



Tools for Building Community Engagement and Support for High Quality Science Education and the Workforce “Pipeline”

Partnership for Reform in Science & Mathematics

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January 15, 2008



What is PRISM?

- A comprehensive grant from NSF to the University System of Georgia designed
 - To test key strategies to increase student learning and achievement in science and mathematics in schools and colleges
 - To codify what works
 - To use lessons learned
 - To influence statewide change in policy and practice
 - To inform the nation about successes that should be replicated to rebuild America's competitive advantage in science and mathematics

Regional and State Partnerships



University System of Georgia

Metro Atlanta Region

- Georgia State University
- Atlanta Public Schools
- CEISM—Georgia Institute of Technology

Northeast Region

- University of Georgia
- Clarke, Jackson, and Oconee School Districts
- Georgia Perimeter College

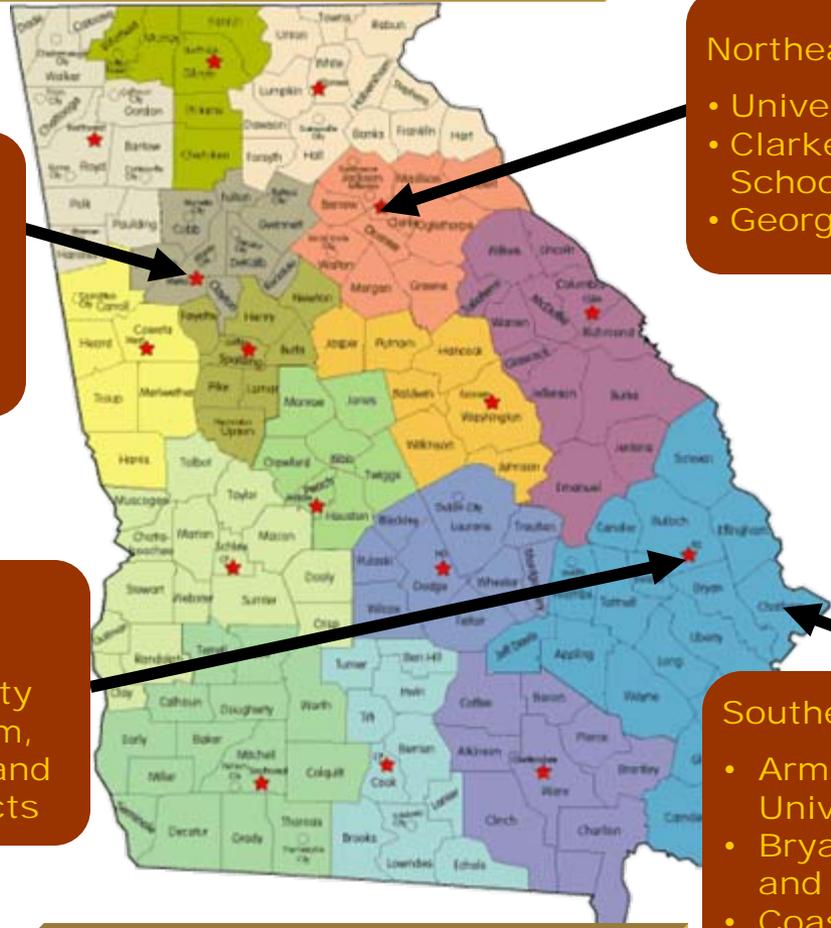
East Central Region

- Georgia Southern University
- Bulloch, Candler, Effingham, Evans, Screven, Toombs, and Vidalia City School Districts

