



Engaging Stakeholders in the Kansas City Region on Improving Math, Science and Technology Education

A Memo for the Kauffman Foundation and Its Community Allies

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August 14, 2007

Introduction: From Research to Engagement

Public engagement aims to give citizens a meaningful voice and role in public problem-solving. When done well, it improves decisions by bringing together multiple perspectives on a problem. Moreover, it can legitimize decisions, create momentum for change, foster collaboration and engender mutual respect and shared responsibility among diverse stakeholders.

This memo offers recommendations for engaging communities on improving math, science and technology (“MST”) education in the Kansas City region as part of Kauffman’s ten-year Initiative. It draws on years of hands-on experience working with communities nationwide to engage citizens on a wide variety of education issues. More immediately, it draws on research that Public Agenda has conducted in the Kansas City region since June of 2006, including:

- Interviews with numerous education and business leaders and experts.
- Focus groups with students, parents and teachers in urban, suburban and “exurban” settings, as well as several heterogeneous groups combining parents, students, teachers, and community members. (See the report, *Opportunity Knocks: Closing the Gaps between Leaders and the Public on Math, Science and Technology Education*.)
- A major survey of parents and students across Missouri and Kansas on the topic, with “oversamples” of African-American and Hispanic respondents. (See the report, *Important, but not for Me: Parents and Students in Kansas and Missouri Talk about Math, Science and Technology Education*)

Our research shows that while parents and students have a measure of appreciation for the role math, science and technology will play in the future world of work, this appreciation remains thin, with relatively few seeming to absorb the personal implications. Parents do not view improving math, science and technology education as a first-tier issue facing their local schools, and students are not coming to these subjects with strong motivation and interest.

The upshot is that as leaders in government, business and education move forward to address the task of improving MST results they have two challenges to work through with respect to the public. The first is to close the “urgency gap” by bringing home to families the economic and educational challenges the country and the region face, and the very personal implications this has for students in terms of their future opportunities and prospects. The second is to think boldly and creatively about ways to engage parents, students and communities in working with schools to increase student success in these critical subjects.

In what follows, we describe the key tasks of public engagement that must be tackled if these challenges are to be met, and suggest a number of guidelines and strategies for doing so. We also, along the way, flag a few pitfalls to avoid.

The memo is organized as follows:

1. *Closing the Urgency Gap by Making Opportunity Real*
 2. *Gaining Stakeholder Input and Involvement via Community Dialogue*
 3. *Creating Partnerships for Success via Leadership Dialogue*
 4. *Building Capacity for the Long Haul: The Challenge of Embedding Engagement*
- Appendix A: Eight Core Principles of Public Engagement*
- Appendix B: A Choicework Discussion Starter on Improving MST Education*

1. Closing the Urgency Gap by Making Opportunity Real

While our research shows that the region's experts and business leaders are much more concerned about MST achievement than are parents (who have only a flimsy appreciation for the career opportunities afforded by MST preparation) or students (who tend to find higher level math and science utterly pointless), we found that this "urgency gap" can be bridged by speaking the language of opportunity and by making opportunity concrete.

Although education experts and business leaders often talk about MST achievement in terms of regional and national competitiveness, we found that parents and students are less likely to be moved by this argument than by the ways in which a strong MST education can open up personal opportunities. The more they understand the concrete connection between higher level MST and opportunity, the more engaged they become in the enterprise of improving results.

The problem is not that parents and students are completely unaware of the importance of MST in today's economy. Rather, it is that this awareness remains abstract and impersonal. When we asked parents and students to talk about the different kinds of career opportunities available to students with advanced MST skills we were met largely with silence. After ticking off the examples of doctor and scientist, both parents and students ran quickly out of ideas. But students did say quite clearly that they would be motivated to take more and higher levels of math and science if they were truly convinced that by doing so they would be able to get into a good college, would be more likely to receive financial aid, or would be able to land a good-paying job.

Among the experts we interviewed, community leaders—particularly those working in lower-income urban settings—were most in-tune with the parents and students by seizing on increased opportunity as *the* key motivator.

