

Building a Learning Community

Christie Hudson

University of Pittsburgh

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The Mathematics Initiative in New York City's Community District #2

Christie Hudson
High Performance Learning Communities Project
Learning Research and Development Center
University of Pittsburgh

In 1995 72% of the students in New York City Community's School District #2 were achieving at or above grade level in mathematics as measured by the California Achievement Test (CAT) in mathematics. Nonetheless, they decided that the time was right to embark on a journey to improve mathematics instruction, much as they had several years earlier in literacy. Why? Because District #2 educators never rely on test scores alone to make their instructional and programmatic decisions. Daily classroom observations of student work and performance play an equally strong role. In 1995, these were telling them a different, more worrisome, story than the test scores. Teachers and district leaders had noticed that while their students were competent at basic mathematical skills, their conceptual understanding and problem solving skills were not as strong as they needed to be to deal with an increasingly diverse and complex world. Moreover, New York City's plans to adopt New Standards Performance Standards in mathematics and New York State's work to develop new, more rigorous performance assessments to which all schools would be held accountable, made it clear that District #2's current methods of mathematics instruction would no longer be adequate in the near future. The beginnings of the Mathematics Initiative were thus seeded to address these district-wide concerns.

District #2's goal for this Initiative is that every child in every classroom in the district, from kindergarten through grade 12, would receive mathematics instruction rich in conceptual understanding and problem solving skills. Although the district was already conducting piecemeal work to enrich their more traditional mathematics program, this

bold goal implied that a whole new way of looking at math was in order. They would have to get everyone in the district on board and at the same time to build a system to support educators as they learned about and implemented the new methods. Not an easy task.

Mathematics can empower people as well as divide them. And many educators in the district had a long-established dislike for or discomfort with mathematics, usually stemming from their own experiences as children with the subject. Even those who were comfortable with the subject often lack significant training in it. Elementary teachers in particular may have taken only two or three courses in mathematics in high school and none in college. In order to combat this divide, the varying needs of teachers — with respect to both their mathematical understanding and their deep-seated beliefs about mathematics — had to be addressed. District educators were not only going to have to understand new curricula, they would have to develop instructional strategies and techniques that would facilitate concept building and problem solving skills for their students. In order to understand and assess how their students develop mathematical thinking and understanding, educators would have to do nothing short of augmenting their own mathematics capacity.

Based on their previous experience with the Literacy Initiative, district leaders knew it would be best to start small, with a few willing and excited volunteers, work out the kinks and then strive to bring their insights to educators district-wide. In literacy, they found it essential to adopt an instructional core — the Balanced Literacy program — around which the work could proceed. Similarly, in mathematics, the adoption of appropriate curricula was a key set of decisions early in the initiative. And just as in literacy, systems of support for helping teachers, principals and even staff developers master new concepts, curricula and teaching methods would be essential. These three core principles underlie the development of both the Mathematics and Literacy Initiatives in the District, although there are significant differences between them. District #2's

Mathematics Initiative is still a fairly new one and it continues to grow and evolve. Yet in the past four years, they have already made great strides. This companion paper to HPLC Video #4 describes their work so far, outlining the supportive infrastructure they have put in place to create and sustain the Mathematics Initiative and the road they took to get where they are now.

Components of the Math Initiative

The Curriculum

As is often the case in America's public schools, District #2 was faced with an inconsistency in the mathematics curricula used in their 48 schools. There was no specific curriculum prescribed for any grade level, which often led to situations such as multiple textbooks being used in one school, or teachers on the same grade level covering very different mathematics topics. In addition, the kind and quality of mathematics instruction being provided to students varied dramatically across the district. While there were pockets of excellence in some schools and classrooms, District #2 leaders were concerned that in many cases the instruction was not strong enough to meet the demands of current standards and assessments in mathematics. District #2 educators realized that the more traditional method of memorized formulas and practice problems through which most of the district's teachers had themselves been taught would no longer be adequate for preparing today's students. Armed with this knowledge and a goal to align curriculum, standards and assessments on all grade levels, district mathematics leaders went on a yearlong search for a strong set of curricula for elementary, middle school and high school students.

