is there any additional information that you would like to share regarding the math intervention program and your use of it?

**Closing:**

Thank you for your participation in the interview and my study. Once again, all of your responses will remain confidential and neither your name nor the school's name will be used within the study. I will be in contact with you after the following semester to conduct another interview if you are still eligible and agree to.

## Second Round Interview Questions

Interviewee: \_\_\_\_\_

Date: \_\_\_\_\_

### Branching Interview (LoU)

If you were to describe the math intervention program to someone who does not know

<i>Are you using the math intervention program?</i>				
Yes		No		
<i>What kinds of changes are you making in your use of the math intervention program?</i>		<i>Have you decided to use it and set a date to begin use?</i>		
User-Oriented	Nothing Unusual	Impact-Oriented	Yes	No (O, I)
<b>III Mechanical</b>	<b>IV A Routine</b>	<i>Are you coordinating your use of the math intervention program with other users, including another not in your original group of users?</i>		<b>II Preparation</b>
		Yes (V)	No (IV B, VI)	<i>Are you currently looking for information about the math intervention program?</i>
		<i>Are you planning or exploring making major modifications or replacing the innovation?</i>		<b>I Orientation</b>
		No	Yes	No
		<b>V Integration</b>	<b>VI Renewal</b>	<b>O Non-use</b>
		<b>IV B Refinement</b>		

about it, and does not work at your school, how would you describe it to them?

Whom do you talk to about math intervention?

Last time we met you said your level of knowledge of the math intervention program was \_\_\_\_\_. How would you describe it now?

Last time we met you said your level of comfort with the math intervention program was \_\_\_\_\_. How would you describe it now?

Describe your experiences with a math intervention program before using the current program?

When you think about the math intervention program, what concerns do you have?

What would you say has influenced you to continue your use with the math intervention program?

What would you say is the best thing about the math intervention program?

If you could change anything about the math intervention program, what would it be?

How would you define “success” for the math intervention program?

What prevents you from using the math intervention program more often than you currently do?

Can you describe your relationship with the math interventionist as well as the math coach?



**Third Round Interview Questions**

Interviewee: \_\_\_\_\_

Date: \_\_\_\_\_

Since the last time we met, have you made any changes in your use of the math intervention program? If so, what changes did you make?

Describe your recent experiences with the math intervention program.

Last time we met you said your level of knowledge of the math intervention program was \_\_\_\_\_. How would you describe it now?

What do you feel you would need in order to increase your level of knowledge?

Last time we met you said your level of comfort with the math intervention program was \_\_\_\_\_. How would you describe it now?

What do you feel you would need in order to increase your level of comfort?

Last time we met you said your concerns were \_\_\_\_\_.  
Have those concerns changed since then, and if so, what are your concerns now?

If you could go back to the very beginning of the math intervention program, what you have wanted then to help you better understand and use the program?

Has your use of the math intervention program increased, decreased, or stayed the same since the first time you used it? Explain why.

Has your collaboration with others about the math intervention program increased, decreased, or stayed the same since you first used it? Explain why.

What motivates you to continue your use of the math intervention program?

Do you have any other comments you would like to share about the math intervention program and your use of it?

**Fourth Round Interview Questions**

Interviewee: \_\_\_\_\_

Date: \_\_\_\_\_

Describe your recent experiences with the math intervention program.

Would you describe your use of the math intervention program as being more routine or customized to the needs of each individual student?

What do you see as the strengths and weaknesses of the math intervention program in your situation? Have you made any attempt to do anything about the weaknesses?

What do you see as being the effects of the math intervention program? Have you received any feedback from students?

Have you made any changes recently in how you use the math intervention program? If so, what changes have you made?

Are you exploring any alternatives or major modifications?

As you look ahead to later this year, what plans do you have in relation to your use of the math intervention program?

Are you working with others? If so, how do you work together and how frequently?

Last time we met you said your level of knowledge of the math intervention program was \_\_\_\_\_. How would you describe it now?

Last time we met you said your level of comfort with the math intervention program was \_\_\_\_\_ . How would you describe it now?

Last time we met you said your concerns were \_\_\_\_\_ .  
Have those concerns changed since then, and if so, what are your concerns now?

How have your concerns about the math intervention changed over time since the first time you used the program?

How would you rank the math intervention program within your list of priorities?

Compared to other programs within your district, school, and/or department, how would you rate the math intervention program in its implementation and use for you personally?

Do you have any other comments or information that you would like to share regarding the math intervention program and/or your use of it?

**Fifth Round Interview Questions**

Interviewee: \_\_\_\_\_

Date: \_\_\_\_\_

Describe your recent experiences with the math intervention program.

Describe your use of the program. Has it remained routine, or have you made any changes in your use?

Last time we met you said your level of knowledge of the math intervention program was \_\_\_\_\_. How would you describe it now?

Last time we met you said your level of comfort with the math intervention program was \_\_\_\_\_. How would you describe it now?

Last time we met you said your concerns were \_\_\_\_\_.  
Have those concerns changed since then, and if so, what are your concerns now?

How has the math intervention program affected you as a teacher?

What could be done to make the math intervention program better for you as a teacher?

Have you collaborated with any other people regarding the math intervention program?

What people or things impacted your use of the program the most?

How has your motivation to use the program changed over time?

Do you feel that the math intervention program is worth maintaining long term?

How would you see the math intervention program being used in the future if it were to continue?

Do you have any other comments or information that you would like to share regarding the math intervention program and/or your use of it?

## APPENDIX E

### Personal Invitation Script

Hi, my name is Stuart Lenz. I am the math interventionist at North Star High School, and am conducting research for my dissertation. I am performing a longitudinal study on the use of the math intervention program. I am here seeing if you would be willing to take part in an interview regarding your experiences with the math intervention program. The interview should only take about 30 minutes, and will be conducted on (Date).

Interviews will be conducted before school, during each period of the day, and also after school. I will be sending out a personal invitation email to all eligible teachers, and if you are willing to participate then please reply indicating your interest to participate and the interview time and location that would be most convenient for you. I will then come to your school on that date and conduct the interview with you during the time and location that we set. All of your responses will remain confidential.

If you have never interviewed with me, then I would be conducting an initial interview with you. But, if you have interviewed with me in the past, then I would be interested in conducting a follow-up interview with you.

I would also like for you to take a few minutes right now to complete a questionnaire on your concerns and thoughts on the math intervention program. Your name is optional, and all of your responses will remain confidential. Based on your responses I will be creating a concerns profile for each person. This same questionnaire will be given each Fall semester in 2012, 2013, and 2014.

Thank you for your time and consideration.

## APPENDIX F

### Personal Email Script

Hi, my name is Stuart Lenz. I am the math interventionist at North Star High School, and am conducting research for my dissertation. I am performing a longitudinal study on the use of the math intervention program. You are being contacted because you have used the math intervention program this past semester. I am contacting you now to see if you would be willing to take part in a voluntary interview regarding your experiences with the math intervention program. The interview should only take about 30 minutes, and will be conducted at your school on (Date). All of your responses will remain confidential.

Times available for interviews are:

Before school, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> period, and after school

If you have never interviewed with me, then I would be conducting an initial interview with you. But, if you have interviewed with me in the past, then I would be interested in conducting a follow-up interview with you.

If you are willing to take part in an interview please reply, indicating the time and location that works best for you. I will then reply back to you to confirm the time and location, or discuss alternate times if there is a conflict.