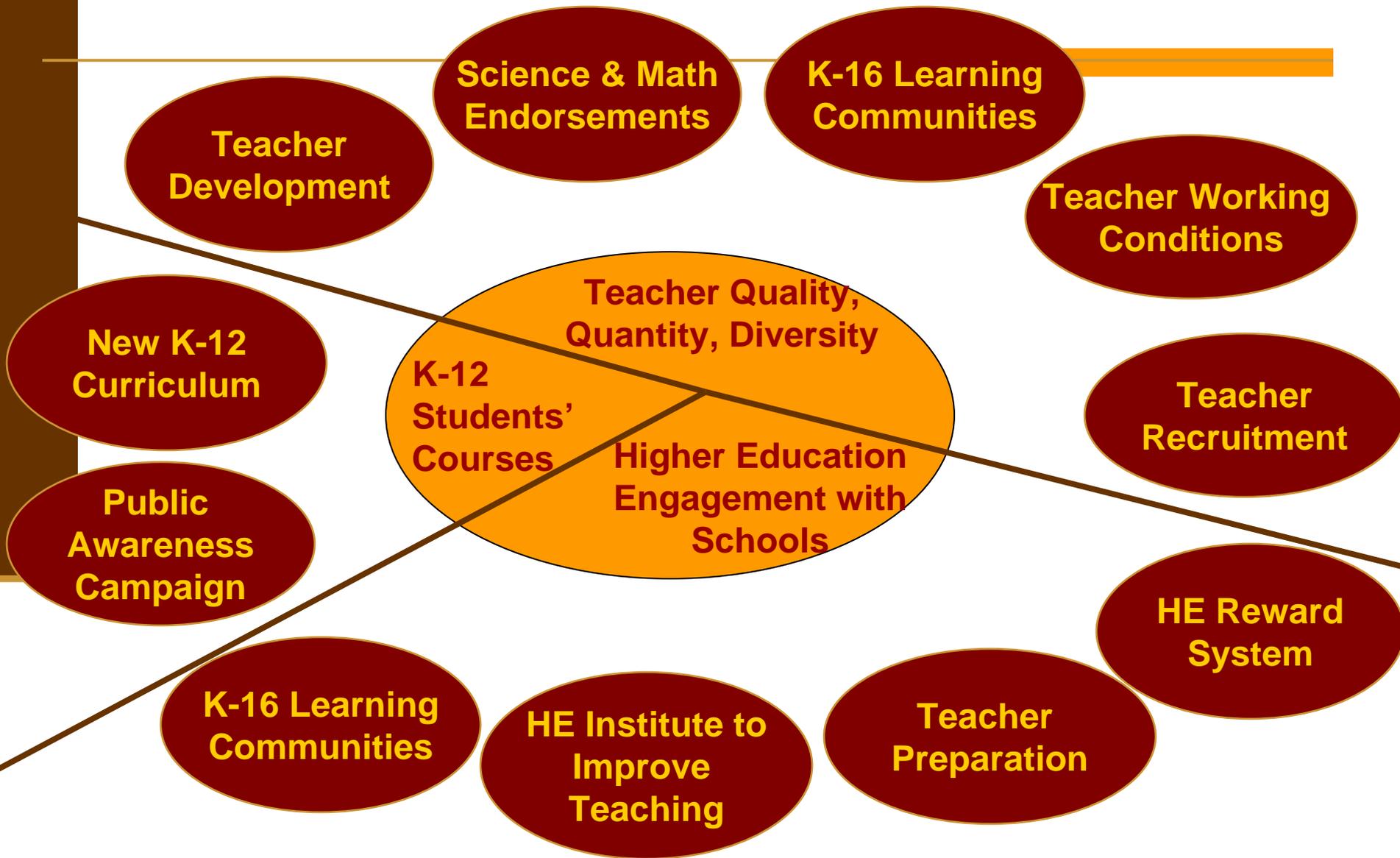
Southeast Region

- Armstrong Atlantic State University
- Bryan, Camden, Chatham, and Glynn School Districts
- Coastal Georgia Community College

