

**AAAS/NSBA present:**



# Facilitator's Guide

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## Workshop Information:

This workshop is designed to be presented in 5<sup>1</sup>/<sub>2</sub> hours, including all breaks except for a suggested 1 hour lunch break. If Module One was used prior to this, be aware that Part One of this workshop is a repeat of that information.

### Workshop Set-up:

#### A/V Requirements:

- Laptop
- Projector
- Audio connections (speakers or connection to “house” sound system depending upon location)
- Large screen.

#### Materials:

- Facilitator’s Guide
- PowerPoint and Video DVD
- Participants’ Manuals
- 1 or 2 sheets of Post-It type flip chart paper and 1 or 2 markers per table

#### Room Set-up:

- Ideally, room set in rounds of 6 or 7 with Participant Manual at each place.

#### Facilitator Guide Key:

The Facilitator Guide is divided into three (3) sections:

- 1) Time – the total time allotted for each section/activity.
- 2) Contents – step-by-step facilitator processes and suggested scripts, in blue italics, for conducting the workshop. (A note on *scripts*: these “scripts” include the content to be delivered, but facilitators should make the language or voice their own.)
- 3) A/V and Page number – matches the Content column with accompanying Powerpoint slide numbers (Slide #) and Participant Manual pages (Page #).

# Part One: Science, Math and Technology Education: Why Do We Care?

Total Time for Part One: 2 hours

## Part One: Introduction (45 minutes)

TIME	CONTENT	A/V	PAGE NUMBER
10 min.	<p><b>1. Acknowledgements and Introduction:</b></p> <ul style="list-style-type: none"> <li>• Put up Slide 1 and introduce workshop title.</li> <li>• Introduce self and make any other appropriate introductions in the room.</li> <li>• Slide 2 – <u>Acknowledgements</u>: Introduce materials by explaining that this program, <i>a SMarT training program for board members</i>, is a leadership project from the American Association for the Advancement of Science (AAAS) and the National School Boards Association (NSBA) with funding support from the Ewing Marion Kauffman Foundation. AAAS is the world’s largest general scientific society and the publisher of the journal Science. NSBA is a federation of state associations of local school boards. The Ewing Marion Kauffman Foundation is based in Kansas City and dedicated to improving science, math, and technology education there and across the U.S.</li> <li>• Much of this workshop is based on the AAAS Science, Mathematics and Technology Education Seminar held June 23, 2007, in Kansas City, MO which brought together experts in science, math, and technology education with board members from Kansas and Missouri.</li> <li>• Video clips of the experts that spoke at that seminar will be shown throughout the workshop so that participants can hear the information directly from the source.</li> <li>• Slide 3 – Refer participants to p. 4 of their manuals and review workshop objectives:               <ul style="list-style-type: none"> <li>• Overall objective of the program is for participants to gain knowledge and tools that can be used to begin creating solutions for science, math and technology programs in their districts by:                   <ul style="list-style-type: none"> <li>• Understanding the importance of and urgency</li> </ul> </li> </ul> </li> </ul>	<p>Slide 1</p> <p>Slide 2</p> <p>Slide 3</p>	<p>Page 4</p>





<p>5 min.</p>	<p><i>and second, that teaching does not always equal learning. As trustees of our children’s education, it is critical that board members take an active role in ensuring that education in science, math, and technology really gives students the skills and knowledge they need to succeed in the 21st century.</i></p> <ul style="list-style-type: none"> <li>• Refer participants to p. 7 and ask them to consider what they read on p. 2, and the videos they just saw, to answer these questions as they watch the video, <b>“The Challenge: Initiating Efforts to improve Science, Mathematics and Technology Education.”</b>– Slide 9</li> <li>• Show video <b>“The Challenge: Initiating Efforts to improve Science, Mathematics and Technology Education”</b> – Slide 10</li> </ul>	<p>Slide 9 Slide 10</p>	<p>Page 7</p>
<p>15 min.</p>	<ul style="list-style-type: none"> <li>• <u>Table Talk</u> – Put up Slide 11 and ask participants to take 10 minutes to discuss the questions on p. 6-7 of their manuals and their reactions to what they read and heard. After 10 minutes, <u>debrief</u> by soliciting one or two answers to each question. Allow 5 minutes for debrief. (Sample answers below, but responses may vary): <ul style="list-style-type: none"> <li>• For students: critical thinking and informed decision making, job skills</li> <li>• For the nation: global competitiveness, innovation and progress; sustained democracy</li> <li>• For school boards: prepare ALL students Then ask for and take a few reactions. (NOTE: Watch time and limit comments as necessary.)</li> </ul> </li> </ul>	<p>Slide 11</p>	<p>Pages 6-7</p>
<p>NOTES:</p>			