They searched for curricula that would provide students with the opportunity to develop deep conceptual understanding and proficiency in problem solving in addition to mastering basic mathematical skills. At the same time the curricula needed to fit with the

teaching philosophy of the district and provide support to teachers who were learning a form of mathematics instruction that might be radically different from that which they experienced themselves as children. District leaders eventually settled on TERC's *Investigations* for grades K-5, Michigan State's *Connected Mathematics Project* for grades 6-8, and later, the Interactive Mathematics Program, Core-Plus (or COMAP) for grades 9-12.

These curricula are based on national standards for high quality mathematics instruction developed by the National Council of Teachers of Mathematics (NCTM). All three develop students' conceptual understanding and problem solving ability by engaging them in rich and challenging mathematical tasks. In other words, students exercise what they already know and construct new knowledge by working on novel and meaningful problems designed to have them grapple with particular key concepts or ideas in mathematics. Moreover, their modular design allowed district leaders to ease their use into District #2 classrooms and they provided many supports for teachers adopting them. Finally, the focus of the curricula on rich, meaningful tasks that were workable by a wide range of students, fit with the general teaching philosophy of District #2.

As will be shown later, the District did not think any of these curricula were perfect — each had its strengths and weaknesses — but rather saw them a strong starting points for their Mathematics Initiative. They served as a concrete anchor around which the rest of the work could proceed. The curriculum, while an important starting point, was only the beginning of their work. As Lucy West, Director of District #2's Mathematics Initiative, explains, “Coming to understand how people, how children in particular, but adults as well, come to understand mathematics is probably the main key to building change in mathematics. It is more important that the curriculum you adopt, much more.” And so the development of a support system for the educators in District #2 implementing these new curricula was as critical, if not more so, than the adoption of the curricula themselves.

The People

Based on their previous experiences with the Literacy Initiative, district leaders understood that in order for the Mathematics Initiative to flourish they would have to build a supportive infrastructure to expand teachers' knowledge and capacity through on-going and intensive professional development. Much like the Literacy Initiative, the district started with a small core of principals, teachers and staff developers that would gradually expand into a cadre of mathematics experts who would lead the initiative. As in literacy, principals are expected to serve as instructional leaders in mathematics for their schools, while staff developers provide the backbone of technical support in the Initiative's efforts. In addition, the district created a new role for some of their expert teachers in mathematics, a role not officially played by expert teachers in literacy. Willing teachers who show promise in mathematics, are trained to be teacher leaders. Their role is to provide staff development and intellectual support to their colleagues in the building, all the while remaining a teacher on-site. Together with the principals at each school, staff developers and teacher leaders involved in the Mathematics Initiative work to help teachers across the district learn about and implement quality mathematics instruction. Below, the importance to the Mathematics Initiative of each of these key types of personnel — principals, staff developers and teacher leaders— is outlined in more detail.

Principals

In order for any systemic initiative to thrive in a district every principal must be on board, and this is especially true for the Mathematics Initiative in District #2. Principals have an intimate knowledge of their schools and are in the position to use that knowledge to help support the initiative. District leaders in mathematics have recognized the ability of principals to create this support and are capitalizing on this knowledge by engaging with principals whenever possible, particularly as part of their Principals Conferences. At

these monthly meetings principals are exposed to some of the core ideas in the mathematics curricula. They watch videos of teachers teaching mathematics to gain an understanding of what they should be seeing in their own classrooms.

Principals also work with staff developers to identify teachers who need help as well as teachers who are emerging as leaders in mathematics and may make strong teacher leaders. They are especially critical in the latter process as it is the principal who understands staff dynamics and will be able to identify who may and may not be respected as a teacher leader.

However critical the role of the principal is, district mathematics leaders also recognize that principals' support of the Mathematics Initiative is constrained by the limits of time and various pressing issues that differ from site to site. For example, a principal may be working to support the Literacy Initiative and a science program at the same time as identifying potential teacher leaders. To accommodate a principal's limited time and knowledge, district leaders try to globalize certain aspects of their support functions. For example, strategies for developing a long-term plan for mathematics in a school can also be applied to developing long-term plans in other subject-areas.