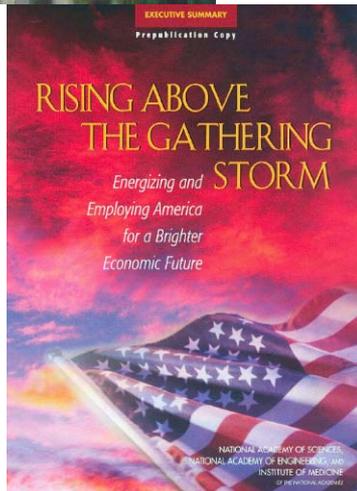
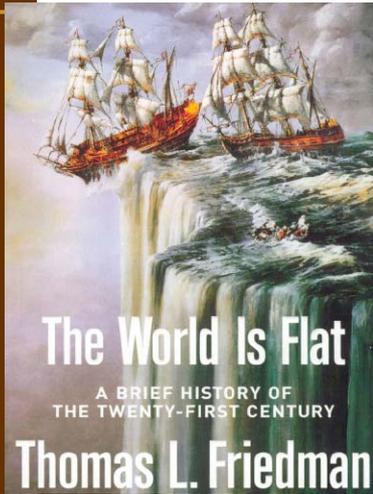
Georgia Department of Education



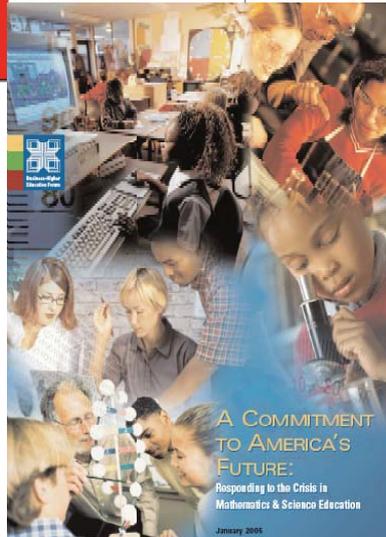
PRISM Design



Current Literature

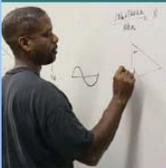


- AA
- Business-Higher Education Forum
- Business Roundtable
- Council on Competitiveness
- Information Technology Association of America
- Information Technology Industry Council
- Minority Business RoundTable
- National Association of Manufacturers
- National Defense Industrial Association
- Semiconductor Industry Association
- Software & Information Industry Association
- TechNet
- Technology CEO Council
- Telecommunications Industry Association
- U.S. Chamber of Commerce




Important, but Not for Me
Parents and Students in Kansas and Missouri Talk About Math, Science and Technology Education

A Report from PUBLIC AGENDA
with support from the Essie Marion Kaufman Foundation

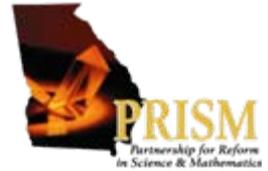






Presentation Focus

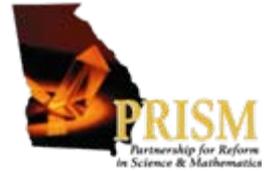
- **Recommendations from National Reports**
- **Concrete Tools of Activities to address:**
 - Partnership Success
 - Public Awareness & Engagement

Recommendations



- **Establish a P-16 Council in each state**
(Business-Higher Education Forum: A Commitment to America's Future)
- **Create Partnerships for Success via Leadership Dialogue** *(Public Agenda: Engaging Stakeholders in the Kansas City region for improving MST education)*

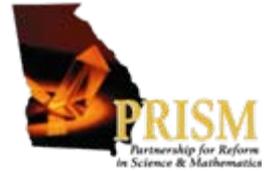
Tools for Managing PRISM



- **Definition Documents**
- **Rubrics**
- **Management Tools**

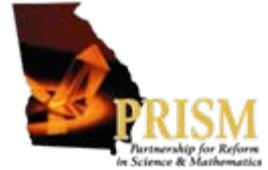


Definition Documents



- Challenging Courses and Curricula for K-12 and Higher Education
- Evidence-based Design and Outcomes
- Regional Coordinating Committee
- P-16 Learning Community
- Professional Development/Learning
- Lead Teachers
- Institute for the Teaching and Learning of Science and Mathematics
- Participation