People make choices based on defined opportunity. ...If we start showing kids the things that can happen if they achieve certain levels of [MST] competency then they'll start studying harder, they'll start seeing the value of doing their homework, of taking more advanced classes. –Urban community leader

The opportunity equation has to be answered...because you're in competition, whether it's competition with the television or competition with their friends, [kids] have got to see the reason why they're doing [math homework] rather than something else that might seem more enjoyable. –Urban economic development expert

Clues to bringing opportunity home to parents and students emerged in our focus groups, which are particularly useful research tools for observing shifts in people's attitudes as they encounter new information or work through conflicting ideas. While the vast majority of students had come to the focus groups with the attitude that high-level MST could hardly be more irrelevant to their futures, conversations about concrete opportunities in college and the workplace clearly warmed students to the idea of taking more of these courses and taking them more seriously.

This dynamic was particularly clear in one especially interesting “general public” focus group that included a working chemist. As the chemist began to rattle off a wide variety of career opportunities made possible by a strong math and science background, the other participants in the group noticeably perked up and the entire tone of the conversation changed. Younger adults in the group began saying things like, “I wish I’d known about all those jobs when I was in school!” and many said they would have definitely taken more MST in high school had someone explained the real and varied opportunities available to those with strong MST backgrounds. In short, it was striking to see how energized people became as they learned about and discussed concrete, real-world opportunities.

2. Gaining Stakeholder Input and Involvement via Community Dialogue

Step one, then, should focus on closing the urgency gap by helping people understand that there’s important work to be done to improve MST education so that young people’s opportunities open up, rather than narrow, in the years ahead. This is a vital start, but it is only a beginning—a prerequisite for helping stakeholders move from awareness to problem-solving. It is in the movement from awareness to problem-solving that the real engagement pay-offs begin to emerge, and community-based dialogue can be a powerful catalyst for such movement.

Through carefully designed community dialogues parents, students, educators, employers, community-based organizations, taxpayers and other critical stakeholders can create new lines of communication and forge new ways of working together for student success. Whether in large public forums or small-group meetings, whether in face-to-face settings or via the Internet, such dialogue among citizens and across different perspectives can be key to building public understanding and the will for change by getting various stakeholders on the same page.

In our conversations with stakeholders in the region we found that parents, teachers, students, experts, business and community leaders are open to being involved with each other in addressing the problems facing local schools, districts and communities when it comes to preparing students for success after high school. A key question, then, is how best to structure such community dialogues, so they are as productive as possible.

The Power of Citizen Choicework

To create the right conditions for effective public engagement, Public Agenda regularly draws on qualitative research such as focus groups and interviews to inform the design of “Citizen Choicework” discussion starters. These are generally comprised of three or four different perspectives on the issue at hand—distinct approaches with different strengths, weaknesses and tradeoffs—that serve as a point of departure for engagement and dialogue in civic events we call “Community Conversations.” In Community Conversations, a large group of stakeholders is broken into small, diverse discussion groups. Trained local moderators facilitate dialogue and deliberation in these groups, creating the opportunity for citizens from a wide range of backgrounds and starting points to think collaboratively about a problem.

The “choices,” though presented as discrete entities, are not intended to be treated as necessarily mutually exclusive. Rather, the framework is a means to help people disentangle key elements of a complex problem in such a way that they can discuss it more effectively and grapple with the trade-offs involved. Thus, effective engagement is not about imparting the “right” answer, but rather it is a matter of creating opportunities and space for citizens from all over the political spectrum to think together about different dimensions of an issue in a task-oriented manner. After the small groups have had an opportunity to work on the problem together, all of the groups are brought together in a plenary session to report the results of their work.

Community dialogue such as this, which brings diverse stakeholders *to* the table while putting diverse ideas *on* the table, results in more common ground, more clarity about disagreements, clarification of lingering questions and concerns, and ideas for moving ahead collaboratively on the problem at hand. Moreover, as people from different backgrounds and with very different viewpoints are given the

opportunity to *work* together in their deliberations, it builds mutual respect, deepens the sense of purpose for participants, and helps span various divides.