# Part One: Science, Math and Technology Education: Why Do We Care?

Total Time for Part One: 2 hours

## Part One: Making the Case (50 minutes including break)

TIME	CONTENT	A/V	PAGE NUMBER
5 min.	<p><b>2. Making the Case (Slide 12):</b></p> <ul style="list-style-type: none"> <li>• <u>Set-up</u> by explaining:  <i>Schools already struggle to find the time and finances for teaching anything beyond “the basics” in language arts and mathematics and have to carefully balance funding for “non-essential” (i.e. doesn’t count toward AYP) programs including the arts, foreign languages and higher-level science, math and technology (SMT) classes. However, it is crucial that districts pay attention to their SMT curriculum as it is not only one of the keys to success in the workplace and higher education, but because it provides ways of thinking and looking at the world that are critical for all students.</i></li> </ul> <p>Where Do We Stand?  <i>First let’s take a look at where we stand now in terms of the general state of education in these subjects. Listen to what the experts have to say. First you’ll hear about some statistics from Joan Abdallah of AAAS, and then some data from Alison Kadlec of Public Agenda, a leading non-profit public-interest research firm (Slide 13). There’s space on page 8 for you to jot down any notes you might want to take.</i></p> <p>Show video – Slide 14</p> <p><i>Now, let’s examine more specifically just a few of the benefits that high-quality science, math and technology education provide.</i></p>	Slide 12	
		Slide 13	Page 8
		Slide 14	
5 min.	<ul style="list-style-type: none"> <li>• <b>STUDENT AS FUTURE EMPLOYEES:</b> (Slide 15)  <i>We will begin with student employment opportunities. Scientific, mathematical and</i></li> </ul>	Slide 15	

<p>5 min.</p>	<p><i>technological literacy are essential in all career fields, and will only continue to become more so in an increasingly specialized economy. Let's listen to what some of the experts have to say on this topic. (Slide 16) First you'll hear from Barry Burke of the International Technology Education Association answering a specific question posed by a board member at the Kansas City seminar, followed by Alison Kadlec talking about some research conducted by Public Agenda. You have room to make notes on page 8 of your participant's manual.</i></p> <p>Show video – Slide 17</p> <p>Summarizing points:</p> <ul style="list-style-type: none"> <li>• <i>SMT literacy is now a requirement in all areas of employment, not just in a few white-collar fields.</i></li> <li>• <i>The level of science, math and technology education that is necessary in today's workplace is much higher than it was ten or twenty years ago, and part of the responsibility of school board members is to ensure not only that they set their standards to a high enough level to adequately prepare their students, but that they communicate with parents about why these higher standards are important.</i></li> </ul> <p>• <b>STUDENTS AS INNOVATORS (Slide 18):</b> <i>A higher standard of SMT literacy is not only important for our students as individuals, but also for our society as a whole as we consider innovation and progress (Slide 19). Let's listen again to Barry Burk, as he addresses this important point. Again, there's a place for any notes you might want to make on p. 8 of your manual</i></p> <p>Show Video – Slide 20</p> <p>Summarizing Points:</p> <ul style="list-style-type: none"> <li>• <i>Our society, and the world as a whole, relies on SMT literate students to innovate</i></li> </ul>	<p>Slide 16</p> <p>Slide 17</p> <p>Slide 18</p> <p>Slide 19</p> <p>Slide 20</p>	<p>Page 8</p> <p>Page 8</p>
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<p>10 min.</p> <p>.</p>	<p><i>the future. SMT literacy allows students to identify solutions to problems we can't even imagine today. As Barry said, real SMT literacy includes the ability to use, manage and understand science, math and technology as they work together.</i></p> <ul style="list-style-type: none"> <li>• <i>High-quality SMT education, beginning in our public schools, can provide the basis for developing the innovators and technicians needed by our country and society as a whole.</i></li> </ul> <ul style="list-style-type: none"> <li>• <b>STUDENTS AS CRITICAL THINKERS AND INFORMED DECISION-MAKERS (Slide 21):</b> <i>One of the frequently overlooked benefits of a strong SMT education is the way in which it fosters rational thought and informed decision making as well as supports learning in a variety of subject areas. (Slide 22) Let's listen to a few of Joan Abdallah's comments on this topic. You have a space for note-taking on page 8 in your manual.</i></li> </ul> <p>Show Video – Slide 23</p> <p>Summarizing Points:</p> <ul style="list-style-type: none"> <li>• <i>A good science curriculum fosters critical thinking and the ability to gather evidence from real-world situations and draw conclusions. Considering multiple viewpoints and making informed decisions are important skills for any member of society, and are both integral parts of scientific literacy.</i></li> <li>• <i>Because all scientific knowledge is on some level uncertain, and because technology is evolving so rapidly that what cannot be done today could be entirely possible next week, a strong foundation in these areas encourages flexibility, open-mindedness and a willingness to take risks and be wrong.</i></li> <li>• <i>SMT fields can also strengthen students' achievement in other areas. Technology can be integrated throughout the curriculum—from learning software, to hands-on learning experiences such as using a camera for an art</i></li> </ul>	<p>Slide 21</p> <p>Slide 22</p> <p>Slide 23</p>	<p>Page 8</p>
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<p>15 min.</p>	<p><i>project or journalism, making those classes more interesting and more topical. Science can also be an exciting topic for students to read and write about at any grade level, whether it is a third-grade paper on dinosaurs or a twelfth-grade essay on the implications of new medical technology. And emerging research suggests a strong connection between science competency and reading and writing skill in addition to the more obvious science-math connections.</i></p> <ul style="list-style-type: none"> <li>• Conclusion – Ask participants to read the quote from Bill Daggett on the top of p. 9: <i>While Daggett, a leading thinker and researcher on the topic of educational change and excellence, wasn't referring directly to SMT education and literacy, this quote pulls together many of the key concepts you've just heard and presents a real challenge to public schools and the boards of education that govern them.</i></li> <li>• <u>Table Talk</u> – Put up Slide 24 and ask participants to discuss the question on p. 9 of their manuals. They will have 10 minutes to talk after which someone from each group should be prepared to report out. After 10 minutes, <u>debrief</u> by asking for a couple of volunteers for each question. Allow 5 minutes for debriefing.</li> </ul>	<p>Slide 24</p>	<p>Page 9  Page 9</p>
<p>10 min.</p>	<p><b>Suggested BREAK</b></p>		
<p>NOTES:</p>			