Staff Developers

Staff Developers are a crucial component to the Mathematics Initiative. They provide district-sponsored workshops and courses for teachers needing to learn more about mathematics in general or the curricula in particular, but more importantly, they work alongside teachers in their own classrooms to help them develop the skills necessary to implement the new mathematical methods. Staff developers work either one-on-one or with small groups of teachers to plan, implement and reflect on a lesson. Referred to as Content-Focused Coaching™, developed by the Institute for Learning at the Learning Research and Development Center of the University of Pittsburgh, these one-on-one

experiences help teachers begin to try out new techniques and develop the content knowledge they are lacking.

The district is currently working toward the goal of having a staff developer on site in every building for at least two days a week. This is an important goal because not only do staff developers serve as coaches to district teachers, they are also the liaison with principals. They support principals by helping them learn and work with the curriculum, sometimes observing instruction with the principal so they can explain what is happening in more detail than is possible during a Principals' Conference. They report principals' concerns back to the Mathematics Initiative leadership and they work with principals to decide which teachers need help and what the plan of action should be. Because staff developers do not have supervisory responsibility over teachers, a strong relationship with the principals in the schools where they work is essential. The staff developer provides the detailed support; the principal supplies the oversight. When it works well, it is a strong combination.

Staff developers also serve as the vehicles for disseminating ideas and spreading information throughout the district. Each week staff developers have meetings where they often discuss various difficulties teachers are having with mathematics instruction. Collectively they can pool their knowledge to develop strategies to combat these difficulties and then take these strategies back to their teachers the next week. With a staff developer at every site, these strategies, as well as other critical information, can spread very quickly throughout the district.

Because of their critical role in spreading and supporting the work of the Mathematics Initiative, district leaders also pay close attention to the professional development of the staff developers. Their weekly Friday meetings are not only a time to air concerns and work out solutions to problems, but also a time to learn. They may discuss strategies or curricula they have been reading about. Outside experts are sometimes brought in to work with the staff developers on new techniques or ideas. And

just like the teachers, they receive one-on-one training. West believes that a key part of her responsibility as Director of the Mathematics Initiative is “coaching the coaches” and so she takes time to observe staff developers conducting their Content-Focused Coaching™ sessions. Afterwards she provides them with the same kind of feedback that the staff developers provide to teachers after a mathematics lesson. Through these means they hope to build the capacity of their staff development team for working with principals and supporting teachers.

Teacher Leaders

Creating a solid core of teacher leaders is perhaps the most critical goal of the Mathematics Initiative. West believes that teacher leaders are key to sustaining the Initiative over the long-term. By focusing on developing this layer of support, the Initiative will continue to sustain its supportive function when Initiative seed money from grants is gone. Moreover, it provides more continuous local support than the staff developers alone can supply, thereby improving the possibility that the efforts of the Initiative will spread widely and deeply.

The notion of a teacher leader surfaced as concerns were raised that the district’s best classroom teachers might be stripped away to serve as staff developers, leaving schools without strong instructors. Establishing a cadre of in-school experts serving as teacher leaders in mathematics, seemed a viable solution. Their role is to provide mathematics staff development for their colleagues on their grade level in their school. A typical teacher leader will run twice-monthly grade level meetings and plan lessons weekly with one or two other teachers on their grade level. She or he will observe another teacher teaching a mathematics lesson and provide feedback and guidance on instructional strategies, teach a lesson with or model a lesson for another teacher. Teacher Leaders are the staff development support when district staff developers cannot be present.

When a teacher leader emerges from the staff of a school she or he is subjected to a range of intensive training and education so that they can provide this critical support to their colleagues, including taking classes to gain mathematics and curricula knowledge. Teacher leaders also attend Friday staff developer meetings for a half-day every other week to get the support they need to grow in their role. At these meetings, along with district staff developers, teacher leaders develop supplemental materials for the curricula, such as test and homework packets, and work with experts in the field of mathematics to further expand their knowledge and expertise. The district hopes to eventually have three teacher leaders in each building.

