ACTIVATING the VISION

The Four Keys of Mathematics Leadership

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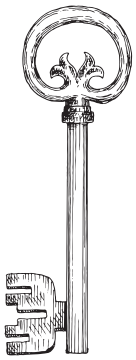

Introduction

A leader takes people where they want to go. A great leader takes people where they don't necessarily want to go, but ought to be.

—Rosalynn Carter

It has never been a more exciting time to be a mathematics leader. A convergence of educational reform initiatives has brought recommendations and findings from decades of meaningful research on mathematics teaching and learning to the forefront of action. Emerging technologies, such as social media and social networking, coupled with a movement focused on increasing expectations for student mathematics learning, provide mathematics leaders with the tools and leverage to engage stakeholders in cycles of continuous improvement. As a mathematics leader, your challenge is to seize opportunities made available by this convergence of research, resources, and reform.

To meet curricular, instructional, and assessment expectations, mathematics teachers must shift away from traditional mathematics instruction that focuses significantly on the development of procedures and algorithms. Instead, they must design engaging learning experiences that feature a balance of student-centered exploration and teacher-facilitated sense making to engage students in rigorous instruction. This shift results in instruction that "builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems" (National Council of Teachers of Mathematics [NCTM], 2014, p. 10). Students must adopt new roles in the mathematics classroom. Rather than sit as passive consumers, they must work collaboratively as they engage in worthwhile tasks that deepen understanding through productive struggle that is supported by student-to-student discourse. Redefining the mathematics classroom learning experience in this way has created a sense of anxiety for staff and families alike. Teachers, familiar with the strategies for developing procedural fluency, are busy learning new teaching strategies. Families, dependent on the traditional mathematics textbook to guide support at home, find themselves unsure how to support multiple algorithms, mathematics investigation, and multiple representations. For district leaders, the challenges associated with stakeholder shifts are compounded with issues of equity and access, increased political attention through the media, greater emphasis on college preparedness, and evolving high-stakes assessment systems that bring the sobering truths about mathematics education into focus.

Here is some good news. Throughout the history of the United States, we have faced complex challenges that tested the very foundation of our democracy. The United States has overcome civil war, economic depression, and civil rights issues. In each of these cases, we have been fortunate to have citizens who possessed the passion, skills, and knowledge to solve these complex problems. At a time when it seems that fewer and fewer of our students graduate with access to their dreams intact, we, as a mathematics community, are so very fortunate to have *you*! You have joined this profession at just the right time. Your passion, skills, and knowledge, when applied with focus and resolve, will lead to better futures for our students. Through your leadership, teachers will work collaboratively to develop the skills and knowledge to transform mathematics classrooms into vibrant centers of thinking and reasoning. Students will graduate ready to thrive in an ever-evolving world. Families will engage as partners in mathematics education. All of these things will happen because of *you*.

Mathematics leaders come in many forms. You could be a director of mathematics at the district level or a principal who oversees mathematics in a rural district. You could be a curriculum director or assistant superintendent who oversees mathematics or a mathematics coach who serves one school or more than thirty schools. You could be a department chair or a course- or grade-level team leader. All of these roles have one thing in common: those who hold them must possess the leadership skills and knowledge to move the vision of teaching and learning mathematics forward to promote student achievement.

So how do we accomplish that great work? The task of developing systems to substantively improve mathematics teaching and learning is daunting. Regardless of your role in mathematics leadership, you will strengthen your own knowledge and the knowledge of those serving on your team. You will develop tools and resources to activate the vision for teaching and learning mathematics. You will rely on effective communication to support data collection that feeds reflective practices. You will build a strong cadre of empowered leaders committed to equity, access, and excellence for each and every student. Each of these actions requires careful attention.

We designed this book to guide you along your journey. We provide mathematics leaders with insight, taken from many years of experience with this work, and a road map for developing a culture focused on collaboration and continuous improvement. We build on the following set of beliefs.

- Issues of equity, opportunity, and access drive leadership decisions and actions.
- All teachers deliver high-quality, rigorous mathematics instruction to all students. All teachers strive to ensure that every student will develop an understanding of rich and meaningful mathematics.
- Effective collaborative teams work to accelerate adult learning and result in substantive improvements in mathematics teaching and student learning.
- Students, families, and community stakeholders have the potential to transform the work of mathematics leaders by serving as significant catalysts for change.

We structured this book to build your capacity as a mathematics leader by focusing on the following four keys of effective mathematics leadership.

1. Establishing a clear vision for mathematics teaching and learning
2. Supporting visionary professional learning for teachers and teacher leaders

3. Developing systems for activating the vision
4. Empowering the vision of family and community engagement

Each of these keys unlocks the purposeful actions of mathematics leaders to support a highly effective mathematics program. As each of the keys is developed, you will notice connections among the leadership actions aligned to a specific key and the skills needed to build other keys. These leadership actions are highlighted with a picture of a key to emphasize the potential use to build a different key's skillset. These connections are vital as we explore and create substantive action steps for developing all four keys.