<p>10 min.</p>	<p><b>4. Taking It Home</b> (Facilitator’s Note: This option is designed for use in a setting where individual board members from multiple boards are present. Please skip this activity and move to Part Two if you are working with one or more intact boards.)</p> <p><u>Set up:</u> <i>We’ve spent a little over an hour hearing about the benefits of high-quality science, math and technology education. You’ve also had an opportunity to begin thinking and talking about how SMT education impacts or is impacted by the competing demands for time and resources.</i></p> <ul style="list-style-type: none"> <li>• <u>Table Talk:</u> <i>Before we move on today, I’d like you to take a few minutes to create a resource and a plan that you can use to begin to work on these issues in your district.</i></li> </ul> <p>Put up Slide 27 and ask participants to turn to p. 10 of their manuals. Go over directions and allow 10 minutes to work on their key talking points. Let participants know they will be building on their talking points for the rest of the day. There is a model for setting up their chart paper on page 11. There is room on p. 11 for recording their ideas. After about 9 minutes ask table groups to wrap up their conversations and to post their chart paper on the wall.</p> <p>Let participants know that you heard many good ideas as you walked around the room and you would like to give them time to “borrow” ideas from other tables as well. Let them know that before the end of the day time will be allotted for participants to view Key Talking Points from other tables and record them in their manuals.</p>	<p>Slide 27</p>	<p>Page 10</p> <p>Page 11</p>
<p>NOTES:</p>			





chance to discuss what they just heard in a few minutes and summarize: *Standards should be set so that students are expected to know the important ideas and underlying processes of science, math and technology. In science that means having an understanding of the real-world implications of the equations and facts they learn in class. One example of this in science is the so-called “Lego” model of matter that we heard about earlier today - understanding that all matter is made up of atoms and those atoms can be rearranged just as one set of Legos can build many different structures. In mathematics, understanding the processes means being able to think mathematically and understand that math has real connections to life. In technology, it means an understanding of technological systems and their appropriate use to innovate and improve the quality of life.*

- LOCAL STANDARDS

- Ask participants to turn to page 15 of their manuals. *Besides keeping in mind those qualities of model standards for science, math and technology, there are a couple of other important considerations when thinking about standards in your district.*
  - *State standards – most states have established state learning standards (an NCLB requirement). It is important for the district to adopt these standards as their “baseline” – these are what students are being assessed on at the state level.*
  - *Local standards – state standards do not preclude districts from adopting local standards for their students. What, beyond the state academic standards, do you want students to know and be able to do; and how well do you want them to be able to do those things? Local standards allow you to define excellence from the perspective of your community.*
  - *Defining excellence in your district requires*

