

# Solution Tree | Press

## **Activating the Vision: The Four Keys of Mathematics Leadership**

*By Bill Barnes and Mona Toncheff*

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### **Study Guide**

This study guide is a companion to the book *Activating the Vision: The Four Keys of Mathematics Leadership* by Bill Barnes and Mona Toncheff. *Activating the Vision* specifies what changes mathematics leaders must make to their practices in order to meet evolving expectations.

This guide is arranged by chapter, enabling readers to either work their way through the entire book or focus on the specific topics addressed in a particular chapter. It can be used by individuals, small groups, or an entire team to identify key points, raise questions for consideration, assess conditions in a particular school or district, and suggest steps that might be taken to promote a healthy school culture.

We thank you for your interest in this book, and we hope this guide is a useful tool in your efforts to create a healthy culture in your school or district.

## **Chapter 1**

### **Take Stock of Your Mathematics Program's Health**

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1. If a newspaper reporter asked you the following two questions, how would you answer them?: “Would you describe your mathematics program as healthy?” and “What evidence can you provide to back up your claim?” Ask a few members of your mathematics community the same questions; what can you learn from how their responses to these questions compare to yours?
2. Per the adapted Toncheff and Kanold exercise in this chapter, record your vision for exemplary mathematics teaching and learning in thirty seconds or less. In what ways does your leadership support this vision, and how could you improve to meet this vision?
3. What three questions should educators consider as they determine whom to recruit as MLT stakeholders? What characteristic must all MLT stakeholders share?
4. What talking points should mathematics leaders use to phone MLT candidates? Which of these talking points do you think is most important to communicate, and why?
5. What three questions should an MLT facilitator ask to drive a whole-group discussion? What purposes do the first three questions and the fourth question serve?

## Chapter 2

### Develop a Collaborative Vision for an Exemplary Mathematics Program

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1. How do Timothy D. Kanold and Thomas J. Sergiovanni describe *vision*? How does this book define *vision statement*?
2. Why do Toncheff and Kanold feel it's important for mathematics leaders to continually ask themselves, "How do you know that your defined vision for mathematics instruction and assessment represents the 'right things' to pursue that are worthy of your best energy and effort?"
3. What are three or four adult behaviors that mirror your vision for mathematics instruction and assessment?
4. What expectations must a strategic mathematics plan clearly outline?
5. What does the acronym *SMART* stand for? According to Anne Conzemius and Jan O'Neill, what are the elements of SMART goals?

## **Chapter 3**

### **Establish Measures of Success**

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1. Consider the mathematics leadership displayed in the “Real-Life Measure of Success Scenario” (pages 37–38). In your opinion, how successful was this leadership, and what leads you to this conclusion?
2. How are outputs different from outcomes? Based on figure 3.1, devise your own example of output and outcome correlation.
3. How are assessments different from performance measures? Provide an example of an assessment and an example of a performance measure.
4. What can accountability without celebration lead to?
5. What message does a district send to teachers when it celebrates AP test performance and does not recognize the efforts of teachers who teach mathematics to students who struggle with this subject?

## Chapter 4

### Engage Teachers in Worthwhile and Differentiated Professional Learning

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1. In your own words, define *professional learning*.
2. What questions should mathematics leaders consider before they start crafting professional learning opportunities?
3. What is *initiative fatigue*? Describe a case in which you experienced or witnessed initiative fatigue. Why did initiative fatigue occur, and how did educators and administrators behave as a result of this fatigue?
4. List and describe the five steps that Mihaly Csikszentmihalyi says mathematics leaders must take to plan how best to support district goals.
5. According to Learning Forward's Standards for Professional Learning, what are the seven characteristics of quality professional learning?

## **Chapter 5**

### **Develop Highly Skilled and Highly Effective Mathematics Leaders**

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1. In K–8 school, secondary school, and small-school settings, what responsibilities can collaborative team leaders take on to support their mathematics program’s vision?
2. What qualities should candidates for exemplary teacher leaders have, and what qualities do they not need to have?
3. What seven domains of teacher leadership do the Teacher Leadership Exploratory Consortium’s *Teacher Leader Standards* outline?
4. How does the “Shared Leadership Scenario” (page 67) model the power of shared leadership?
5. Answer the bulleted list of questions on page 68 regarding team communication. Based on your answers, in what ways do you need to improve communication structures among collaborative teams and site- and district-level leadership in your district?