Rubrics



- Partnership
- Learning Community



Partnership Rubric



Indicators	Beginning	Emerging	Developing	Accomplished
Vision and Goals	Partners are together due to the nature of their work, but do not share a common vision and are concerned only with their own individual goals.	A shared vision emerges as partners work together, but the focus is still on individual goals.	Partners recognize the “value added” of a shared vision and collaborate on some common goals.	Partners hold a shared vision and collaboratively develop and implement common goals.
Communication	The purpose of communication is to share individual needs.	Most communication focuses on sharing individual needs; however, some discussion takes place related to a shared vision and common goals.	Communication promotes progress toward achieving a shared vision and common goals.	Communication is both consistent and deliberate, and is seen as an important component of the success of the partnership.
Decision-Making	Most partners are represented by those with no authority to make changes; therefore, decisions are made apart from common goals.	Some partners are represented by those with limited authority to make small decisions that may contribute to common goals.	Most partners are represented by those with limited authority to make decisions that promote individual or organizational goals, but are less committed to making decisions toward common goals.	Partners with authority represent their organization to make collaborative decisions that meet common goals.

PRISM Learning Community Rubric

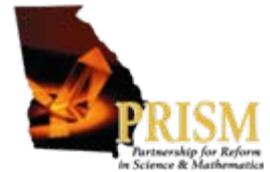
Indicators	Beginning	Emerging	Developing	Accomplished
Shared Vision	The facilitator/leader of the learning community has a vision of teaching and learning which includes promoting intellectually challenging work for students and effective teaching practices.	A few of the members of the learning community share a vision of teaching and learning which promotes the development of intellectually challenging work for students and embodies the use of effective teaching practices.	Most of the members of the learning community share a vision of teaching and learning which promotes the development of intellectually challenging work for students and embodies the use of effective teaching practices.	All members of the learning community share a vision of teaching and learning which promotes the development of intellectually challenging work for students and embodies the use of effective teaching practices.
Shared Leadership	The learning community is organized and its work determined by someone perceived to be outside of the community and not directly related to the work.	The learning community is facilitated by one member who is responsible for organizing the meetings and work of the community.	The learning community is co-facilitated by a member from higher education and a member from P-12.	The learning community is facilitated through the input of all P-16 members equally sharing leadership responsibility.
P-16 Faculty Collaboration	The learning community is comprised of only P-12 faculty or higher education faculty, thus resulting in no P-16 collaboration.	The learning community is either school-based or university-based. Representatives from the other educational level may be invited to interact with the group from time to time resulting in tentative P-16 collaboration.	The learning community is either school-based or university-based, but includes a representative from the other educational level resulting in a limited P-16 collaboration.	The learning community is comprised of P-16 faculty due to the combined nature of their work, thus resulting in a substantial P-16 collaboration.
Collaborative Inquiry	Educators discuss the effectiveness of classroom practices and teaching materials currently used in their classrooms within their learning community.	Educators study and discuss research-based practices and how they relate to current practice within their learning community.	Educators discuss research-based practices within their learning community and individual members implement a practice in their classrooms based on need or interest. The member implementing decides how the effectiveness of the practice will be measured and reports results to the learning community.	Educators study research-based practices and collaboratively design an action research study that is conducted in their classrooms by the learning community and evidence of student achievement is documented.
Making Results Public	Learning community members share results of collaborative inquiry with their learning community.	Learning community members communicate results of their work with colleagues in their school and district.	Learning community members make presentations of results in regional, state, or national venues.	The results of the learning community work are published and accessible to a wide audience.

The Management Tools



- PRISM Leadership Team developed and uses a set of Management Tools to gauge progress toward actualizing the 5 Key Features of MSP
- Each feature—sub-divided into dimensions
- Indicators describe what PRISM would look like when
 - Emerging practices are evident
 - Policies and procedures have been modified
 - Practices have changed
 - Change has been institutionalized
- We rate our progress on each page annually

Sample from Management Tools



Partnership Driven: STATE LEVEL

Policies and Practices are Evident that Result in Well Documented, Inclusive, and Coordinated Institutional Change