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	<p><i>the board to keep a few more important concepts in mind. One of these is the issue of “breadth” – that is, how much content – vs. “depth” – that is, how deeply students understand the content. Listen to Jo Ellen Roseman address this issue briefly. (Slide 33)</i></p> <p>Show video clip – Slide 34</p> <ul style="list-style-type: none"> <li>• Table Talk – Put up Slide 35 and ask participants to turn to page 16 of their manuals and to discuss the 4 questions. Allow 10 minutes for discussion.</li> </ul> <p>After 10 minutes, debrief by asking for two or three comments for each question. Allow about 7 minutes for the debrief.</p> <p>Question 1 – Key concepts are listed in Appendix A on p. 38 of the Participant Manual:</p> <ul style="list-style-type: none"> <li>• Roseman re: science standards: Do standards really focus on what is most important? Are they clear and specific enough to be useful? Do they “hang together as a set?” Are they grade- level appropriate? Are they attainable?</li> <li>• Barger re: math standards: Does your math curricula address both content and processes, like problem solving, communication (students can communicate what they are doing) reasoning and proof (students can figure out whether their idea is right), representation (students can move among different ways of talking about math); and connections (making connections within the field of math and to life)?</li> <li>• Burke re: technology standards: Standards should address the ability to use, manage, and understand technology. What should be taught is design, innovation, invention, technological systems, and engineering, as well as the issues around and impact of technology.</li> <li>• Breadth vs. Depth – Standards need to reflect the hard choices about what students need to deeply know and understand.</li> </ul>	<p>Slide 33</p> <p>Slide 34</p> <p>Slide 35</p>	<p>Page 16</p> <p>Page 38</p>
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## Part Two: Science, Math and Technology Education: What Do We Want and How Do We Get It?

Total Time for Part Two: 80 minutes

### Part Two: Assessment, Accountability and Alignment (20 minutes)

TIME	CONTENT	A/V	PAGE NUMBERS
1 min.	<p><b>2. Assessment, Accountability, and Alignment</b></p> <p><b>Set up:</b> <i>Earlier, we considered how rigorous, relevant standards for SMT education define what we want. Now let's consider the question, "How do we get it?" Let's look at the important connections among standards and the key means of achieving those standards: assessment, and alignment.</i></p>		
5 min.	<ul style="list-style-type: none"> <li>• ASSESSMENT: Refer participants to page 17.               <ul style="list-style-type: none"> <li>• <i>When we hear the word "assessment" most of us probably first think of testing; and in the current educational climate, we probably think of annual high stakes state assessments. But there's much more to assessment that we need to consider.</i></li> <li>• <i>First we need to think about assessment as a <u>process</u> rather than an event.</i></li> </ul> </li> <li>Put up Slide 36 and review:</li> <li>• Assessment is a process that               <ul style="list-style-type: none"> <li>• Includes review and discussion of current standards for relevance and alignment with vision.</li> <li>• Measures success at regular intervals – not just "at the end of the game"</li> <li>• Provides data that gives quality feedback about such things as individual student performance, instructional effectiveness, etc.</li> <li>• Results in needed changes based on that data and feedback. Assessment is viewed as a means for adjusting and improving – not for blaming and punishment.</li> <li>• Should not take important time away from teaching and learning. Let's listen to Rita Barger address that point from the perspective of mathematics (Slide 37)</li> </ul> </li> </ul>	Slide 36	Page 17
		Slide 37	

<p>2 min.</p>	<p>Show Video Clip – Slide 38</p> <ul style="list-style-type: none"> <li>• ACCOUNTABILITY: Refer participants to the bottom of page 17 and put up slide 39 <ul style="list-style-type: none"> <li>• <i>A good assessment process allows you to put into place a system of accountability shared by all stakeholders. Let's listen to JoeVillani, deputy executive director of NSBA, describe the Key Area of accountability.</i></li> <li>• <i>Ultimately accountability in public education is really about how well students learn and achieve. In order to know if students are living up to the standards that have been set for them, it is important to have ongoing assessments that measure their deeper understandings as well as their ability to reiterate the answers they were taught in class and then to hold all stakeholders – students, teachers, administrators, parents, community and the board – accountable for achieving those results.</i></li> </ul> </li> </ul>	<p>Slide 38</p> <p>Slide 39</p>	<p>Page 17</p>
<p>10 min.</p>	<ul style="list-style-type: none"> <li>• ALIGNMENT: Refer participants to p. 18. <i>How we choose to utilize the district's resources speaks to what's really important. If high-quality SMT education is important in our districts, the way we choose to align district resources and practices should match that.</i></li> </ul> <p>Put up Slide 40: <i>Alignment has to do with matching practices and resources with stated goals.</i></p> <ul style="list-style-type: none"> <li>• <i>Let's begin with <u>practices</u>.</i> Ask someone to read the Joan Abdallah statement from p. 18 (quote taken from Joan's presentation at AAAS/ NSBA's June, 2007 Science, Mathematics and Technology Education Symposium in Kansas City.)</li> </ul> <p>Put up slide 41 and continue: <i>Once you have rigorous standards which focus on the important concepts of SMT in place, the next step is implementing those standards. Turning learning standards into actual performance means making sure that you have teachers</i></p>	<p>Slide 40</p> <p>Slide 41</p>	<p>Page 18</p>



	<ul style="list-style-type: none"><li>• <b>SUMMARY:</b> Standards, Assessment, Accountability and Alignment. <i>Listen as Jo Ellen Rosemen summarizes the Board's responsibility in each of these areas with respect to their SMT programs.</i></li></ul> <p><b>Show video clip - Slide 49</b></p>	Slide 49	
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## Part Two: Science, Math and Technology Education: What Do We Want and How Do We Get It?