Therefore, we always include in our Choicework materials a range of ideas that we find, based on preliminary stakeholder research, helps citizens enter into dialogue with others who have very different backgrounds and starting points. Appendix B describes the Choicework and toolkit we produced for our upcoming engagement initiative in the Kansas City region. But note that this is only one example, aimed at first round community conversations on the overall topic of improving MST results in the region. As the Initiative progresses, other, perhaps more specific topics, might very well call for their own treatment.

The Special Challenge of Engaging Stakeholders around Technology Education

Our qualitative research suggests that people’s understanding of what constitutes technology education is so fragmentary and ill-formed that it is in somewhat of a category of its own. While people often speak of math, science and technology education as a single unit, our research demonstrates that it’s often useful to disentangle the disciplines when helping people engage the issue of improving MST education.

While experts and leaders define technology with terms such as “design,” “innovation,” “engineering” and the “built environment,” we found in our focus groups that parents and students think of technology education primarily in terms of basic computer literacy, with perhaps a dash of AV competency thrown in. Beyond this, parents and students tend to view technology education as primarily a matter of incorporating computers into other subjects, such as math and science. Because the gap between technology experts and the public around the core definition of technology education is so pronounced, stakeholders will need extra help understanding the basic concepts at a deeper level before they can be expected to engage the challenge of improving technology education.

Proceed with Caution
The public’s limited appreciation for what technology education really means, along with people’s mixed feelings about the term “innovation,” suggest that special care must be taken to help parents, students, and communities grapple with the significance of (and need to improve) technology education.

In addition, we found that care should be taken by when using words like “innovation,” because although most experts and leaders view the notion of innovation as an unambiguously positive goal, parents and the general public have mixed feelings about the idea of innovation as a goal of education. In our focus groups, for example, we found that many ordinary citizens are somewhat leery of the term *at least at first*, because they tend associate it with chaos, faddism, and an abandonment of the basics. Despite this initial suspicion, most of the people we spoke with warmed to the idea of innovation once they were assured that it was not a cover for education fads or needlessly expensive gadgets, and given the opportunity to talk more about what constitutes a 21st century curriculum.

The public’s lack of awareness of the *what* and *why* of technology education, along with their initial discomfort with the notion of innovation, suggest that special care must be taken to help parents, students, and communities grapple with the significance of the topic. This is one area where additional qualitative research could be particularly useful.

3. Creating Partnerships for Success via Leadership Dialogue

Parents, students, teachers, education experts and business leaders that we spoke with all said that they want closer and more creative partnerships between schools and community institutions, especially businesses. They see this as key to driving home the real-life applications and opportunities that the MST disciplines represent, and as vehicles for bringing the material to life. The following quotes from interviews and focus groups paints a kind of picture of what is needed in terms of robust leadership engagement.

Manufacturers are consistently telling us ‘we would like to have more relationships with schools, particularly high schools.’ High schools were saying, teachers and administrators, ‘boy, we’d love to have more relationships with manufacturers. They could bring real-world examples into the classroom.’ Both were saying the same thing; they just haven’t gotten together. –Business leader, manufacturing

If math teachers could just kind of think of things that would apply to a person in their actual life, like real careers, or have people come in who work in those careers and help us think about that, instead of just “Do this problem.” That would help a lot. –Exurban student

Instead of just telling students, “You need [to know this], you have to learn it,” tell them why you’re going to need it, or what businesses or what companies would use this knowledge and how that’s going to work in the workforce. –Urban parent

All of the different things that students can do with the computer, the different software, and all of that stuff is pretty amazing. Some of my students can do tons more than I can do, but they don’t even think that’s something that would go on a resumé because they don’t know how these things connect up with the real world. That’s a problem. –Urban high school technology teacher

The community organizations, the faith community, and the business community should play a greater role...helping to get students exposed to experiences that they have no access to, because they live in hyper-segregated communities where there are layer upon layer upon layer of poverty and lack of education. We need to show kids in our community role models of scientists and engineers and nurses, people who have come from the same place. –Urban community leader

Proceed with Caution
While the Kansas City region is well-positioned for robust public engagement, local leaders in the community and from education and business sectors told us that many are vulnerable to “meeting fatigue.” Those interested in seeing more inclusive and robust public engagement in the region should keep this in mind as they plan their efforts.