Courses and Coaching

Staff developers and teacher leaders provide support to District #2 educators through a variety of venues. Classes, workshops and summer institutes are used to provide teachers with basic information about mathematics, mathematics teaching methods and the various curricula in use in District #2. Visits to other classrooms and schools are used to get a strong feel for what the new curricula and methods look like and deepen teachers' understanding of their possibilities. And finally, Content-Focused Coaching™ is used to hone teachers planning and instruction strategies. The shape and purpose of these various forms of support are reviewed below.

Classes, Workshops and Summer Institutes

District #2 educators who have weak content knowledge in mathematics may be encouraged to take courses in mathematics and/or mathematics methods from any of a number of local universities or programs. In addition, the district also provides their own workshops and summer institutes for improving teachers' knowledge base. In many school districts the summer is a time for teachers to explore their outside interests or simply relax and have fun. Not so in District #2. During the summer District #2 convenes its Summer Institute, which is an intensive professional development experience that

aims to develop the content knowledge, teaching and assessment skills that will improve mathematics instruction throughout the district. District #2 sends upwards of 400 teachers to these Summer Institutes each year, with the expectation that those attending will learn valuable lessons that they can bring back to their schools.

A typical Summer Institute includes courses developed in collaboration with local universities and other outside organizations, such as the National Science Foundation (NSF) and Marilyn Burns Education Associates (MBEA). For example, *Mathematics in the City* is a NSF-sponsored course offered through New York's City College that is aimed at developing the leadership skills of teacher leaders. *Math Solutions* is a three-level course offered through MBEA that starts with the principles behind implementing standards-based instruction and ends with building the participants mathematics content knowledge.

Various workshops are also provided during Summer Institutes, as well as year round. These workshops are differentiated in content in order to address the varying needs of teachers at different stages in their careers. Some focus on particular units in the curriculum for teachers who have not yet taught those units. During one of these workshops the teacher will play the games and solve the problems of the unit as well as analyze why the unit is structured the way it is structured. Often these daylong workshops will be followed up with several after school workshops only on that unit.

Theme-based workshops are for teachers who have taught the units in the curriculum and are ready to go deeper into mathematical themes. An example of this type of workshop would be one that examines the "number strand" in TERC's *Investigations* curriculum and evaluates how the curriculum develops students understanding of numbers throughout grades K-5.

Finally, in assessment-based workshops teachers are pulled from across the district to look at children's work coming out of the curricula. One objective of this type of workshop is to examine students' work in such a manner as to see where the gaps in

instruction are. Bringing teachers together in this fashion also serves to break down the isolation that happens in schools. As is similar to the role of the staff developer, district-wide workshops that bring people together to examine curriculum, children's work and instruction are a way to send out into the district the depth of the ideas in the Initiative.

Content-Focused Coaching

Content-Focused Coaching™ is a structured form of one-on-one support for teachers trying to improve their instruction. It builds off of established research on effective on coaching, such as relationship building and focusing on instruction, and incorporates a focus on content. Typically it involves three basic stages. First, the staff developer (or teacher leader) and teacher meet to discuss the mathematical concept to be taught and the instructional lesson to be used. This conversation focuses on what kids need to learn or are having difficulty understanding. An appropriate lesson from the curricula is chosen (or a new lesson is created if the curricula does not provide one) and the details of how the lesson should be run given the students' needs are reviewed. The lesson itself may be taught by either the staff developer (who might be modeling the instruction for the teacher), the teacher, or both together. Afterwards, they discuss the lesson in terms of what the students did and did not learn, how the instructional strategies used hindered or helped that learning and what their next steps should be.

Because of its critical role in their professional development system, Content-Focused Coaching™ receives regular attention as part of Friday staff developer meetings. During these sessions, participants will view videos of Content-Focused Coaching™ sessions or coaches will coach each other in order for everyone to analyze the actual process of coaching. During the analysis, participants will discuss what might be done different, or coaches will justify why a particular strategy was used in the coaching session.