Total Time for Part Two: 80 minutes

### Part Two: Conclusion (10 minutes)

TIME	CONTENT	A/V	PAGE NUMBER
10 min.	<p><b>3. Taking It Home</b> (Facilitator’s Note: This option is designed for use in a setting where individual board members from multiple boards are present. Please skip this activity and move to Part Three if you are working with one or more intact boards.)</p> <p>Set-up: <i>We’ve been learning about how standards translate a district’s vision into concrete, measurable targets for student knowledge about science, math and technology. Having specific, rigorous standards supported by effective assessment systems and reinforced by a practices and resources that are aligned with those standards is a major step towards realizing your vision for high quality SMT education.</i></p> <ul style="list-style-type: none"> <li>• <u>Table Talk</u>: <i>Before we move on today, I’d like you to take a few more minutes to add to your key talking points.</i></li> </ul> <p>Put up Slide 50 and ask participants to turn to p. 19 of their manuals. Go over directions and allow 10 minutes to work on their key talking points. Let participants know they will be building on their talking points for the rest of the day. The model for setting up their chart paper is shown again on page 19.</p> <p>There is room on p. 20 for recording their ideas. After about 9 minutes ask table groups to wrap up their conversations and to post their chart paper on the wall.</p> <p>Remind participants that they will have time at the end of the day to view the Key Talking Points from other tables and record them in their manuals and that they are encouraged to view other charts during breaks as well.</p>	Slide 50	Page 19  Page 20
1 hr.	<b>Suggested lunch break, 1 hr</b>		

## Part Three: Science, Math and Technology Education: Public Engagement – Why? Who? How?

Total Time for Part Three: 1 hour 50 minutes

### Part Three: Public Engagement: Why? (35 minutes)

TIME	CONTENT	A/V	PAGE NUMBER
2 min.	<p><b>1. Why?</b> Put up slide 51. Then begin: <i>As trustees of their communities, boards have an obligation to engage those communities on important issues, and making changes that will result in higher quality SMT education is certainly an important issue.</i></p> <p><i>Public engagement can be a loaded process, and one that some school districts have had bad experiences with. Still, there are a number of reasons why it is important to discuss your science, math and technology programs with the community.</i></p> <p><i>Public Agenda, a non-profit, non-partisan public opinion research and civic engagement organization has been working with AAAS, NSBA, and the Kauffman Foundation on the issues surrounding SMT education and public engagement. Today I'll be sharing with you the results of some of their research as well as some of their recommendations as we look at the why, who and how of public engagement around SMT education. While our focus is on SMT, some of what we'll discuss will concern general public engagement principals and be relevant to other subjects as well. Let's begin by looking at three primary reasons for public engagement around SMT education.</i></p>	Slide 51	
15 min.	<ul style="list-style-type: none"> <li>• ADDRESSING THE “URGENCY GAP”: <i>We'll begin by looking at what Public Agenda calls the “urgency gap.” There are major differences of beliefs among key stakeholder groups about the state of SMT education.</i></li> </ul> <p>Put up Slide 52 and ask participants to guess who holds each opinion. Take a couple of suggestions from the group and then let them know the answers:</p>	Slide 52	