Significant efforts already exist in the region to create such partnerships and our research, as illustrated above, shows support for deepening and adding to them. Public Agenda’s engagement initiative in the region will be a step in this direction. It will begin by establishing an MST Engagement Coordinating Coalition made up of local organizations representing every sector from school-readiness to workforce development. Additionally, it will involve a series of leadership dialogues with local policy and decision-makers from across the region that include citizen representatives from local Community Conversations.

One caution came across in our research for efforts such as these that we believe the Kauffman Foundation and its allies should keep in mind: While we believe that the Kansas City region’s leadership will benefit from robust and creative engagement, we were also warned by local leaders that many in the region are vulnerable to “meeting fatigue.” Given the extent to which organizations and foundations have already begun involving stakeholders in different ways, it is important that future engagement initiatives be organized to clearly add value to, rather than duplicate, past efforts.

4. Building Capacity for the Long Haul: The Challenge of Embedding Engagement

Far too often, public engagement initiatives are viewed as culminating in large events or public forums that mark the terminus of the effort. But to be truly effective, public engagement should never be a “one and done” affair. In our view and model, public events like Community Conversations are best understood as points of departure for individual and collaborative action and for further engagement.

To have lasting impact, in other words, public engagement must move beyond the “project” phase to become a set of community practices and habits of communication among leaders and the public that are embedded in the life of the community. The goal of engagement, by this account, is to help foster a culture of decision-making in which citizens and leaders share in the responsibility for addressing problems of common concern.

Much can be said about how habits and practices of engagement become embedded in the life of a community.¹ The most important point here is that *as efforts are made to engage stakeholders in efforts to improve MST in the region, capacity should be built at every turn for future engagement.* Practically speaking, this means that local organizations learn to work together to design and organize engagement, local citizens learn to moderate dialogues, and local leaders learn to leverage the process to inform and facilitate change. Public Agenda’s program of work over the next few years will proceed with these goals fully in mind.

¹ See, for example, “Transforming Public Life: A Decade of Citizen Engagement in Bridgeport, CT” by Will Friedman, Alison Kadlec, and Lara Birnback. Public Agenda, Center for Advances in Public Engagement, Case Studies in Public Engagement, Number 1, 2007.

Appendix A

In the memo above we have drawn both on our research in the Kansas City region and on our years of experience working with communities around the country to offer recommendations for engaging communities on improving math, science and technology (“MST”) education as part of Kauffman’s ten-year initiative. While different circumstances shape how we approach public engagement in each of the communities where we work, a number of core principles remain constant. These principles undergird our work and serve as guidelines for our approach to the design and execution of any specific public engagement initiative.

Eight Core Principles of Public Engagement

Dan Yankelovich, cofounder of Public Agenda, points out that there are two wrong ways to hold a public meeting—which are, unfortunately the most common ways they are held. The first is the public hearing, in which citizens supposedly express their views, but where two kinds of “voices” tend to predominate: the most angry and the most organized. The *general* public, and certainly those who have been traditionally marginalized, are rarely represented in any meaningful fashion.

The other common approach, the expert panel, reverses the flow. Instead of leaders being subject to unproductive rants from angry citizens or hearing input only from the “usual suspects,” expert panels often subject a passive, glassy-eyed audience to the pontification of a few knowledgeable individuals. This approach operates on the dubious assumption that providing more information is the key to engaging citizens. Information certainly has its place in the scheme of things, but it’s easy for this strategy to go awry and amount to little more than a useless data dump.

How then, should we proceed? The following principles should be kept in mind as approaches to public engagement are developed. All of these principles will be at work in Public Agenda’s activities in the region over the next few years, but they can also come into play in other ways as the broader Initiative evolves.

1. Attend to people’s leading concerns

When there are gaps between leaders and the public, it is important to recognize that people will be most receptive to leaders’ concerns if the things that they themselves are *already* feeling most concerned about are acknowledged and being addressed by leaders.