Thanks for your time and consideration,

Stuart Lenz

[slenz@lps.org](mailto:slenz@lps.org)

[stulenz@hotmail.com](mailto:stulenz@hotmail.com)

308-440-3780



## APPENDIX G

## Math Intervention Stages of Concern Questionnaire

## Math Intervention Stages of Concern Questionnaire

Name (optional): \_\_\_\_\_

*The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the adoption process.*

*The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years' experience using them. Therefore, many of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.*

For example:

*This statement is very true of me at this time.*      0 1 2 3 4 5 6 7  
*This statement is somewhat true of me now.*      0 1 2 3 4 5 6 7  
*This statement is not at all true of me at this time.*      0 1 2 3 4 5 6 7  
*This statement seems irrelevant to me.*      0 1 2 3 4 5 6 7

*Please respond to the items in terms of your present concerns, or how you feel about your involvement with the math intervention program. I do not hold to any one definition of the innovation (the math intervention program), so please think of it in terms of your own perception of what it involves. Phrases such as "this approach" and "the new system" all refer to the same innovation (the math intervention program).*

*Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the innovation.*

*Thank you for taking time to complete this task.*

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now	

## Circle One Number For Each Item

1. I am concerned about students' attitudes toward math intervention.	0	1	2	3	4	5	6	7
2. I now know of some other approaches that might work better.	0	1	2	3	4	5	6	7
3. I am more concerned about another innovation.	0	1	2	3	4	5	6	7
4. I am concerned about not having enough time to organize myself each day.	0	1	2	3	4	5	6	7
5. I would like to help other faculty in their use of the math intervention program.	0	1	2	3	4	5	6	7

Adapted from George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The Stages of Concern Questionnaire*. Austin, TX: Southwest Educational Development Laboratory.

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now		Very true of me now		

Circle One Number For Each Item

6. I have a very limited knowledge of the math intervention program.	0	1	2	3	4	5	6	7
7. I would like to know how the math intervention program will effect how my students view me as their math teacher.	0	1	2	3	4	5	6	7
8. I am concerned about process I have to go through to recommend a student to the math intervention program.	0	1	2	3	4	5	6	7
9. I am concerned about revising my use of the math intervention program.	0	1	2	3	4	5	6	7
10. I would like to develop working relationships with both our faculty and outside faculty using the math intervention program.	0	1	2	3	4	5	6	7
11. I am concerned about how the math intervention program affects students.	0	1	2	3	4	5	6	7
12. I am concerned about the math intervention program at this time.	0	1	2	3	4	5	6	7
13. I would like to know who will make the decisions in the new system.	0	1	2	3	4	5	6	7
14. I would like to discuss the possibility of using the math intervention program.	0	1	2	3	4	5	6	7
15. I would like to know what resources are available with the math intervention program.	0	1	2	3	4	5	6	7
16. I am concerned about my inability to manage all that the math intervention program requires.	0	1	2	3	4	5	6	7
17. I would like to know how my teaching is supposed to change.	0	1	2	3	4	5	6	7
18. I would like to familiarize other departments or persons with the progress of the math intervention program.	0	1	2	3	4	5	6	7
19. I am concerned about evaluation of my impact on students.	0	1	2	3	4	5	6	7
20. I would like to revise the math intervention program's approach.	0	1	2	3	4	5	6	7
21. I am preoccupied with things other than the math intervention program.	0	1	2	3	4	5	6	7

Adapted from George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The Stages of Concern Questionnaire*. Austin, TX: Southwest Educational Development Laboratory.

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now		Very true of me now		

## Circle One Number For Each Item

22. I would like to modify our use of the math intervention program based on the experiences of our students.	0	1	2	3	4	5	6	7
23. I spend little time thinking about the math intervention program.	0	1	2	3	4	5	6	7
24. I would like to excite my students about their part in the math intervention program.	0	1	2	3	4	5	6	7
25. I am concerned about time spent working with nonacademic problems related to the math intervention program.	0	1	2	3	4	5	6	7
26. I would like to know what the use of the math intervention program will require in the immediate future.	0	1	2	3	4	5	6	7
27. I would like to coordinate my efforts with others to maximize the math intervention program's effects.	0	1	2	3	4	5	6	7
28. I would like to have more information on time and energy commitments required by the math intervention program.	0	1	2	3	4	5	6	7
29. I would like to know what other faculty are doing in this area.	0	1	2	3	4	5	6	7
30. Currently, other priorities prevent me from focusing my attention on the math intervention program.	0	1	2	3	4	5	6	7
31. I would like to determine how to supplement, enhance, or replace the math intervention program.	0	1	2	3	4	5	6	7
32. I would like to use feedback from students to change the math intervention program.	0	1	2	3	4	5	6	7
33. I would like to know how my role will change when I am using the math intervention program.	0	1	2	3	4	5	6	7
34. Coordination of tasks and people is taking too much of my time	0	1	2	3	4	5	6	7
35. I would like to know how the math intervention program is better than what we had before.	0	1	2	3	4	5	6	7

Adapted from George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The Stages of Concern Questionnaire*. Austin, TX: Southwest Educational Development Laboratory.

Check the boxes that apply to you.

1) I am currently using the math intervention program

YES \_\_\_\_\_ NO \_\_\_\_\_

2) Counting the current semester, I have used the math intervention for:

Never used the math intervention program \_\_\_\_\_

1 Semester \_\_\_\_\_

2 Semesters \_\_\_\_\_

3 Semesters \_\_\_\_\_

4 Semesters \_\_\_\_\_

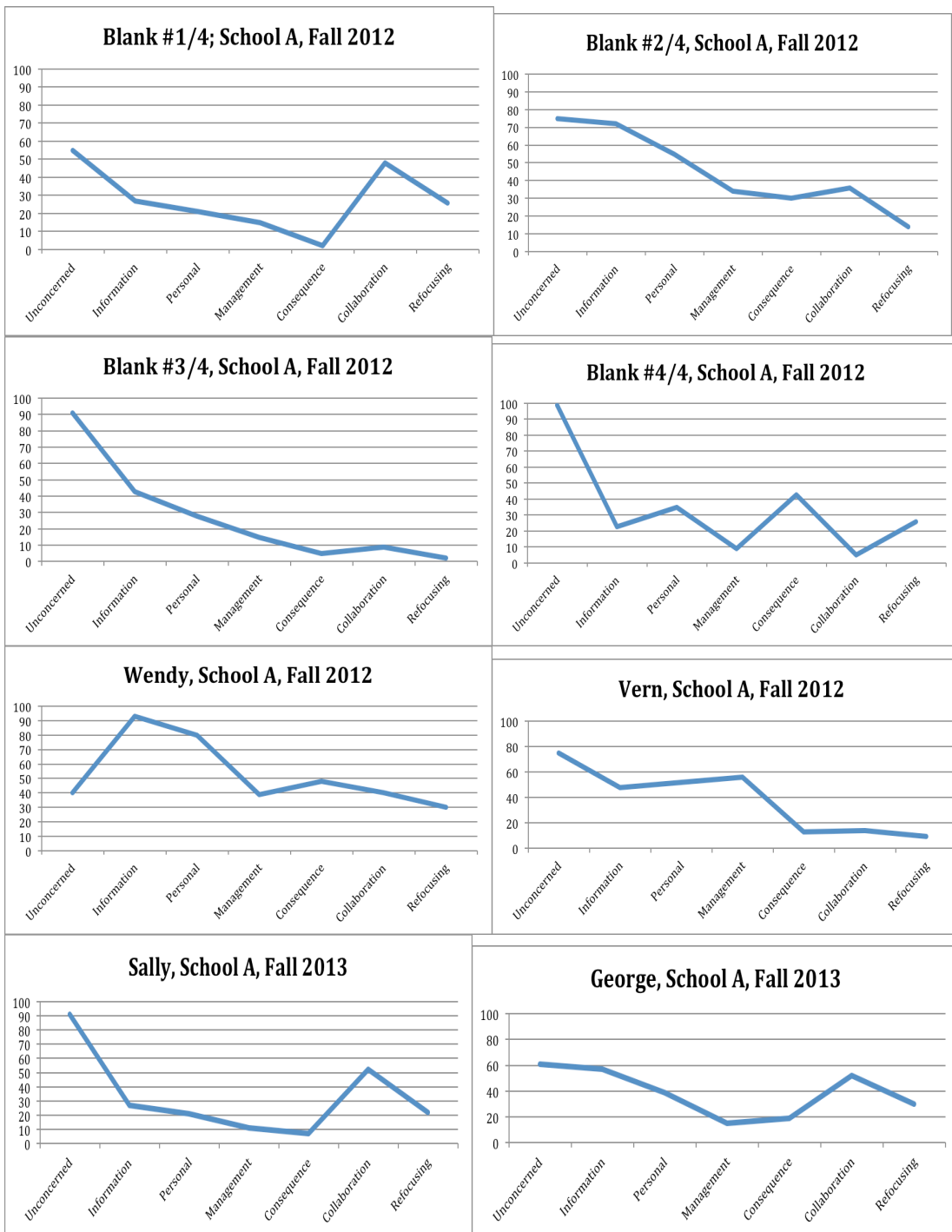
More than 4 Semesters \_\_\_\_\_

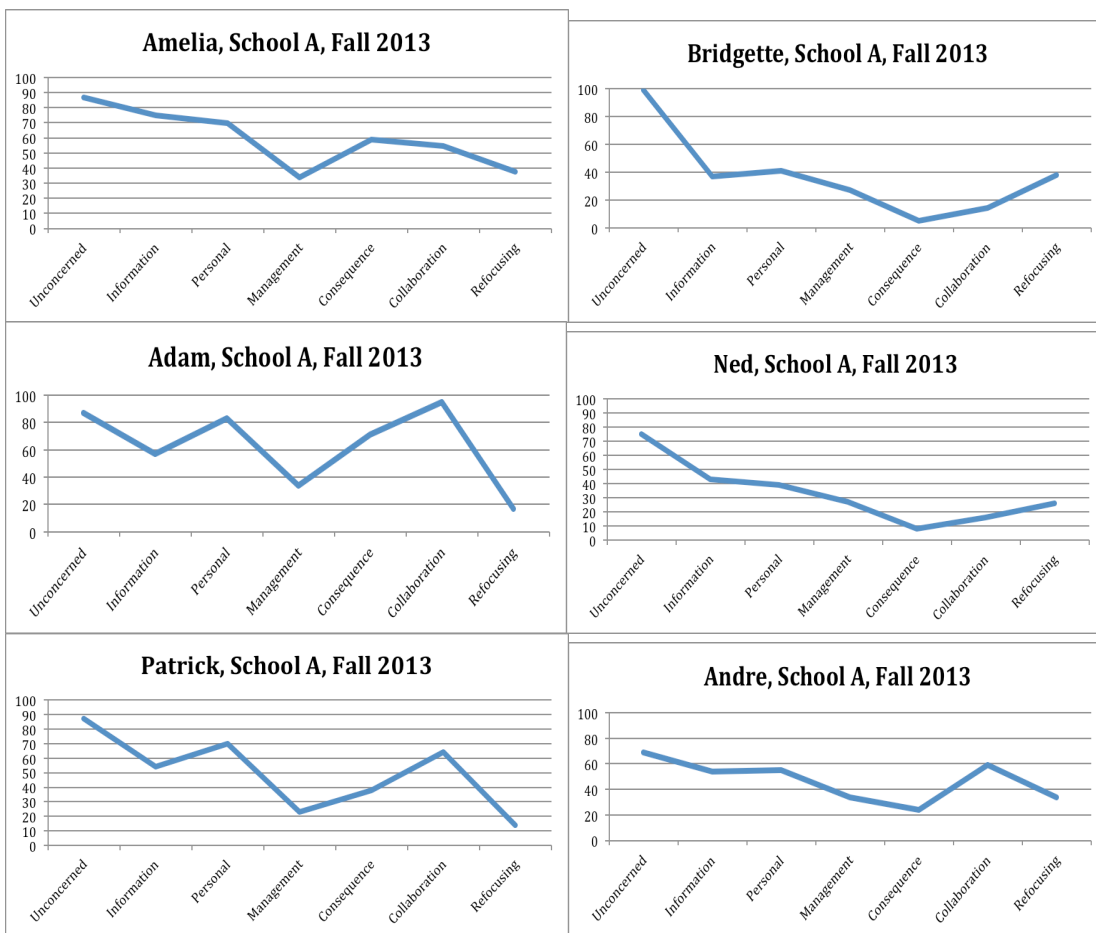
Adapted from George, A. A., Hall, G. E., & Stiegelbauer, S. M. (2006). *Measuring implementation in schools: The Stages of Concern Questionnaire*. Austin, TX: Southwest Educational Development Laboratory.