	<ul style="list-style-type: none"> <li>• “We’ve got to do better” – business and education leaders</li> <li>• “We’re doing pretty well” – parents</li> <li>• “Who cares – it’s irrelevant” - students</li> </ul> <p><i>Let’s take a few minutes to compare those beliefs in a little more detail beginning with business and education leaders. Page 22 of your manual provides space for you to take some notes.</i></p> <ul style="list-style-type: none"> <li>• Business and education leaders: (Slide 53) <i>What we hear over and over again from these leaders is that “we have to do better.” Business leaders interviewed by Public Agenda repeatedly said things like “Today’s global language for economic competitiveness is math and science. If we’re illiterate in these areas, we’re not going to be able to compete globally. If students don’t do well, they’re going to be relegated to jobs in the service industry.” Urban economic development experts said things like “The old arm and hammer jobs of the past just don’t exist anymore. Almost every job now requires competency in algebra, for example.” And these concerns are supported by data. At the bottom of page 20 you’ll see some numbers recently issued by the US Department of Labor: 60% of the jobs of the 21st century are going to require skills that only 20% of the workforce currently has.</i></li> <li>• Parents: (Slide 54) <i>Parents are somewhat less concerned than business and education leaders. They do believe that the world is changing and math and science are becoming more important, but don’t fully understand the consequences or opportunities this brings. They also see their children doing more math and science than they did. They know there is more testing and more demanding requirements than they experienced, so they assume their children must be well prepared. The end result is complacency.</i></li> <li>• Students: (Slide 55) <i>Public Agenda conducted a series of interviews with high school students</i></li> </ul>	<p>Slide 53</p> <p>Slide 54</p> <p>Slide 55</p>	<p>Page 22</p>
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<p>5 min.</p>	<p><i>in the Kansas City area and asked them what things they were learning in school were useful and relevant and what was useless. 9 out of 10 students – regardless of gender, race, region (urban, suburban or rural) or socioeconomic status – chose a science or math class as the most irrelevant thing they were learning in high school – a finding that mirrors national research on the topic. Here is a video clip of some of these interviews of students as well as a parent. (Slide 56)</i></p> <p>Show video clip “Urgency Gap” (© 2007 Public Agenda) – Slide 57 (Note: A link to the complete Public Agenda research report on this topic titled <u>Opportunity Knocks</u> is listed on the reference page at the end of the Participant’s Manual.</p> <ul style="list-style-type: none"> <li>• <i>Public Agenda’s research demonstrates that there is an “urgency gap” with regard to science, math and technology education – educators and employers consider those areas to be vital and under-taught, whereas parents and students feel that instruction is sufficient, or do not appreciate the utility of those fields, or else think that what is being taught is irrelevant. As the links between their district’s schools and the broader community, school boards have an important role to play in helping parents and students understand the importance of strong SMT programs. Bringing the community, including employers, higher education professionals, parents, teachers and students together, is one of the best ways to bridge this gap and to garner community support for improving SMT programs.</i></li> <li>• PREVENTING POLITICIZATION OF ISSUES. Refer participants to p. 23 in their manuals and put up Slide 58. <ul style="list-style-type: none"> <li>• <i>A second key reason to encourage public engagement around SMT education is that engaging your community early and often</i></li> </ul> </li> </ul>	<p>Slide 56</p> <p>Slide 57</p> <p>Slide 58</p>	<p>Page 23</p>
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## Part Three: Science, Math and Technology Education: Public Engagement – Why? Who? How?

Total Time for Part Three: 1 hour 50 minutes

### Part Three: Public Engagement: Who (30 min. including 10 min. break)

TIME	CONTENT	A/V	PAGE NUMBER
12 min.	<p><b>2. Who?</b></p> <ul style="list-style-type: none"> <li>Set up: <i>Different groups of people bring different insights and assets to your district's efforts regarding high-quality SMT education. It is important to involve as many different groups as possible in this process.</i></li> </ul> <p>Put up Slide 61 and refer participants to p. 24 of their manual and ask them to read Will Friedman's comments at the top of the page to start their thinking about who should be involved.</p> <ul style="list-style-type: none"> <li><u>Table Talk</u> – Put up Slide 62 and ask participants to do the Table Talk activity at the bottom of page 22. Allow 5 minutes to discuss before moving on.</li> </ul> <p><i>Let's hear from some board members who attended the Kansas City Seminar to see how they answered this question. (Slide 63)</i></p> <p><b>Show Video – Slide 64</b></p> <p>When video is finished, ask group to indicate by show of hands if they had many of the same answers. Then ask if they had come up with any other possibilities. Allow a few minutes for answers.</p>	<p>Slide 61</p> <p>Slide 62</p> <p>Slide 63</p> <p>Slide 64</p>	Page 24
8 min.	<ul style="list-style-type: none"> <li>INTERNAL AND EXTERNAL STAKEHOLDERS: <i>Most of us would agree on the need to include our internal stakeholders in the process. By "internal" I'm referring to those who are already engaged with the system: teachers, parents, students, and other staff. But what about external stakeholders? You mentioned some during your last Table Talk activity. Let's watch a video segment called</i></li> </ul>		



## Part Three: Science, Math and Technology Education: Public Engagement – Why? Who? How?

Total Time for Part Three: 1 hour 50 minutes

### Part Three: Public Engagement: How? (25 min.)

TIME	CONTENT	A/V	PAGE NUMBERS
1 min.	<p><b>3. How?</b>  <i>Set up: We've considered why public engagement is so important and who should be involved in dialogue and conversation about our districts' SMT educational programs. That leaves us with the hardest part about any community engagement plan – knowing where to begin and how to proceed. While there is no one plan that will be equally successful in all communities, there are several things to bear in mind that will improve the effectiveness of any approach. We will again turn to Public Agenda, experts in this area, for that information.</i></p>		
10 min.	<ul style="list-style-type: none"> <li>• PRINCIPLES OF SOUND PUBLIC ENGAGEMENT: Ask participants to turn to p. 26 of their manual and put up slide 67.</li> <li>• TWO WRONG WAYS TO HOLD A PUBLIC MEETING: For public meetings on topics such SMT education in your schools, Public Agenda advises against:               <ul style="list-style-type: none"> <li>• <i>The expert panel (expert speakers and pie charts in front of glassy-eyed citizens). The point is not “to educate” or “train,” but to engage.</i></li> <li>• <i>The public hearing (lots of venting – little <u>exchange of ideas and information</u>). The point is to engage for a constructive purpose; not provide a forum for airing grievances and complaints.</i></li> </ul> </li> <li>• Ask participants to turn to p. 27 of their manual and put up slide 68.  <i>Public Agenda has identified several principles of sound public engagement that contribute to success.</i> <ul style="list-style-type: none"> <li>• <i><u>Begin by listening</u> – It's important to know your public; to understand their values, concerns, level of knowledge, and level of urgency about the issue. Listening will help</i></li> </ul> </li> </ul>	Slide 67	Page 26
		Slide 68	Page 27