This means that if people do not yet feel that MST is the leading issue for schools, it is not enough to simply try to “educate” them by talking more about the links between MST and economic opportunity—as important as this is. It is also important to understand and address the things that are most pressing on people’s minds. For example, our research indicates that many African-American and Hispanic parents are not convinced that their children are learning *basic* math well enough, let alone calculus. As such, they are unlikely to be receptive to experts who are only talking about *advanced* math coursework. As an early Public Agenda report put it, for the public it’s often—and quite reasonably—a matter of, “first things first.”

2. Begin by listening

Understanding the public’s starting point and leading concerns, not to mention determining the best ways to communicate with and engage people about tough issues, requires careful and systematic listening as a first stage. The considerable investments in research and stakeholder meetings that have already taken place in the region embody this principle well.

One area where, as mentioned, we think more work may be warranted along these lines concerns technology education. There stakeholder views are inchoate and murky, and we feel that further qualitative research could serve to provide more clues as to the most productive ways to engage people on this aspect of the Initiative.

3. Frame issues for citizens, not experts

Engaging citizens involves speaking their language and acknowledging their concerns. Expert-speak must be translated into the language that lay-people use, and should address the public's concerns. Generally speaking, framing an issue for public (as opposed to expert) engagement means concentrating more on values conflicts and broad strategies, and less on technical details and tactical minutia.

Moreover, the tradeoffs that are embedded in any issue that citizens must confront should be brought to the surface. As discussed earlier in this memo, this is a fundamental engagement practice that Public Agenda calls "framing for deliberation" or "Citizen Choicework."

4. Help people move beyond wishful thinking

Because Choicework is aimed at surfacing the tradeoffs implied by various approaches to a problem, it is particularly helpful for encouraging people to begin to think realistically about a challenge, and to move beyond wishful thinking.

A strong public engagement initiative will look for diverse ways to achieve realism and seriousness in the public debate, such as challenging leaders who pander to people's wishful thinking, creating opportunities for people with very diverse experiences and viewpoints to engage in dialogue, and providing corrective information once it's become clear the public is "hung up" on a misperception or fantasy.

5. Get beyond the "usual suspects"

It's easy to bring together those people who are already powerfully involved stakeholders in an issue, as well as those who love to sound-off in public. Finding ways to include or represent the broader public, especially those whose voices have traditionally been excluded, is a more challenging proposition. This takes special effort at community outreach and the use of a variety of media and forums.

6. Create multiple, varied opportunities for deliberation and dialogue

People need to go through a variety of stages to come to terms with an issue, decide what they are willing to support and figure out how they can make their own contribution. A strong engagement initiative will be not only inclusive but iterative, giving people multiple and varied opportunities to learn about, talk about, think about and act on the problem at hand. Community conversations, "study circles," online engagement strategies and media partnerships are a few of the possibilities.

7. Respond thoughtfully and conscientiously to the public's involvement

It is critical that leaders respond to the public's deliberations. This does not mean leaders are obligated to do everything that people say they want. Rather, it means that leaders should take care to "close the loop" in any given round of engagement by keeping people informed of all the ways in which their ideas and concerns are being incorporated into the work of problem-solving among official decision-makers. Moreover, it means taking the time to explain why some ideas are not being incorporated. Doing so deepens people's understanding of the issues and fosters mutual respect.

8. Give people a role and a stake

How leaders incorporate and respond to the input and deliberations of stakeholders is only part of the equation. Just as important is helping people find a way to make their own contribution to the issue.

Well-designed engagement opportunities energize citizens and lead many to want to roll up their sleeves and get involved. Leaders should take advantage of this goodwill and human capital by helping people plug into existing initiatives and organizations that aim to improve MST education, or by supporting citizen-centered efforts to develop new ones. Doing so not only gives people a role and a way to contribute, it gives them a personal stake in the success of the work.