## APPENDIX H

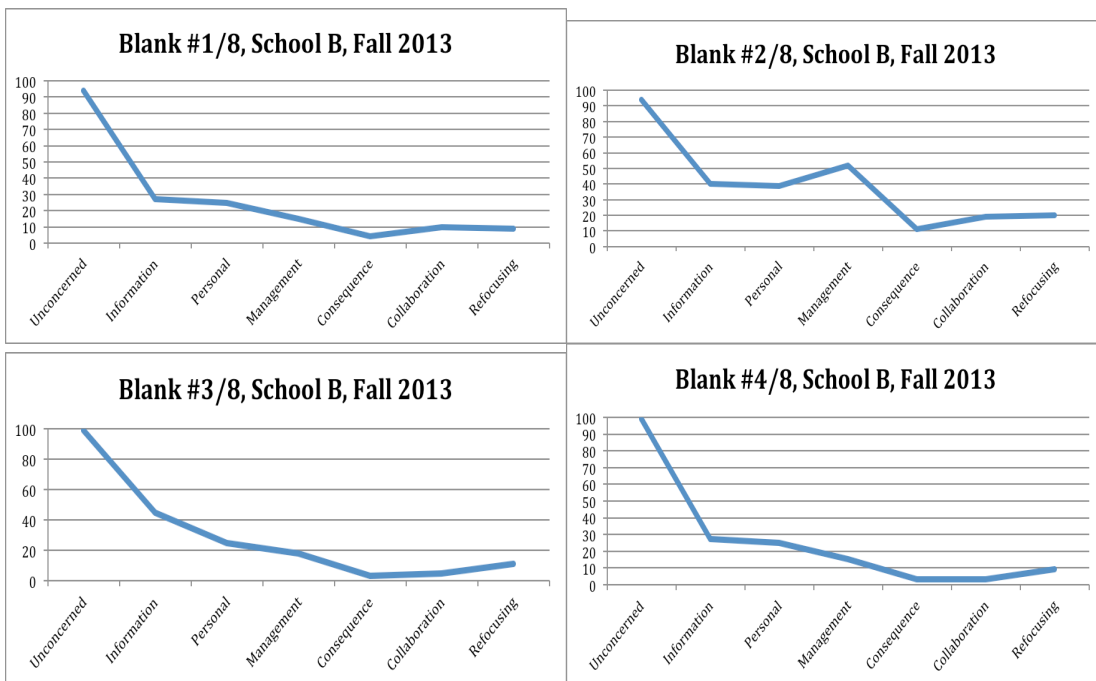
### SoC Questionnaire User Profiles

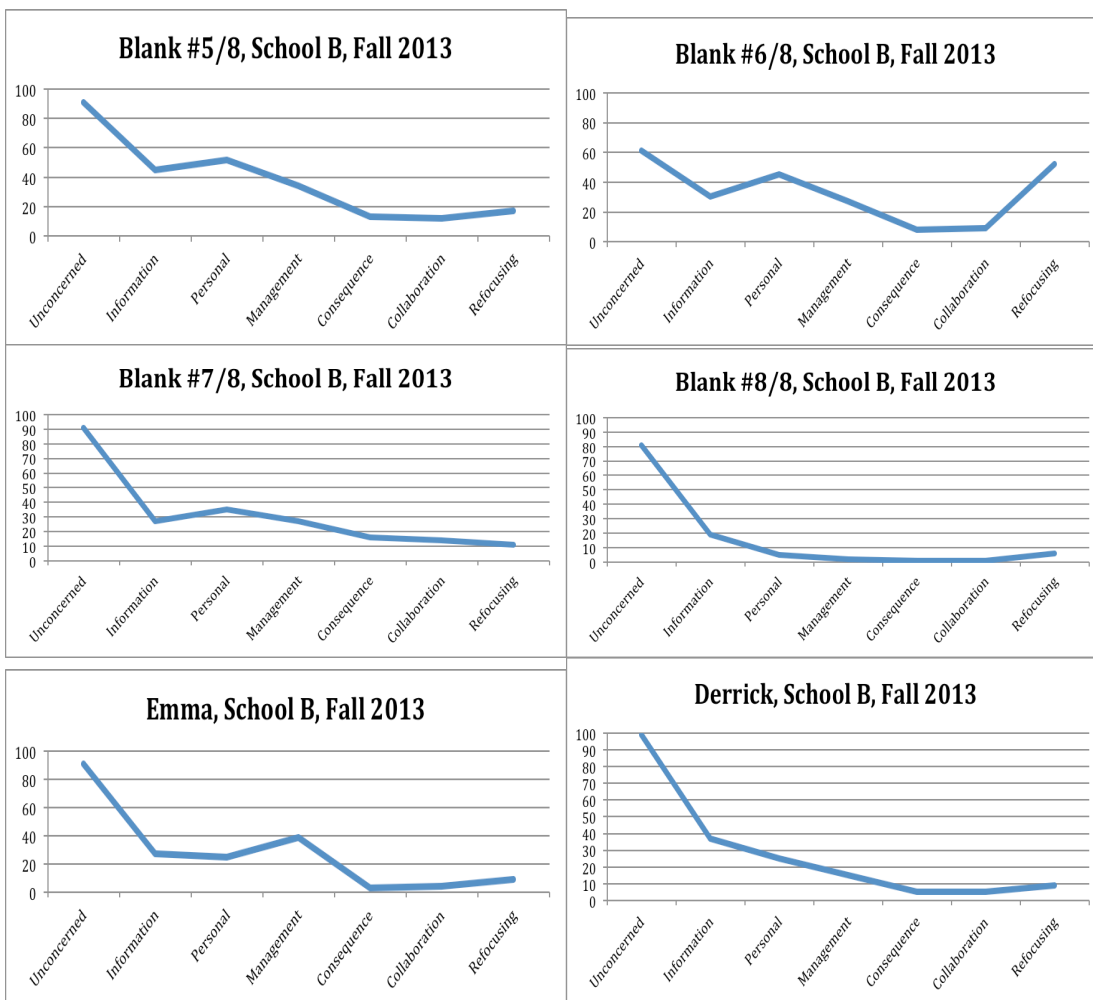
#### School A



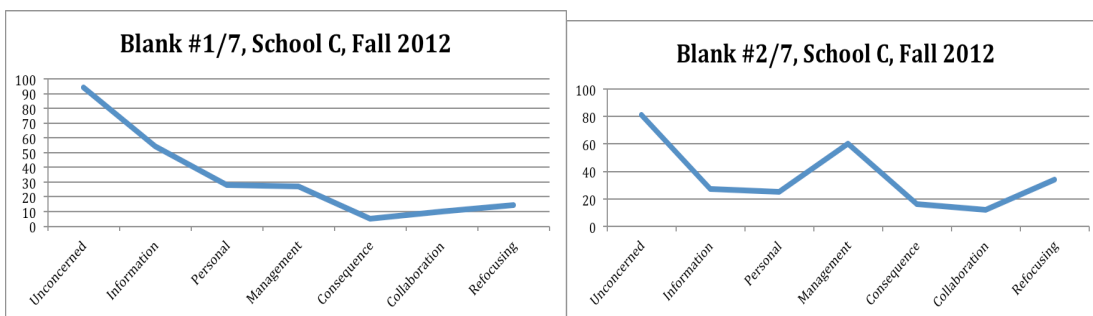


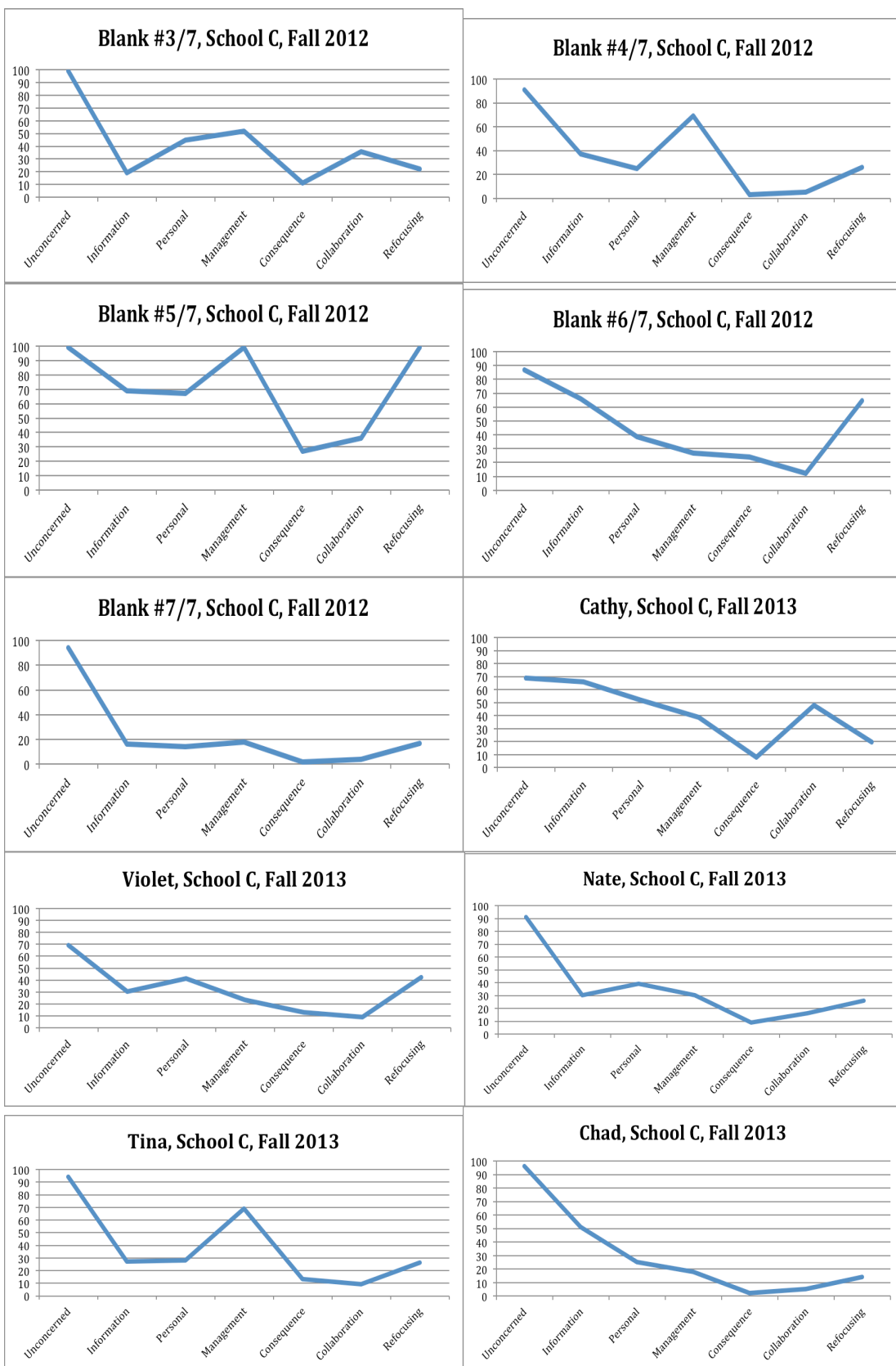
**School B**



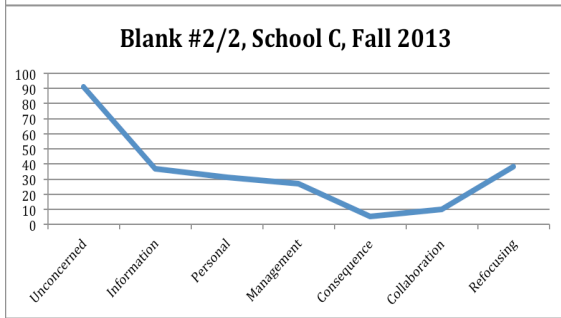
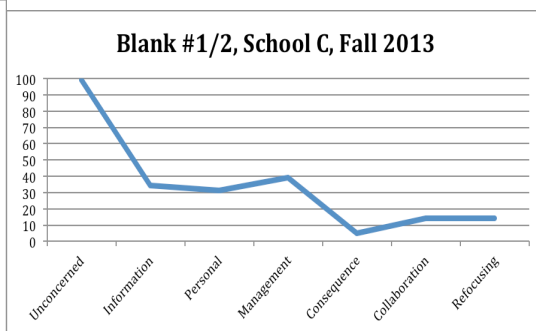
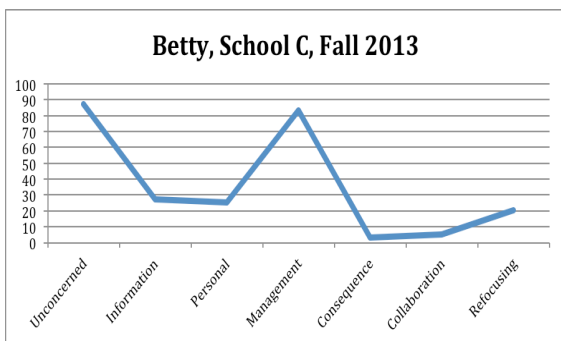


**School C**









## APPENDIX I

## Second Highest Concerns Charts

School A Second Highest Concerns, Fall 2012 (year 1)

<b>Highest SoC</b>	<b>Second Highest SoC</b>						
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
0 - Unconcerned	0	5	1	2	1	2	0
1 - Information	0	0	1	0	0	0	0
2 - Personal	0	0	0	0	0	0	0
3 - Management	0	0	0	0	0	0	0
4 - Consequence	0	0	0	0	0	0	0
5 - Collaboration	0	0	0	0	0	0	0
6 - Refocusing	0	0	0	0	0	0	0
Total		<b>5</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	

School A Second Highest Concerns, Fall 2013 (year 2)

<b>Highest SoC</b>	<b>Second Highest SoC</b>						
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
0 - Unconcerned	0	3	5	0	0	3	1
1 - Information	0	0	0	0	0	0	0
2 - Personal	0	0	0	0	0	0	0
3 - Management	0	0	0	0	0	0	0
4 - Consequence	0	0	0	0	0	0	0
5 - Collaboration	2	0	0	0	0	0	0
6 - Refocusing	0	0	0	0	0	0	0
Total	<b>2</b>	<b>3</b>	<b>5</b>			<b>3</b>	<b>1</b>

School B Second Highest Concerns, Fall 2013 (year 2)

<b>Highest SoC</b>	<b>Second Highest SoC</b>						
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
0 - Unconcerned	0	5	2	2	0	0	1
1 - Information	0	0	0	0	0	0	0
2 - Personal	0	0	0	0	0	0	0
3 - Management	1	0	1	0	0	0	0
4 - Consequence	0	0	0	0	0	0	0
5 - Collaboration	0	0	0	0	0	0	0
6 - Refocusing	0	0	0	0	0	0	0
Total	<b>1</b>	<b>5</b>	<b>3</b>	<b>2</b>			<b>1</b>

School C Second Highest Concerns, Fall 2012 (year 1)

<b>Highest SoC</b>	<b>Second Highest SoC</b>						
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
0 - Unconcerned	0	3	3	5	0	0	0
1 - Information	0	0	0	0	0	0	0
2 - Personal	0	0	0	0	0	0	0
3 - Management	0	1	0	0	0	0	0
4 - Consequence	0	0	0	0	0	0	0
5 - Collaboration	0	0	0	0	0	0	0
6 - Refocusing	0	1	0	0	0	0	0
<b>Total</b>		<b>5</b>	<b>3</b>	<b>5</b>			

School C Second Highest Concerns, Fall 2013 (year 2)

<b>Highest SoC</b>	<b>Second Highest SoC</b>						
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
0 - Unconcerned	0	3	2	3	0	1	2
1 - Information	0	0	0	0	0	0	0
2 - Personal	0	0	0	0	0	0	0
3 - Management	0	0	0	0	0	0	0
4 - Consequence	0	0	0	0	0	0	0
5 - Collaboration	0	0	0	0	0	0	0
6 - Refocusing	0	0	0	0	0	0	0
<b>Total</b>		<b>3</b>	<b>2</b>	<b>3</b>		<b>1</b>	<b>2</b>

## APPENDIX J

## Stages of Concern Questionnaire Individual Question Scores by School

## School A – Fall 2012 - Stages of Concern Questionnaire Question Categories

**#1 Unconcerned** (*to busy to think about or work with the intervention program, or concerned about other issues and things*)

3 – I am more concerned about another innovation (1.5)

12 – I am concerned about the math intervention program at this time (2.67)

21 – I am preoccupied with things other than the math intervention program (3.25)

23 – I spend little time thinking about the math intervention program (3.08)

30 – Currently, other priorities prevent me from focusing my attention on the math intervention program (2.67)

**#2 Information** (*gathering or wanting more information regarding the math intervention program, its use and requirements*)

6 – I have a very limited knowledge of the math intervention program (2.17)

14 – I would like to discuss the possibility of using the math intervention program (2.5)