These chapters will guide your visionary leadership actions across every level of mathematics leadership based on the differentiated needs of your mathematics program. While you can certainly use the book as a cover-to-cover resource, you may find that, based on the results of the mathematics program audit in chapter 1, your focus rests on the content of just two or three chapters. Mathematics leadership is daunting and the breadth of work is significant, so use the book as a resource that best meets your needs as a leader. We organized the chapters to support your leadership by helping you:

- Take stock of current realities
- Reconcile current beliefs and actions with relevant research and effective practices
- Engage in activities to strengthen the community's collective skills and knowledge
- Design mechanisms for managing, monitoring, and celebrating desired growth

In part I, we address Key 1 and outline how to establish a clear vision for mathematics teaching and learning. We challenge you to survey mathematics teachers and other key stakeholders to determine if there is a clear and consistent understanding of the expectations for mathematics teaching and learning in your school or district. We share strategies for collaboratively developing and teaching a common vision, and we provide strategic action steps to create supportive conditions for improved teaching and learning.

Chapter 1 focuses on the development of a mathematics leadership team (MLT) that is trained and empowered to lead a mathematics program audit. In chapter 2, leaders will explore strategies for synthesizing the data collected from the program audit to create a clearly articulated vision for exemplary mathematics teaching and learning. MLT members leverage current research and best practices to develop SMART (strategic, measurable, attainable, results oriented, and time bound) goals that will guide vision communication and teaching. In chapter 3, MLT members establish clear measures of success with a timeline for continuous monitoring of the vision.

In part II, we address Key 2 and explore how to support visionary methods for building the capacity of those you lead. Change is complex. Teachers and teacher leaders require supportive conditions to embrace it. Mathematics leaders can create opportunities to engage new learning, application, and action research to evaluate the impact of the new learning.

Chapter 4 focuses on effective strategies for developing collective capacity across the mathematics program by designing meaningful professional learning experiences and developing a culture of continual growth and learning. In chapter 5, leaders will explore strategies for building capacity with existing and emerging mathematics leaders and explore the importance of communication across the community of leaders. In chapter 6, leaders will learn how to effect positive instructional change by becoming experts at developing mathematics leadership in the places that matter most: the school and the boardroom.

In part III, we address Key 3 and share strategies for developing systems to activate the collaboratively developed vision for mathematics teaching and learning. You will be able to put systems in place to monitor, evaluate, and revise districtwide and site-based goals and action steps. The chapters in part III guide you through the design of reflective practices and processes to ensure stakeholder actions align with the teaching and learning vision.

Chapter 7 focuses on structures that support teachers and leaders working in a PLC culture and utilizing research-affirmed collaborative team actions. These structures ensure consistent implementation of instructional strategies that support the vision for exemplary mathematics teaching and learning developed in chapter 2. In chapter 8, leaders will learn how to coach teams to move beyond textbooks to design a guaranteed and viable curriculum (Marzano, 2003) focused on the Standards for Mathematical Practice, determine assessments for curriculum, engage students in the assessment cycle, and challenge grading practices by providing appropriate feedback. Chapter 9 focuses on developing and monitoring clear expectations for desired teacher actions and student learning behaviors in mathematics classrooms. Further, leaders will explore how effective feedback, when provided to teachers and students, improves the quality of teaching and learning in the mathematics classroom.

In part IV, we address Key 4 and explain how to empower students, families, and community members as engaged advocates for mathematics education in your school or district.

Chapter 10 focuses on strategies for engaging students as advocates and partner-leaders for the improvement of mathematics teaching and learning. Leaders will explore a variety of strategies along a continuum of engagement to support an increased student voice. In chapter 11, you will explore strategies for engaging parents and families as partners in mathematics education. You will learn how to engage parents as advocates and champions for your mathematics vision. Chapter 12 focuses on engaging business and community partners in your district. These local resources have the potential of bringing the real world into the mathematics classroom so that students graduate with a network of support already in place.

Your roles and responsibilities as a mathematics leader present you with a robust and diverse set of opportunities. As mathematics leaders ourselves, we understand these challenges because we live them every day. Our goal is to not only strengthen your leadership with our ideas and resources, but also compel you to actively participate in a community of leaders across North America and beyond that engage in the same critically important work. We understand the complexities associated with ensuring equitable access to meaningful mathematics for all, with developing curricular resources to support the wide range of student strengths in the classroom, and of supporting staff through comprehensive reform efforts. We believe that the answers to our shared, complex problems rest within the larger mathematics community. Our challenge is to harness our collective skills, knowledge, and experiences to engage in truly innovative leadership actions. It is important that we work together to meet this challenge because our students' hopes and dreams depend on it!