*you determine the extent of “the urgency gap” and/or the potential for politicized, controversial issues in your community, and provide you with a starting place for dialogue.*

- *Provide user-friendly information – It’s important to consider how your participants process information and to avoid using educational jargon and acronyms and “data dumps” (where you provide every table, chart and Excel file your staff has ever compiled on the topic). Remember and respect the fact that people often come with some knowledge of the subject. Be aware of language and cultural issues as well.*
- *Reach out in your community – We discussed this while we were talking about WHO to include – reaching out “beyond the usual suspects” to a diverse group of stakeholders who care about the issue and have the capacity to impact it, and who might not have a voice, but should. (Put up slide 69)*
- *Open up multiple lines/forms of communication – Think about using a variety of different lines of two-way communication: help-lines, surveys, websites, and face-to-face community dialogues.*
- *Use the “language of opportunity” – When looking to engage people on SMT education, the idea of opportunity resonates with students and parents. While they don’t much relate to how SMT education impact’s America’s global competitiveness, they do care about the opportunities that high-quality SMT education affords students. Parents, students, and sometimes even educators and staff really don’t understand the employment potential for students with strong science, math and/or technological skills. Concrete opportunities engage people. To illustrate, here’s another focus group video clip from Public Agenda’s research. (Slide 70) As you listen to these students and parents, note how often the “opportunity” theme comes up.*