Dimensions	Defining Questions	Emerging Practices	Yr Rtg	Policies/Procedures Modified	Yr Rtg	Practices Changed	Yr Rtg	Change Institutionalized	Yr Rtg
Core Partners— State Level	To what extent are PRISM state partners committed to a shared vision and to partnership goals for PRISM? To holding one another accountable for achieving them?	PRISM partners define roles and responsibilities of the Leadership Team as the unit responsible for meeting goals and deliverables	2-M	The State Board of Education and DOE feature PRISM goals, strategies, and deliverables in strategic plans	2-IP	Research and evidence drive decision-making by PI, Co-PI, Project Director, Associate Directors, and the Leadership Team	2-IP	The State Board of Education and Board of Regents approve policy recommendations resulting from PRISM	2-IP
					3-IP		3-IP		
					4-IP		4-IP		
	To what extent is communication between state partners deliberate and frequent?	PRISM partners define roles and responsibilities of the Department of Education (DOE) and the University System of Georgia (USG) for meeting goals and deliverables on PRISM	2-IP	The Board of Regents and USG feature PRISM goals, strategies, and deliverables in strategic plans	2-IP	The Leadership Team supports hard decisions when inconsistent quality is identified and not quickly rectified	2-IP	Evidence-based decisions guide curriculum development, teacher induction, teacher professional learning, and school improvement practices in SM in the DOE	2-IP
			3-M		3-IP		3-IP		
					4-M		4-IP		
	To what extent do state partners respect the contributions of one another?	The Leadership Team practices shared decision-making	2-IP			Within DOE and USG progress in SM is reported at periodic meetings of <ul style="list-style-type: none"> Superintendent's and Chancellor's cabinets State Board and Board of Regents' meetings Superintendents/Chief Academic Officers' Meetings Appropriate Academic Advisory Committees meetings 	2-IP	Evidence-based decisions guide teacher preparation induction, and advanced programs for SM teachers in the USG	2-IP
			3-M		3-IP		3-IP		
			4-S		4-M		4-IP		
	To what extent do state partners promote partnership goals in addition to those of the organization?	PRISM connects to ongoing work to improve student learning in SM within the DOE and USG	2-IP					USG policies for faculty promotion, tenure, post-tenure review, and salary incentives result in consequential numbers of SM faculty engaged in sustained work to increase K-12 student achievement	2-IP
			3-M				3-IP		
			4-S			4-IP			
To what extent is PRISM changing state policies and practices in science and mathematics (SM) to sustain PRISM?	DOE and USG jointly plan and implement PRISM programs and activities	2-IP							
		3-M							
		4-S							

Recommendations



- **Build public support for making science, technology, engineering and math improvement a national priority** (*Business Roundtable: Tapping America's Potential*)
- **Implement coordinated National and State Public Information Programs** (*Business-Higher Education Forum: A Commitment to America's Future*)
- **Close the Urgency Gap by Making Opportunity Real & Build Capacity for the Long Haul: The Challenge of Embedding Engagement** (*Public Agenda: Engaging Stakeholders in the Kansas City region for improving MST education*)

Market Research Approach



- **Phase I ('04):** Baseline data gathering, analysis, and core message platform development
- **Phase II ('06):** Evaluation of pilot public awareness campaign effectiveness and message refinement
- **Phase III ('08-'09):** Final post-test evaluation of public awareness campaign and achievement levels