Intervisitation and Collaboration Sites

Teachers visiting and observing other teachers at work has always been a critical part of District #2's efforts at instructional improvement in any subject area. Teachers are encouraged to spend some of their preparation time watching other colleagues and talking with them about their strategies. Intervisitations — or teachers visiting one another between schools — are arranged when principals and staff developers believe the faculty at different schools have much to learn from one another. In the Mathematics Initiative, a special and unique form of intervisitation—the Collaboration Site visit—is available to teachers who have been involved in teaching the curriculum for at least a year. These sites are schools where almost all of the teachers in the building have taken extensive instruction in mathematics and are equipped to model in a “live” situation mathematics instruction that is well aligned with the curricula and standards.

The Collaboration Site experience is a very structured situation that involves two visits to the site over a two-week period. A small team of teachers from various schools in the district and a staff developer go to the site to observe several lessons in different live classrooms on the same grade level. In some ways, these observations bear a resemblance to a form of small group Content-Focused Coaching™. Prior to each lesson the group meets with the teacher they are about to observe and they talk with her about the lesson that they will see. They plan the lesson together, with the teacher explaining what she thinks the lesson is about and what she plans to do and the visiting group offering suggestions for how to refine the lesson plan. The visitors then observe the lesson and carefully take note of the specific focus they were given to look at, after which they reconvene and “debrief” with the teacher about the lesson. During the debriefing the visitors discuss with the teacher different aspects of the lesson, whether certain parts worked or not, whether the visuals and materials used were effective and understandable. When this is done, the visitors repeat the process in another classroom on the same grade level. This entire process allows the visiting teachers to begin to ask themselves better

and better questions about how to plan and teach a lesson. Since teachers are not allowed to participate until they've worked with the curriculum for a year, it also provides the observed teacher with some focused and thoughtful feedback.

After the visitors have finished the cycle of lessons they meet with their staff developer and discuss how they will incorporate some of their new understandings in their own classrooms. For example one visitor might have observed that the use of an overhead projector was particularly effective in a given lesson and now they will do that in their own classroom. During the afternoon of that first visit teachers will then either participate in a workshop where they learn mathematics or work with others to plan lessons for their own classrooms. The next week, this same group of teachers returns to the Collaboration Site to repeat the cycle again.

The chance to see instruction in action at the sites coupled with the structures in place that allow teachers to learn together collectively is what has made this component of the Mathematics Initiative so successful. One issue that has emerged with the Collaboration Sites, however, is the strength of matching the school population of the site with the school populations of the visiting teachers. Many teachers have difficulty seeing how the instruction they observe can be relevant to their own classroom situation if the student populations are radically different. The district has addressed this issue by developing two collaboration sites that have varying populations—one more middle class and one where a majority of the students are either high-poverty or immigrants.

Assessment

Assessment takes on many forms in the Mathematics Initiative, from formal standardized tests to informal, daily observations made by teachers. Formal tests mandated by the city for 3-8 graders and the state for 4th, 8th, and high school students, are one method the district uses to assess its progress. Some of these tests are scored by teachers in the district. Often either after a test is administered and/or during the scoring

process, teachers, staff developers and leaders from across the district will come together to examine the test results. During this process the district as a whole can assess where their students did well, or where they fell short. This information can be checked against the curricula to make adjustments in the form of supplemental materials and test preparation packages. The curricula adopted by the district are aligned with the newer forms of formal assessments, which-takes some of the pressure off of teachers to perform. They no longer need to “drop everything” in January to prepare for formal tests. Nonetheless, the tests usually show places in which the curricula could use “tweaking.” With the supplemental materials created in the process of tweaking the curricula, teachers and students can ideally be ready for a test year round.

Another form of mathematics assessment carried on throughout the district is individualized student assessment. As the district evolves away from their former instructional methods into opportunities to build knowledge, a strong emphasis is being placed on assessing each student individually to identify where they are on the continuum of mathematics knowledge. When a teacher can assess where a student is at in their mathematics knowledge, she can provide activities to ground a student’s fragile understanding or push an excelling student to the next level. A typical individualized assessment is more interview-like in nature and places the student in a one-on-one context with the teacher. Assessing the student in this fashion allows the teacher to ask questions such as “Does this student know place value?” “Is the hundreds board or the number line better for this student?” “Are the classroom visuals working?” Asking these questions helps a teacher identify where the gaps are in each student’s knowledge, as well as what kind of learner the student is and helps them design both their whole class and individualized instruction better.