Appendix B

The Choicework we created for our upcoming engagement initiative in the Kansas City region is designed to help people understand the strengths and tradeoffs associated with trying to improve MST results through better teaching, a stronger curriculum, and a smarter system of assessment and accountability. The guide titled, “Ready for 21st Careers: Making Sure Students Get the Math, Science and Technology They’ll Need to Succeed in the New Economy” also suggests ways in which schools, families and the broader community can work together in support of different approaches to student success.

In addition, a video discussion starter version of the Choicework was created as part of the larger public engagement “toolkit” that we developed to support the Initiative (available from Public Agenda). In addition to the print and video discussion starters, the toolkit includes:

- A detailed Organizer’s Manual for hosting Community Conversations
- A Moderator’s and Recorder’s Guide for facilitating Community Conversations
- Participant handouts, post-forum surveys and other tools for use by local and regional partners and organizers.

A version of the MST Choicework is reprinted here. Remember, this is a tool designed to enable stakeholders with very different levels of expertise and experience to deliberate together on ways to improve results in their communities and across the region. It is a user-friendly and inclusive discussion starter, not a complete or sophisticated tutorial for experts.

Ready for 21st Century Careers: Making Sure Students Get the Math, Science and Technology They’ll Need to Succeed in the New Economy

Introduction

Whether they’re planning to attend a four-year university, a two-year degree program or enter an on-the-job training program, today’s students will be living in a world of rapid technological change where more and more good jobs and promising careers will require a solid background in math, science and technology. From nursing to auto-mechanics to marketing, workers will need a greater mastery of these subjects than ever before. Even many jobs that do not directly involve math or science will require the kinds of analytic skills that these subjects help students to develop.

A solid grasp of math, science and technology can also help students become more capable citizens, better able to understand important issues such as cloning, global warming and the latest economic trends.

Finally, better achievement in math, science and technology is important to our region and to our country if we are to compete successfully in the new global economy.

Unfortunately, recent studies suggest we are not doing a good enough job teaching math, science and technology to today’s students. For example,

- Fewer than half of all high school graduates are prepared for basic college-level math.
- It is estimated that 60% of all new jobs in the 21st century will require the kinds of math, science and technology skills that are possessed by only 20% of the current workforce.
- The U.S. ranked 24 out of 29 industrialized nations in an international standardized test of mathematics skills and knowledge.



How can we change these trends and make sure that all students who graduate from our high schools have the math, science and technology they'll need? To help you and your neighbors talk about this, we present three approaches to improving student achievement in math, science and technology. Among these choices there are probably some ideas that you'll like and some you won't. The main point is that we can't do everything at once. We need to make choices and set priorities. Which ideas make the most sense to you—and why?

1) Invest in Great Teachers

Skilled, enthusiastic teachers with a deep knowledge of their subject area are the key to helping students master math, science and technology. Knowledgeable and inspiring teachers bring the material alive, fine-tune it to the needs of different kinds of learners, and motivate them to work hard. Unfortunately, too many math and science teachers don't know their subject matter well enough to help students develop the background they'll need to succeed in college or job-training programs after high school.

Therefore, we should do things like:

- Raise salaries to attract and retain talented math and science teachers—even if this means paying them more than teachers in other subject areas.
- Place the most experienced and capable math and science teachers in the toughest schools.
- Provide strong professional development in math and science, so that teachers can keep up with advances in their fields, and provide training to elementary school teachers—who may not be very strong in math or science at all.
- Create better ways for teachers to communicate with parents by scheduling teacher/parent conferences at different times of day and by creating websites where teachers and parents can interact online.

People who like this approach say, “The human touch is what counts. You can't have great schools and motivated students without great teachers.”

But others say, “It's not realistic to expect every teacher to be a superstar.”

2) Create Smart Accountability

The key to better results is demanding more of our teachers, students and schools through a *strong and smart system of accountability*. We need to know how well all of our students are doing, which of our teaching methods are really working, and how best to encourage the results that we want. By carefully assessing student achievement on a regular basis, and by putting the right mix of incentives in place, we'll motivate everyone to try harder, work smarter and get the job done.