Slide 69

Slide 70

<p>14 min.</p>	<p>Show video – Slide 71</p> <ul style="list-style-type: none"> <li>• COMMUNITY CONVERSATIONS: KEYS TO SUCCESSFUL PUBLIC DIALOGUE: Ask participants to turn to p. 28 and put up the heading for Slide 72. <i>Face-to-face community dialogues don't have to become out-of-control bloodbaths, and if you follow certain steps they are more likely to be productive.</i> (Click up each of the following bullets on Slide 72 individually as you discuss them.)</li> <li>• <u>Ask the right questions.</u> <i>The key to a productive meeting is asking the right questions to frame the deliberation. Engaging the community on a highly technical question is usually a mistake. Broader questions dealing with values and purposes or clarification of direction are more appropriate. Public Agenda recommends a technique they call "choice-work" in which you present a problem along with a limited number of solutions to choose from. You tell participants: "Here is the problem. Here are three specific approaches to address the problem. What do you think? What makes sense for our community? What should be emphasized? What could be combined?" Framing the conversation in this way tends to be much more manageable and effective than an open-ended approach where you ask simply, "How do we improve SMT education?" And we'll look at this technique in more detail in a minute.</i></li> <li>• <u>Small group dialogues with diverse participants</u> <i>work best by allowing participants to actually get into the issue, talk to one another, and hear other points of view. Public Agenda suggests that these groups include teachers (more than one or two teachers per group may dominate the conversation so consider limiting the number), students, parents, and members of the general public, including employers and community leaders.</i></li> </ul>	<p>Slide 71</p> <p>Slide 72</p>	<p>Page 28</p>
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	<p><i>for students in terms of employment and college prospects. Public Agenda's research has shown that people are most motivated by hearing about the specific opportunities that a stronger SMT background will open up for them and their families.</i></p> <ul style="list-style-type: none"><li><i>• It is important that your engagement take the form of a dialogue. Listen to the concerns and ideas of the people you reach out to, and provide them with feedback in a timely manner.</i></li></ul>		
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<p>10 min.</p>	<ul style="list-style-type: none"> <li>• <u>Table Talk</u>: Ask participants to turn to pages 33- 36 of their manual and draw their attention to the Key Questions at the top of each page. Point out that these are policy-level questions that boards need to address. Then continue: <ul style="list-style-type: none"> <li>• <i>Following the Key Questions you will find three to six (3-6) additional questions designed to help you deliberate and answer those policy level questions. They will help you determine what information you need and who you need to include and involve in answering these questions. They provide a “plan to plan”.</i></li> <li>• <i>The first step is to decide where your board needs to begin. Do you have a clear, shared vision for your district’s SMT program? If a vision is in place, have standards been defined? Is an assessment program in place to measure progress toward those standards? A critical assessment of where you currently are will determine which of the key areas you will begin with.</i></li> <li>• <i>Today, I’d like to give you an opportunity to begin looking at these questions even though you don’t have the benefit of being able to discuss them with your entire board.</i></li> </ul> </li> <li>• Assign one page to each table. If the group is large, you may want to do this arbitrarily. If the group is smaller, it might be possible to ask groups to select the questions they’d like to work on while ensuring that all 4 pages are covered: vision; standards; assessment, accountability and alignment; climate and collaboration. Then put up Slide 81 and ask participants to take a few minutes to work on the questions their assigned page. Explain that since they are from multiple districts, they may need to answer the questions generally rather than specifically, but will have the opportunity to get some ideas that they can take home.</li> </ul>	<p>Slide 81</p>	<p>Pages 33-36</p>
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<p>5 min.</p>	<ul style="list-style-type: none"> <li>• Debrief large group: Policy level conversations like these rarely “just happen” at the board table. <ul style="list-style-type: none"> <li>• <i>What do you see as the benefit to having these kinds of conversations?</i></li> <li>• <i>What would it take to convince your board to do this kind of work?</i></li> </ul> <p>After taking a couple of answers to each question, ask participants to turn to p. 37 of their manuals and jot down some ideas for items a) and b).</p> </li> </ul>		<p>Page 37</p>
<p>10 min.</p>	<ul style="list-style-type: none"> <li>• <b>Wrap-up/Conclusion:</b> Congratulate participants on their hard work and ask them to take just a minute to plan their next steps. They’ve identified talking points and have begun thinking about how they can raise this issue with their boards. Ask them to take a moment to plan specifically what their next step(s) will be. (p. 35, item c)</li> </ul> <p>Conclude by putting up Slide 82 referring participants to p. 39, Appendix B for additional resources available to them.</p>	<p>Slide 82</p>	<p>Page 39</p>
<p>5 min.</p>	<ul style="list-style-type: none"> <li>• <b>Option 2</b> (NOTE: Assuming you have skipped the Taking It Home sections at the end of Parts One through Three, you should have up to 80 minutes for this section if you’re conducting a 5.5 hour workshop.) (Slide 77)</li> <li>• Set up: <i>Today we’ve talked about quality SMT education – why it’s important, what it looks like and the importance of engaging our publics in order to achieve it. Now it’s time to consider how these ideas fit into the work that boards do, and we are going to do that within the framework of NSBA’s Key Work of School Boards which you see in your participant manual on p. 32. (Slide 78) You may already be familiar with the Key Work but in case you’re not, it is a framework of eight key action areas that focus and guide schools boards in their efforts to improve student achievement. (Slide 79) Let’s take a few minutes now to listen to Joe Villani,</i></li> </ul>	<p>Slide 77</p> <p>Slide 78</p> <p>Slide 79</p>	<p>Page 32</p>

<p>45 min.</p>	<p><i>Deputy Executive Director of NSBA, and one of the <u>Key Work</u> authors, briefly explain the <u>Key Work</u> and the role of the board as it works toward high quality SMT education in each of the Key Areas</i></p> <p><b>Show Video – Slide 80</b></p> <ul style="list-style-type: none"> <li>• <b>Table Talk:</b> Put up slide 81. Ask participants to turn to pages 33-36 of their manual and draw their attention to the Key Questions at the top of each page. Point out that these are policy-level questions that boards need to address. Then continue: <ul style="list-style-type: none"> <li>• <i>Following the Key Questions you will find three to six (3-6) additional questions designed to help you deliberate and answer those policy level questions. They will help you determine what information you need and who you need to include and involve in answering these questions. They provide a “plan to plan”.</i></li> <li>• <i>The first step is to decide where your board needs to begin. Do you have a clear, shared vision for your district’s SMT program? If a vision is in place, have standards been defined? Is an assessment program in place to measure progress toward those standards? A critical assessment of where you currently are will determine which of the key areas you will begin with. Where do you need to begin? Once you have determined your starting point, move to the appropriate page in your manual to begin discussing the planning questions.</i> (Facilitator’s Note: Facilitate the conversation(s) as needed.)</li> </ul> </li> </ul>	<p>Slide 80</p> <p>Slide 81</p>	<p>Pages 33-36</p>
<p>15 min.</p>	<ul style="list-style-type: none"> <li>• <b>Debrief Next Steps:</b> Ask participants the following questions to help them to continue this work. <ul style="list-style-type: none"> <li>• <i>What are your next steps? What must occur for this work to continue?</i></li> </ul> </li> </ul>		

5 min.	<ul style="list-style-type: none"><li>• <b>Wrap-up/Conclusion:</b> Congratulate participants on their hard work. Conclude by putting up Slide 82 and referring participants to p. 39 (Appendix B) for additional resources available to them.</li></ul>	Slide 82	Page 39
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