Another form of individualized student assessment currently being experimenting with is the portfolio. In a portfolio, students keep all of their work for a particular unit so that after the unit is complete they can analyze their own growth from start to finish, do a

project that exemplifies the knowledge gained through the unit, and write about that process and knowledge. Portfolios not only help teachers see a child's progress from beginning to end, it is an opportunity for the student to assess themselves and reflect on their own learning.

The curricula also contain assessments embedded within each unit. Unit assessments can be used as an individualized assessment to study each child's work and progress or as a whole class assessment to inform instruction.

Finally, district mathematics leaders are experimenting with creating their own assessment packages using a CD ROM program purchased from the Freudenthal Institute. This program contains a bank of assessment questions that are on varying levels. Choosing sets of assessment questions that are in line with the curricula can help teachers stay on target with students throughout the year by helping them build off of their students' prior knowledge.

Community Outreach

Parents are an integral part to sustaining the Mathematics Initiative because they are an integral part to every student's life. With any global change at a child's school or district the first response of parents is to question why and how. District #2 has anticipated their concerns with the Mathematics Initiative by incorporating various parent events for different schools, and several district-wide events each year. In the district, the concerns of parents range from worrying they will not be able to help their child with homework to whether their child will do well on city and statewide tests. Parent events are organized for the explicit purpose of allaying those concerns. During a typical event, parents get to try a little bit of their children's curriculum out for themselves, or watch their children working on video tape.

Creating, Scaling and Evolving the Mathematics Initiative

As one would expect, cultivating a structured, successful initiative with multiple facets and layers does not happen over night, nor does it happen with ease. There are bumps in the road and a never-ending need to examine and reexamine what has happened and what will happen as a result of components changing and evolving. The question of how a district could begin to seed an initiative such as this might best be answered with a look at the history and change processes of the District #2 Mathematics Initiative.

Over a decade ago District #2, under the leadership of Superintendent Anthony Alvarado, began a change process that affected every level of the district, from administrators to teachers to students. He focused the attention of everyone on the classroom and made instruction and learning the bottom line. Merely refocusing the district on the classroom was not enough to truly create change, however. District administrators recognized the need to build a new infrastructure of constant support and evolution that emphasized life-long learning and growth for everyone. A culture of nested learning communities was gradually nurtured as everyone learned to work one level up and one level down to support the collective growth in the knowledge of the entire district. The vehicle that advanced this new learning culture was the Literacy Initiative, which aligned itself with the national Standards movement and stressed that every child can and will learn to read and write and become productive, analytic members of American society. It was quickly recognized that the steadfast cultural foundation being laid by the Literacy Initiative might also make it possible to change the way other subject matter was taught in the district. The Mathematics Initiative was thus born.

District administrators first began to explore ways their teachers could change the way they teach math by gathering as much information on mathematics instruction as was humanly possible. The district brought in experts to help identify what exactly the problems in mathematics instruction were, endlessly explored research on the ways children gain knowledge in mathematics, and thoroughly examined various mathematics

curricula that were aligned with the National Council for Teachers in Mathematics (NCTM) Standards.

Under the direction of Alvarado and West the district began to develop a small pool of leaders who would become staff developers. These leaders were gleaned from the strongest mathematics instructors in the district as well as experts brought in from outside the district. Next they identified potential candidates for the curricula as well as teachers and principals who would be willing to pilot the materials. A total of 13 pilot projects were started in several elementary and middle schools. Around the same time the district began offering Summer Institutes to for teachers to gain content knowledge in mathematics.

A window of opportunity to adopt the curricula throughout district elementary and middle schools presented itself when the district decided to move 6th graders into the middle schools. District leaders then created a long-term plan of phasing in the curricula over the course of three years using a unit-replacement strategy, which brings in the curricula in bits in pieces. Unit-replacement recognizes that it is almost impossible to relearn all mathematics or the methodology for teaching it in one year. As teachers learned one unit at a time they could then eliminate those pieces from their textbooks, with eventually the whole textbook being replaced.