Market Research



Maguire Associates

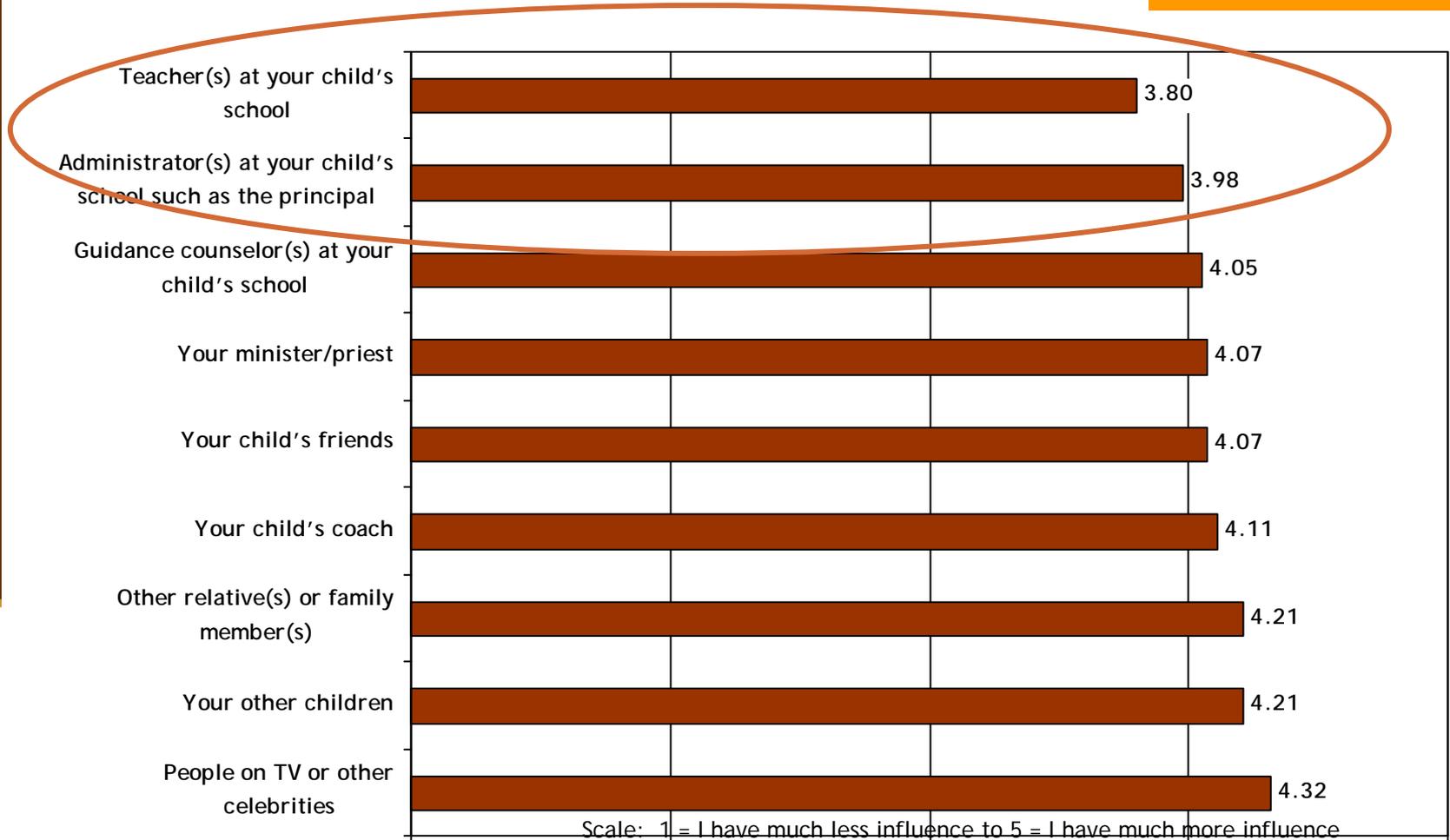
□ Phase I

- **Qualitative conducted September 2004 through October 2004**
- **Quantitative conducted December 2004 through January 2005 (643 High School students and 451 parents)**
 - **Goals**
 - Gather data on attitudes toward, and achievement in, science and mathematics.
 - Guide the development of an effective communications program.

□ Phase II

- **558 completed parent surveys conducted June 2006 – July 2006**
 - **Goals**
 - Gather data on attitudes toward, and achievement in, science and mathematics.
 - Guide the development of the most effective communications to students, parents, and the community about the importance of science and mathematics.
 - Measure shifts in attitudes and behavior.

Parents' Assessment of Sources of Influence



Q: Compared to the following people, how much influence do you think you (and your partner/spouse if applicable) have on your child's formal education?