15 – I would like to know what resources are available with the math intervention program (2.92)

26 – I would like to know what the use of the math intervention program will require in the immediate future (2.33)

35 – I would like to know how the math intervention program is better than what we had before (2.58)

**#3 Personal** (*focus is on how program will effect the teacher personally in regards to work load and responsibilities*)

7 – I would like to know how the math intervention program will effect how my students view me as their teacher (2.42)

13 – I would like to know who will make the decisions in the new system (1.75)

17 – I would like to know how my teaching is supposed to change (2.83)

28 – I would like to have more information on time and energy commitments required by the math intervention program (2.25)

33 – I would like to know how my role will change when I am using the math intervention program (2.42)

**#4 Management** (*concerned about the time and energy required to use the program and managing it all*)

4 – I am concerned about no having enough time to organize myself each day (2.08)

8 – I am concerned about process I have to go through to recommend a student to the math intervention program (2)

16 – I am concerned about my inability to manage all that the math intervention program requires (1.67)

25 – I am concerned about time spent working with nonacademic problems related to the math intervention program (1.25)

34 – Coordination of tasks and people is taking too much of my time (1.33)

**#6 Consequence** (*concerned with students' attitudes and impacts*)

- 1 – I am concerned about students' attitudes toward math intervention (3.25)
- 11 – I am concerned about how the math intervention program affects students (4.08)
- 19 – I am concerned about evaluation of my impact on students (2.58)
- 24 – I would like to excite my students about their part in the math intervention program (3.75)
- 32 – I would like to use feedback from students to change the math intervention program (3)

**#5 Collaboration** (*concerned about collaborating with others about the program, letting others know about it and talking with others that are using it*)

- 5 – I would like to help other faculty in their use of the math intervention program (2.92)
- 10 – I would like to develop working relationships with both our faculty and outside faculty using the math intervention program (2.67)
- 18 – I would like to familiarize other departments or persons with the progress of the math intervention program (2.5)
- 27 – I would like to coordinate my efforts with others to maximize the math intervention program's effects (3.33)
- 29 – I would like to know what other faculty are doing in this area (3)

**#7 Refocusing** (*concerned with changing or modifying the program*)

- 2 – I now know of some other approaches that might work better (2.83)
- 9 – I am concerned about revising my use of the math intervention program (1.92)
- 20 – I would like to revise the math intervention program's approach (1)
- 22 – I would like to modify our use of the math intervention program based on the experiences of our students (1.25)
- 31 – I would like to determine how to supplement, enhance, or replace the math intervention program (2.17)

**School A – Fall 2013 - Stages of Concern Questionnaire Question Categories**

***Unconcerned*** (*to busy to think about or work with the intervention program, or concerned about other issues and things*)