## **Chapter 6**

### **Build Capacity of Site-Based Administrators and District Leaders**

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1. What can site-based administrators accomplish if a mathematics leader effectively engages them in professional learning that improves their mathematics leadership capacity?
2. According to Timothy D. Kanold, Diane J. Briars, and Skip Fennell, what role does a site-based administrator play in leading mathematics instruction?
3. What question do district mathematics leaders need to answer as they design a learning plan for site-based administrators, and how should they go about answering it?
4. Consider the key questions and activities that figure 6.1 states can help reach the goal of supporting exemplary mathematics teaching and learning through classroom observation. What is a question or an activity that you would add to these lists?
5. What actions can district mathematics leaders take to succeed in activating their vision for mathematics teaching and learning in the district office?

## **Chapter 7**

### **Leverage Collaborative Team Actions**

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1. What do you remember about your experiences with learning K–12 mathematics as a student? How were the expectations placed on mathematics teachers different then than they are now?
2. When do district- and site-level leaders deliver the most promising job-embedded professional learning?
3. What do teacher teams do and aim to achieve during the collaboration, cooperation, and coordination phases of the collaborative process?
4. According to Parry Graham and William Ferriter, what are the seven stages of collaborative team development?
5. Consider the collaborative team scenarios featured in figure 7.3. Which stage of collaborative teaming does each of these scenarios best represent, and why is this the case?

## Chapter 8

### Create and Implement Well-Designed and Articulated Curriculum and Assessments

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1. Based on this chapter's definition of *curriculum*, define *curriculum* in your own words.  
What does it mean for curriculum to be *guaranteed and viable*?
2. What does the grain size of an instructional objective signify? Provide an example of an objective that has a large grain size and one that has a small grain size.
3. What purpose does a proficiency map serve? What does this tool track?
4. When students see their assessment scores, what responses do they commonly have?  
Why is this the case?
5. According to research on grading practices, what six categories do U.S. educators' understanding of the purpose of grades fall into?

## **Chapter 9**

### **Monitor Consistent Expectations for Exemplary Instruction**

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1. Describe the best classroom lesson you have observed. What characteristics caused the lesson to be so effective?
2. Which of the two algebra scenarios detailed in figure 9.1 best epitomizes your vision for teaching and learning mathematics, and why?
3. What intensification strategies must mathematics leaders implement to effectively support diverse learners?
4. Consider figure 9.3, “Articulated Instructional Vision Statement Example.” What observable actions can you unwrap your own vision statement into during instruction?
5. Answer the district-planning questions in figure 9.7. Based on your responses, what action steps for collaborative teams, site-level leaders, and district leaders would you establish to make sure students have access to rich mathematics?

## **Chapter 10**

### **Activate the Student Voice to Check Alignment Between Vision and Reality**

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1. In what levels of engagement in figure 10.1, “The Spectrum of Student Voice-Oriented Activity,” do most student activities in your school or district fall? In which levels of the spectrum of engagement do students need to engage more, and why?
2. Based on figure 10.2, craft your own message that expresses your mathematics improvement plan’s intentions to all stakeholders.
3. In mathematics classrooms across the United States, how has the focus of classroom observation changed? What has caused this shift to take place?
4. What five key actions should interview facilitators take to make sure they conduct effective student interviews?
5. Describe what student panels, learning labs, and professional learning roles each involve and what they enhance.

## **Chapter 11**

### **Empower Families as Informed Advocates**

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1. In what ways can school leaders publicize research-affirmed teaching and learning standards for their school or district? Which of these methods seems most practical for reaching people in your school or district, and why?
2. Why is it important to engage family and community members in face-to-face events about mathematics teaching and learning?
3. What questions may families find useful when they have instructional conversations with school leaders?
4. Briefly describe the actions mathematics leaders, site leaders, and collaborative teams can take to empower students' families as advocates for their children's college readiness.
5. In what ways has your school fostered a culture of intentional celebration? Add an action that families can take when they experience something positive in the mathematics community to the bulleted list on page 153.

## Chapter 12

### Build and Engage a Strong Network of Partnerships

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1. Write your own list of internships that staff and leaders in science, technology, engineering, and mathematics (STEM) can make available to mathematics students.
2. In your own words, define *externships*. Describe an example of an externship that staff from your school could pursue and how it could enhance their work.
3. How could community partners who do not have the means to fully take part in internship and externship programs still help promote STEM education and support students?
4. How do community challenges engage students, families, and community partners?
5. Why is it important to take time to celebrate and honor community partners? How have you honored community partners in the past, and in what ways can you honor partners in the future?