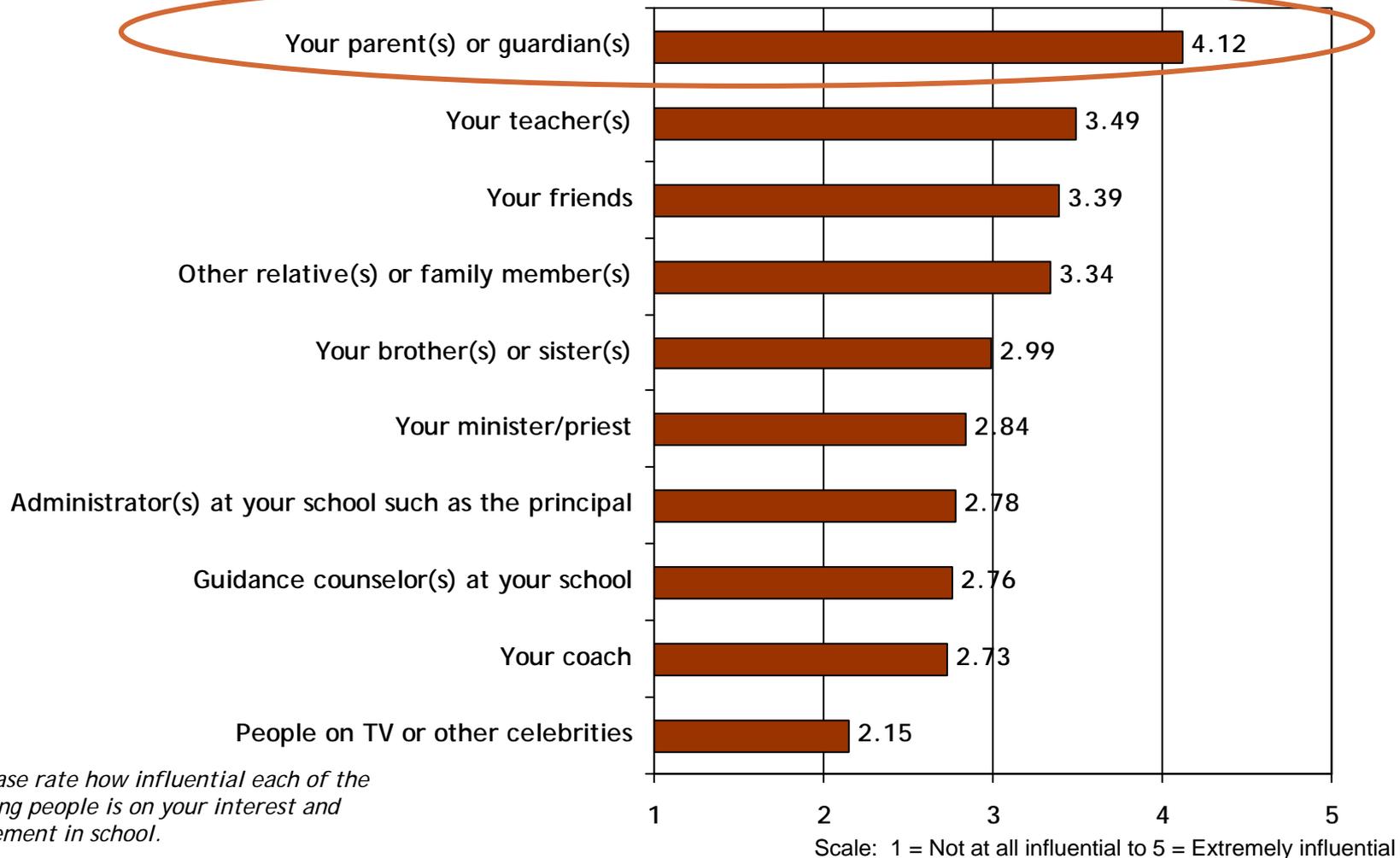
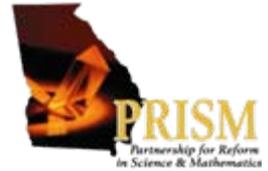