The district approached the phasing in process from different angles for the elementary and middle schools. Elementary school teachers were allowed to volunteer to begin bringing in TERC in the first year, but the district made it clear that by year three everyone had to be teaching at least four units of the curriculum. In the middle schools, teachers were required to phase in two units of Connected Mathematics in year one, four units in year two and the whole curriculum by year three. The curricula are now entirely integrated in the elementary and middle schools and the high schools have begun using COMAP.

Integrating the curricula district-wide is not the end of the story, however. District #2 is made up of a community of learners that strive to expand their mathematics content knowledge and explore new and evolving teaching strategies. Workshops, Summer Institutes, intervisitations and Collaboration Site days, teacher leaders, staff developers and courses taken outside the district continue to provide teachers in the district with the support they need to succeed as mathematics educators. This supportive infrastructure is also the key to maintaining the Mathematics Initiative over the long-term.

Scaling and Evolving the Mathematics Initiative

When one thinks of overhauling an entire system of operation it is easy to forget that tensions and resistance are a natural by-product of change. The change process that occurred in District #2 was met with its fair share of difficulties. But because those issues were managed with understanding and acceptance the Mathematics Initiative continues to grow stronger.

When teachers were faced with the prospect of a new mathematics curricula a sudden nervous twitter spread could be heard throughout the district. Basic content knowledge in mathematics appeared to be lacking for many and deep-seated beliefs about mathematics presented a hurdle to overcome. Leaders in the district anticipated this reaction and encouraged teachers to adapt and learn on their own, through professional development opportunities offered by the district, before a full integration of the curricula was upon them. A gap still exists though, between what West calls the “believers” and the “non-believers.” She considers the believers to be those educators who are fully on board with Initiative, many from its earliest moments. District leaders work to engage those with doubts about the Mathematics Initiative, the non-believers, through ongoing professional development opportunities to expand their knowledge and overcome their discomfort with or fear of mathematics. Through these experiences, they hope that

district educators who are wary of the new methods will learn to view mathematics in a new light.

Sometimes, however, it is not just lacking content knowledge that restrains the non-believer. As was mentioned earlier, the district had been met with relatively steady success under the old mathematics program. This was evidenced by the stability of standardized test scores for district students. The sheer fact of this success left many district educators wondering why a change, why adopting new curricula district-wide, was necessary if things had been going so well. The obvious success rates of the district as a whole under the old program also caused, and still causes, parents to support educator's concerns and question the district's choices. This line of questioning is in many ways reasonable and valid. It is also indicative of another issue at play in the district: Why, after all this time, is there now a need for prescribed curricula?

Under the old mathematics program, as with the Literacy Initiative, there were no set curricula. District educators have for over a decade been allowed to choose their materials to meet the needs of their students as they see fit. The adoption of one curriculum for each level— elementary, middle and secondary— is a drastic alteration to the district's general operating practice for over a decade. However, District leaders see the adoption of curricula as a necessary part of their move toward better, deeper mathematics instruction across the district. The district has responded to these issues by allowing everyone a chance to air their concerns, engaging in open and honest discussion, while offering them the chance to see the new mathematics in action.

Evolving Toward the Future

Though they are part of a very diverse community, educators in District #2 are rooted in a culture of learning. Being part of this culture is synonymous with an inherent desire to evolve through new knowledge. One way to gain new knowledge is to examine what is present and look for ways to improve it. From the beginning the new curricula

was viewed as a starting point, a place from which the Mathematics Initiative could grow. District #2 takes this position seriously and turns to its educators for insights on where the gaps are. For example, after working with the elementary curricula for a while, district educators determined that it was not providing students with sufficient support and practice in computational skills. These same district educators are now working to fix that gap in the curricula by creating supplemental materials for use district-wide that will strengthen students' computational skills. Locating the gaps in the curricula is only a small example of the district's ongoing evolution and adaptation. As with all things in District #2, the Mathematics Initiative is continually a work in progress.