Therefore, we should do things like:

- Measure student progress regularly through a variety of well-crafted tests and assessments.
- Create incentives that reward or penalize school leaders and teachers based on student performance.



- Allow students to graduate from middle and high school only if they demonstrate that they've learned their coursework in core math and science subjects.
- Encourage families to expect high student achievement in math, science and technology.

People who like this approach say, "High expectations coupled with a smart system of assessment and accountability will motivate students to perform at high levels."

But others say, "How do we know that tougher math and science graduation requirements won't just create more drop-outs rather than better-motivated students?"

3) Implement a 21st Century Curriculum from Kindergarten through High School

Accountability doesn't mean much if we haven't decided what to teach. The real key to student success is developing an *innovative, up-to-date, math, science and technology curriculum* that, beginning in elementary school, gets students excited and prepares them for the opportunities of today's world. Such a curriculum should be engaging, demanding and carefully focused on the essential knowledge and skills appropriate to each level of schooling. And as much as possible, it should be a common curriculum across schools and districts, as some other countries have, to help make sure all students are mastering the core concepts required for success after high school.

Therefore, we should do things like:

- Get kids excited about these subjects early on in elementary school while making sure they learn the fundamentals so they are ready to succeed in middle and high school.
- Develop an innovative and challenging curriculum that, rather than trying to cover too much, concentrates on a select number of essential areas each year.
- Implement the curriculum as consistently as possible across classrooms, schools and districts so all students have the same opportunities.
- Create partnerships with businesses and colleges so students see real-world applications and emerging career opportunities.

People who like this approach say, "We should start young with a relevant, engaging, common curriculum designed to prepare all students for the real world."

But others say, "An overly-detailed curriculum will stifle the creativity of teachers."

The Choices in Brief and their Tradeoffs

Great Teachers

Skilled, enthusiastic teachers with a deep knowledge of their subject area are the key to helping students master math, science and technology. We should:

- Pay math and science teachers more than teachers in other subject areas.
- Place the most experienced and capable teachers in the toughest schools.
- Provide strong professional development opportunities & require subject-area mastery.
- Create better ways for teachers to communicate with parents.

Challenges, tradeoffs and questions for this approach:

- It is not realistic to expect every teacher to be a superstar; they are already spread thin.
- Other subjects are equally important and other teachers work equally hard, so it's not fair to pay math and science teachers more.
- How are we going to pay for this very expensive solution?
- It is really fair or smart to put the best teachers in the worst schools?

Better Accountability

The key to better results is demanding more of our teachers, students and schools through a *strong and smart system of accountability*. We should:

- Measure student progress regularly through a variety of well-crafted tests and assessments.
- Create incentives that reward or penalize school leaders and teachers based on student performance.
- Allow students to graduate from middle and high school only if they demonstrate that they've learned their coursework in core math and science subjects.
- Encourage families to expect high student achievement in math, science and technology.

Challenges, tradeoffs and questions for this approach:

- There is no point in measuring progress until we know that we have the right curriculum.
- Isn't this more likely to produce a nation of test-takers, rather than a nation of thinking, educated people?
- What's to keep exit exams from resulting in higher dropout rates rather than better performance?
- Penalizing schools and teachers isn't fair unless we are willing to fund all of our schools adequately and equally.

21st Century Curriculum

A challenging, engaging, world-class math, science and technology curriculum that will help all students meet the challenges of today's world is the real key to student success. We should:

- Start in the early grades with a strong emphasis on math, science and technology.
- Concentrate on a select number of essential areas each year.
- Implement the curriculum as consistently as possible across schools and districts.
- Create partnerships with businesses and colleges to directly expose students to the real-world applications of what they are learning.

Challenges, tradeoffs and questions of this approach:

- A highly detailed curriculum will stifle the creativity of teachers and make it harder for them to fine-tune their classes to different teaching and student learning styles.
- Promoting a common curriculum will diminish local control and ignore the different needs of different schools and communities.
- Might students miss out on important educational experiences if we put too much emphasis on the math, science and technology curriculum?
- Do we really want to tie the school experience so closely to business? After all, an education is about more than making money, isn't it?