- 3 – I am more concerned about another innovation (1.357)
- 12 – I am concerned about the math intervention program at this time (4.786)
- 21 – I am preoccupied with things other than the math intervention program (3.071)
- 23 – I spend little time thinking about the math intervention program (2.929)
- 30 – Currently, other priorities prevent me from focusing my attention on the math intervention program (2.5)

***Information*** (*gathering or wanting more information regarding the math intervention program, its use and requirements*)

- 6 – I have a very limited knowledge of the math intervention program (1.429)
- 14 – I would like to discuss the possibility of using the math intervention program (1.571)
- 15 – I would like to know what resources are available with the math intervention program (2.5)

26 – I would like to know what the use of the math intervention program will require in the immediate future (2.643)

35 – I would like to know how the math intervention program is better than what we had before (2.5)

***Personal*** (focus is on how program will effect the teacher personally in regards to work load and responsibilities)

7 – I would like to know how the math intervention program will effect how my students view me as their teacher (2.286)

13 – I would like to know who will make the decisions in the new system (1.714)

17 – I would like to know how my teaching is supposed to change (3.214)

28 – I would like to have more information on time and energy commitments required by the math intervention program (2.786)

33 – I would like to know how my role will change when I am using the math intervention program (2.571)

***Management*** (concerned about the time and energy required to use the program and managing it all)

4 – I am concerned about no having enough time to organize myself each day (2.071)

8 – I am concerned about process I have to go through to recommend a student to the math intervention program (1.429)

16 – I am concerned about my inability to manage all that the math intervention program requires (1.214)

25 – I am concerned about time spent working with nonacademic problems related to the math intervention program (1.786)

34 – Coordination of tasks and people is taking too much of my time (1.071)

***Consequence*** (concerned with students' attitudes and impacts)

1 – I am concerned about students' attitudes toward math intervention (2.929)

11 – I am concerned about how the math intervention program affects students (3.429)

19 – I am concerned about evaluation of my impact on students (3.214)

24 – I would like to excite my students about their part in the math intervention program (4.857)

32 – I would like to use feedback from students to change the math intervention program (3.071)

***Collaboration*** (concerned about collaborating with others about the program, letting others know about it and talking with others that are using it)

5 – I would like to help other faculty in their use of the math intervention program (3.786)

10 – I would like to develop working relationships with both our faculty and outside faculty using the math intervention program (4.357)

18 – I would like to familiarize other departments or persons with the progress of the math intervention program (3.714)

27 – I would like to coordinate my efforts with others to maximize the math intervention program's effects (4.357)

29 – I would like to know what other faculty are doing in this area (3.429)

***Refocusing*** (concerned with changing or modifying the program)

- 2 – I now know of some other approaches that might work better (3.357)
- 9 – I am concerned about revising my use of the math intervention program (1.929)
- 20 – I would like to revise the math intervention program's approach (1.429)
- 22 – I would like to modify our use of the math intervention program based on the experiences of our students (1.714)
- 31 – I would like to determine how to supplement, enhance, or replace the math intervention program (3.00)

**School B – Fall 2013 - Stages of Concern Questionnaire Question Categories*****Unconcerned*** (to busy to think about or work with the intervention program, or concerned about other issues and things)

- 3 – I am more concerned about another innovation (1.909)
- 12 – I am concerned about the math intervention program at this time (5.273)
- 21 – I am preoccupied with things other than the math intervention program (4.545)
- 23 – I spend little time thinking about the math intervention program (4.1)
- 30 – Currently, other priorities prevent me from focusing my attention on the math intervention program (1.7)

***Information*** (gathering or wanting more information regarding the math intervention program, its use and requirements)

- 6 – I have a very limited knowledge of the math intervention program (1.364)
- 14 – I would like to discuss the possibility of using the math intervention program (1.545)
- 15 – I would like to know what resources are available with the math intervention program (1.545)
- 26 – I would like to know what the use of the math intervention program will require in the immediate future (1.00)
- 35 – I would like to know how the math intervention program is better than what we had before (2.00)

***Personal*** (focus is on how program will effect the teacher personally in regards to work load and responsibilities)

- 7 – I would like to know how the math intervention program will effect how my students view me as their teacher (1.273)
- 13 – I would like to know who will make the decisions in the new system (2.455)
- 17 – I would like to know how my teaching is supposed to change (1.455)
- 28 – I would like to have more information on time and energy commitments required by the math intervention program (1.00)
- 33 – I would like to know how my role will change when I am using the math intervention program (1.10)

***Management*** (concerned about the time and energy required to use the program and managing it all)

- 4 – I am concerned about no having enough time to organize myself each day (2.727)
- 8 – I am concerned about process I have to go through to recommend a student to the math intervention program (1.727)

16 – I am concerned about my inability to manage all that the math intervention program requires (1.00)

25 – I am concerned about time spent working with nonacademic problems related to the math intervention program (1.50)

34 – Coordination of tasks and people is taking too much of my time (1.10)

***Consequence*** (concerned with students' attitudes and impacts)

1 – I am concerned about students' attitudes toward math intervention (2.273)

11 – I am concerned about how the math intervention program affects students (2.455)

19 – I am concerned about evaluation of my impact on students (0.818)

24 – I would like to excite my students about their part in the math intervention program (2.80)

32 – I would like to use feedback from students to change the math intervention program (1.40)

***Collaboration*** (concerned about collaborating with others about the program, letting others know about it and talking with others that are using it)

5 – I would like to help other faculty in their use of the math intervention program (1.818)

10 – I would like to develop working relationships with both our faculty and outside faculty using the math intervention program (1.455)

18 – I would like to familiarize other departments or persons with the progress of the math intervention program (1.273)

27 – I would like to coordinate my efforts with others to maximize the math intervention program's effects (1.60)

29 – I would like to know what other faculty are doing in this area (1.00)

***Refocusing*** (concerned with changing or modifying the program)

2 – I now know of some other approaches that might work better (2.455)

9 – I am concerned about revising my use of the math intervention program (1.818)

20 – I would like to revise the math intervention program's approach (1.00)

22 – I would like to modify our use of the math intervention program based on the experiences of our students (1.667)

31 – I would like to determine how to supplement, enhance, or replace the math intervention program (1.20)

**School C – Fall 2012 - Stages of Concern Questionnaire Question Categories**

***#1 Unconcerned*** (to busy to think about or work with the intervention program, or concerned about other issues and things)

3 – I am more concerned about another innovation (2.09)

12 – I am concerned about the math intervention program at this time (2.36)

21 – I am preoccupied with things other than the math intervention program (4.09)

23 – I spend little time thinking about the math intervention program (3.82)

30 – Currently, other priorities prevent me from focusing my attention on the math intervention program (3.55)



**#3/4 Information** (*gathering or wanting more information regarding the math intervention program, its use and requirements*)

6 – I have a very limited knowledge of the math intervention program (1.45)

14 – I would like to discuss the possibility of using the math intervention program (1.73)

15 – I would like to know what resources are available with the math intervention program (2)

26 – I would like to know what the use of the math intervention program will require in the immediate future (2.82)

35 – I would like to know how the math intervention program is better than what we had before (3.27)

**#3/4 Personal** (*focus is on how program will effect the teacher personally in regards to work load and responsibilities*)

7 – I would like to know how the math intervention program will effect how my students view me as their teacher (2.09)

13 – I would like to know who will make the decisions in the new system (2.55)

17 – I would like to know how my teaching is supposed to change (1.73)

28 – I would like to have more information on time and energy commitments required by the math intervention program (2.45)

33 – I would like to know how my role will change when I am using the math intervention program (2.09)

**#2 Management** (*concerned about the time and energy required to use the program and managing it all*)

4 – I am concerned about no having enough time to organize myself each day (4.18)

8 – I am concerned about process I have to go through to recommend a student to the math intervention program (2.91)

16 – I am concerned about my inability to manage all that the math intervention program requires (2.55)

25 – I am concerned about time spent working with nonacademic problems related to the math intervention program (1.73)

34 – Coordination of tasks and people is taking too much of my time (2.64)

**#7 Consequence** (*concerned with students' attitudes and impacts*)

1 – I am concerned about students' attitudes toward math intervention (1.82)

11 – I am concerned about how the math intervention program affects students (3.27)

19 – I am concerned about evaluation of my impact on students (2.18)

24 – I would like to excite my students about their part in the math intervention program (2.55)

32 – I would like to use feedback from students to change the math intervention program (2.67)

**#6 Collaboration** (*concerned about collaborating with others about the program, letting others know about it and talking with others that are using it*)

5 – I would like to help other faculty in their use of the math intervention program (1.36)

10 – I would like to develop working relationships with both our faculty and outside faculty using the math intervention program (2.27)

18 – I would like to familiarize other departments or persons with the progress of the math intervention program (1.18)

27 – I would like to coordinate my efforts with others to maximize the math intervention program's effects (3.91)

29 – I would like to know what other faculty are doing in this area (3.55)

**#5 Refocusing** (*concerned with changing or modifying the program*)

2 – I now know of some other approaches that might work better (2.73)

9 – I am concerned about revising my use of the math intervention program (3)

20 – I would like to revise the math intervention program's approach (2.18)

22 – I would like to modify our use of the math intervention program based on the experiences of our students (2.64)

31 – I would like to determine how to supplement, enhance, or replace the math intervention program (2.27)

### School C – Fall 2013 - Stages of Concern Questionnaire Question Categories

**#1 Unconcerned** (*to busy to think about or work with the intervention program, or concerned about other issues and things*)

3 – I am more concerned about another innovation (1.636)

12 – I am concerned about the math intervention program at this time (5.273)

21 – I am preoccupied with things other than the math intervention program (2.909)

23 – I spend little time thinking about the math intervention program (3.727)

30 – Currently, other priorities prevent me from focusing my attention on the math intervention program (2.727)

**#2 Information** (*gathering or wanting more information regarding the math intervention program, its use and requirements*)

6 – I have a very limited knowledge of the math intervention program (1.818)

14 – I would like to discuss the possibility of using the math intervention program (1.455)

15 – I would like to know what resources are available with the math intervention program (2.273)

26 – I would like to know what the use of the math intervention program will require in the immediate future (1.636)

35 – I would like to know how the math intervention program is better than what we had before (2.00)

**#3/4 Personal** (*focus is on how program will effect the teacher personally in regards to work load and responsibilities*)

7 – I would like to know how the math intervention program will effect how my students view me as their teacher (1.818)

13 – I would like to know who will make the decisions in the new system (1.636)

17 – I would like to know how my teaching is supposed to change (1.455)

28 – I would like to have more information on time and energy commitments required by the math intervention program (2.00)

33 – I would like to know how my role will change when I am using the math intervention program (1.455)

**#3/4 Management** (*concerned about the time and energy required to use the program and managing it all*)

4 – I am concerned about no having enough time to organize myself each day (2.818)

8 – I am concerned about process I have to go through to recommend a student to the math intervention program (2.182)

16 – I am concerned about my inability to manage all that the math intervention program requires (1.273)

25 – I am concerned about time spent working with nonacademic problems related to the math intervention program (2.182)

34 – Coordination of tasks and people is taking too much of my time (2.00)

**#7 Consequence** (*concerned with students' attitudes and impacts*)

1 – I am concerned about students' attitudes toward math intervention (1.727)

11 – I am concerned about how the math intervention program affects students (2.636)

19 – I am concerned about evaluation of my impact on students (1.091)

24 – I would like to excite my students about their part in the math intervention program (3.455)

32 – I would like to use feedback from students to change the math intervention program (2.182)

**#6 Collaboration** (*concerned about collaborating with others about the program, letting others know about it and talking with others that are using it*)

5 – I would like to help other faculty in their use of the math intervention program (1.545)

10 – I would like to develop working relationships with both our faculty and outside faculty using the math intervention program (1.727)

18 – I would like to familiarize other departments or persons with the progress of the math intervention program (1.455)

27 – I would like to coordinate my efforts with others to maximize the math intervention program's effects (3.273)

29 – I would like to know what other faculty are doing in this area (2.727)

**#5 Refocusing** (*concerned with changing or modifying the program*)

2 – I now know of some other approaches that might work better (2.727)

9 – I am concerned about revising my use of the math intervention program (2.273)

20 – I would like to revise the math intervention program's approach (1.182)

22 – I would like to modify our use of the math intervention program based on the experiences of our students (2.727)

31 – I would like to determine how to supplement, enhance, or replace the math intervention program (2.00)

## APPENDIX K

## High and Low Concerns by Stages of Concern Category

## School A

Stages of Concern Category	Fall 2012	Fall 2013
Unconcerned	<p><b>High:</b> I am preoccupied with things other than the math intervention program</p> <p><b>Low:</b> I am more concerned about another innovation</p>	<p><b>High:</b> I am concerned about the math intervention program at this time</p> <p><b>Low:</b> I am more concerned about another innovation</p>
Information	<p><b>High:</b> I would like to know what resources are available with the math intervention program</p> <p><b>Low:</b> I have a very limited knowledge of the math intervention program</p>	<p><b>High:</b> I would like to know what the use of the math intervention program will require in the immediate future</p> <p><b>Low:</b> I have a very limited knowledge of the math intervention program</p>
Personal	<p><b>High:</b> I would like to know how my teaching is supposed to change</p> <p><b>Low:</b> I would like to know who will make the decisions in the new system</p>	<p><b>High:</b> I would like to know how my teaching is supposed to change</p> <p><b>Low:</b> I would like to know who will make the decisions in the new system</p>
Management	<p><b>High:</b> I am concerned about not having enough time to organize myself each day</p> <p><b>Low:</b> I am concerned about time spent working with nonacademic problems related to the math intervention program</p>	<p><b>High:</b> I am concerned about not having enough time to organize myself each day</p> <p><b>Low:</b> Coordination of tasks and people is taking too much of my time</p>
Consequence	<p><b>High:</b> I am concerned about how the math intervention program affects students</p> <p><b>Low:</b> I am concerned about evaluation of my impact on students</p>	<p><b>High:</b> I would like to excite my students about their part in the math intervention program</p> <p><b>Low:</b> I am concerned about students' attitudes toward math intervention</p>
Collaboration	<p><b>High:</b> I would like to coordinate my efforts with others to maximize the math intervention program's effects</p> <p><b>Low:</b> I would like to familiarize other departments or persons with the progress of the math intervention program</p>	<p><b>High:</b> I would like to coordinate my efforts with others to maximize the math intervention program's effects</p> <p>I would like to develop working relationships with both our faculty and outside faculty using the math intervention program</p> <p><b>Low:</b> I would like to know what other faculty are doing in this area</p>
Refocusing	<p><b>High:</b> I now know of some other approaches that might work better</p> <p><b>Low:</b> I would like to revise the math intervention program's approach</p>	<p><b>High:</b> I now know of some other approaches that might work better</p> <p><b>Low:</b> I would like to revise the math intervention program's approach</p>

## School B

Stages of Concern Category	Fall 2012	Fall 2013
Unconcerned		<p><b>High:</b> I am concerned about the math intervention program at this time</p> <p><b>Low:</b> Currently, other priorities prevent me from focusing my attention on the math intervention program</p>
Information		<p><b>High:</b> I would like to know how the math intervention program is better than what we had before</p> <p><b>Low:</b> I would like to know what the use of the math intervention program will require in the immediate future</p>
Personal		<p><b>High:</b> I would like to know who will make the decisions in the new system</p> <p><b>Low:</b> I would like to have more information on time and energy commitments required by the math intervention program</p>
Management		<p><b>High:</b> I am concerned about not having enough time to organize myself each day</p> <p><b>Low:</b> I am concerned about my inability to manage all that the math intervention program requires</p>
Consequence		<p><b>High:</b> I would like to excite my students about their part in the math intervention program</p> <p><b>Low:</b> I am concerned about evaluation of my impact on students</p>
Collaboration		<p><b>High:</b> I would like to help other faculty in their use of the math intervention program</p> <p><b>Low:</b> I would like to know what other faculty are doing in this area</p>
Refocusing		<p><b>High:</b> I now know of some other approaches that might work better</p> <p><b>Low:</b> I would like to revise the math intervention program's approach</p>

## School C

Stages of Concern Category	Fall 2012	Fall 2013
Unconcerned	<p><b>High:</b> I am preoccupied with things other than the math intervention program</p> <p><b>Low:</b> I am more concerned about another innovation</p>	<p><b>High:</b> I am concerned about the math intervention program at this time</p> <p><b>Low:</b> I am more concerned about another innovation</p>
Information	<p><b>High:</b> I would like to know how the math intervention program is better than what we had before</p> <p><b>Low:</b> I have a very limited knowledge of the math intervention program</p>	<p><b>High:</b> I would like to know what resources are available with the math intervention program</p> <p><b>Low:</b> I would like to discuss the possibility of using the math intervention program</p>
Personal	<p><b>High:</b> I would like to know who will make the decisions in the new system</p> <p><b>Low:</b> I would like to know how my teaching is supposed to change</p>	<p><b>High:</b> I would like to have more information on time and energy commitments required by the math intervention program</p> <p><b>Low:</b> I would like to know how my teaching is supposed to change</p> <p>I would like to know how my role will change when I am using the math intervention program</p>
Management	<p><b>High:</b> I am concerned about not having enough time to organize myself each day</p> <p><b>Low:</b> I am concerned about time spent working with nonacademic problems related to the math intervention program</p>	<p><b>High:</b> I am concerned about not having enough time to organize myself each day</p> <p><b>Low:</b> I am concerned about my inability to manage all that the math intervention program requires</p>
Consequence	<p><b>High:</b> I am concerned about how the math intervention program affects students</p> <p><b>Low:</b> I am concerned about students' attitudes toward math intervention</p>	<p><b>High:</b> I would like to excite my students about their part in the math intervention program</p> <p><b>Low:</b> I am concerned about evaluation of my impact on students</p>
Collaboration	<p><b>High:</b> I would like to coordinate my efforts with others to maximize the math intervention program's effects</p> <p><b>Low:</b> I would like to familiarize other departments or persons with the progress of the math intervention program</p>	<p><b>High:</b> I would like to coordinate my efforts with others to maximize the math intervention program's effects</p> <p><b>Low:</b> I would like to familiarize other departments or persons with the progress of the math intervention program</p>
Refocusing	<p><b>High:</b> I am concerned about revising my use of the math intervention program</p> <p><b>Low:</b> I would like to revise the math intervention program's approach</p>	<p><b>High:</b> I now know of some other approaches that might work better</p> <p>I would like to modify our use of the math intervention program based on the experiences of our students</p> <p><b>Low:</b> I would like to revise the math intervention program's approach</p>

## APPENDIX L

## Side-by-side Joint Display of SoC Questionnaire and Interview Concerns

Stage of Concern	Quantitative Results (SoC Questionnaire)			Qualitative Themes (Interviews)	Converging themes and results
	School	Rank			
		2012	2013		
Unconcerned	A B C	1, N/A 1	1 1 1	<p>“It ranks lower for me just because it’s something that we do, but it’s not something that I focus and dwell on. At the end of the day I’m a teacher in the classroom and I’m not in here intervening it up with kids”</p> <p>“I know I wanted to try to use it more because it’s an intervention that I often forget about...”</p>	Unconcerned was always the top concern, which means teachers had little concern or involvement with the math intervention program. This was consistent with interviews when teachers indicated that the program was not a high priority and they often forget about it.
Informational	A B C	2 N/A 3	4 2 2	<p>“...is it due to her lack of knowledge or lack of understanding or is it due to her absences, persistent absences?”</p> <p>“I think probably my greatest difficulty with intervention has been knowing how to identify which kids need it, and get them in there sooner”</p> <p>“...there’s a ton of other options and I can take any of them”</p>	Majority of the time the informational stage was the second highest concern, indicating that teachers had concerns about their general awareness of the math intervention program and wanting to learn more. This was evident in the interviews as teachers, inexperienced and experienced, discussed struggling to know which students to refer and when.
Personal	A B C	3 N/A 3	2 3 3	<p>“Because it’s almost like two classes where they’re learning the same stuff, and if they can learn it in the one</p>	Every school ranked personal concerns as the third highest concern almost every time. This means that

				<p>that they prefer, then why do anything in the other class”</p> <p>“The referral, the actual online referral doesn’t take long at all. I would say it’s 20 minutes or less if you know the student. So that didn’t take very long”</p>	<p>teachers were concerned about the demands of the math intervention program and their role with it. During the interviews teachers showed higher concerns for their role, indicating that students were sometimes relying on intervention and thus not working in class. But, teachers also showed very little concern regarding the demands of the program, saying it was quick and easy to use.</p>
Management	A B C	4 N/A 2	6 4 3	<p>“Without the Google docs I don’t think it would be as successful. I think it’s very important that those things are easy to submit, easy to go through”</p> <p>“I think that’s the area that I’ve improved a lot, because I feel like I’m a lot more organized this semester, and being more organized on my end allows me to keep track of what interventions I’ve already put in place and if those interventions have worked or not”</p>	<p>Management concerns were higher during 2012, and then ranked lower for all schools during 2013. This indicates that teachers concerns regarding the process and tasks of using the program decreased over time. In the interviews teachers discussed ways in which their concerns about managing the program changed, talking about how they felt the process for referring students was easy once they got used to it and with the change to the online form. Also, teachers modified their organizational skills to help them use the program more efficiently.</p>



Consequence	A B C	6 N/A 7	7 7 7	<p>“Seeing students successes, and students that ask to go realize, hey I can get some help here”</p> <p>“...to see that confidence that is built up in those students that are generally quiet or have other things going on is really, it just motivates me to keep using it and to keep passing on that this is helpful to you”</p> <p>“I just think again I really have seen the kids’ confidence levels increase, and just the kids that I have in it and some of the kids that I have seen in here working and every time I walk by they look like they’re getting something out of it and they want to learn”</p>	<p>Teachers ranked their consequence concerns last almost every time. This means that teacher had very few concerns regarding the impact of the math intervention program on their students. This could be seen in the interviews as well as teachers talked about how they experienced very positive results from the program and high confidence and comfort with it.</p>
Collaboration	A B C	5 N/A 6	3 6 6	<p>“I would say that collaborating more about who’s been in it and who might need it would be the extent of the collaboration, not necessarily collaborating in the sense of what’s going on in there...”</p> <p>“I don’t know what that even means, work with other people in regards to math intervention”</p> <p>“I feel like the interventionist does</p>	<p>Collaboration was ranked as the second to last almost every time. This means that teachers had few concerns about coordinating and cooperating with other about the math intervention program. Teachers discussed in the interviews how they didn’t feel a need, or even know how, to collaborate with others. Thus, teachers were not concerned about it</p>

				such a sufficient job there is not reason for me to have to go and talk with another teacher about how to make intervention work better”	because it was not viewed as a necessity.
Refocusing	A B C	7 N/A 5	5 5 5	<p>“I don’t think that I have any suggestions right now for changes. I feel like it’s run pretty efficiently as far as the referral process and how things go. I think there’s good communication in all parts. I don’t really have any suggestions”</p> <p>“No big changes. Everything’s fine”</p> <p>“Just another interventionist I guess. Just so that they could spread themselves even thinner with the kids I guess”</p> <p>“I couldn’t think of many changes besides making sure it doesn’t explode into, lets put everybody in intervention, and making sure that it doesn’t seem like a right of students to be able to be in intervention”</p>	<p>Concerns about refocusing the math intervention program remained ranked fairly low, majority of the time third lowest. This means that teachers didn’t have many concerns about wanting to make changes to, or replace, the program. Most of the teachers indicated during the interviews that they wanted to keep the program the same, seeing no need for changes. Other teachers did discuss some possible changes, but only minor ones that would not change the structure of the program itself.</p>