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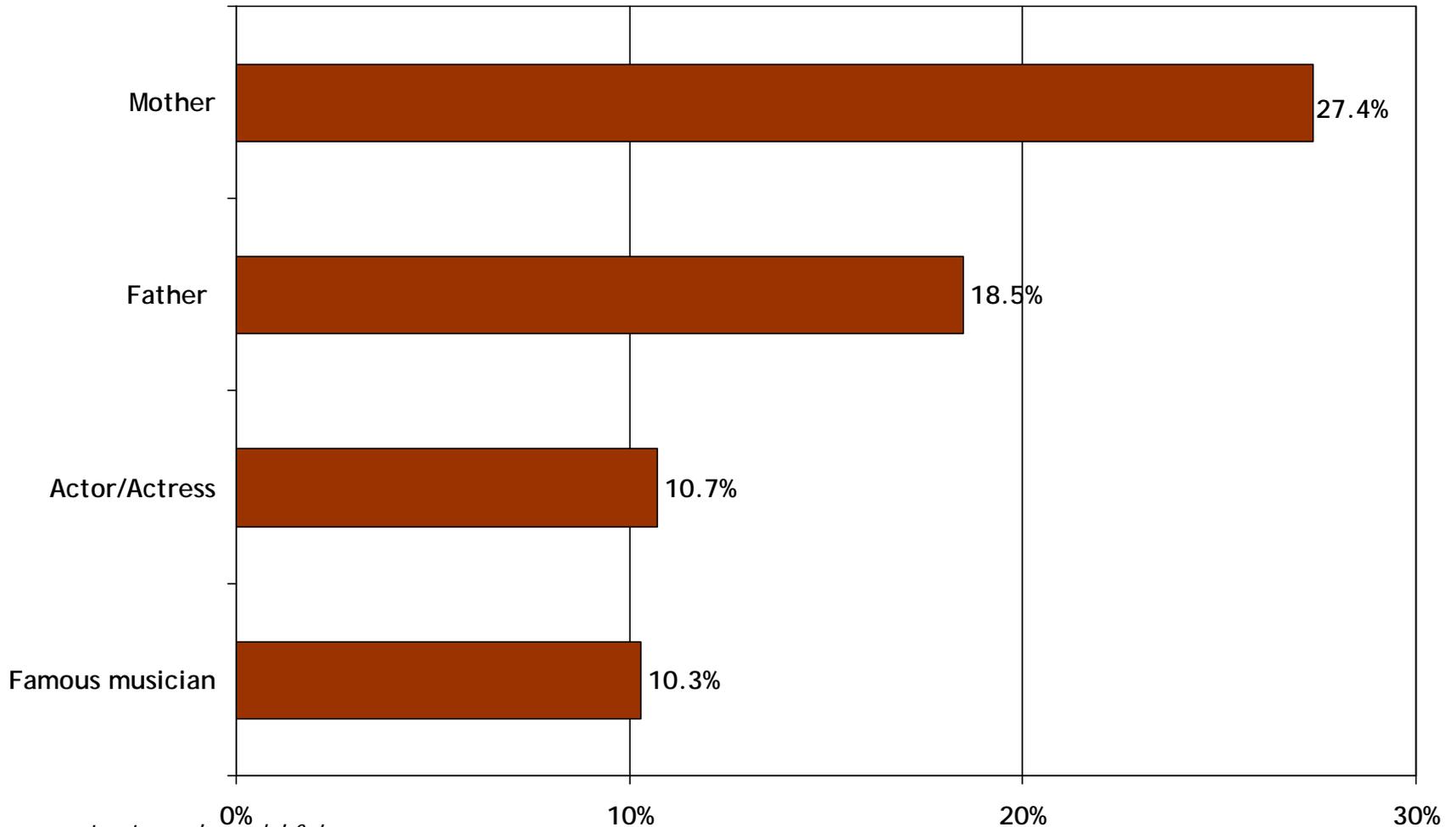
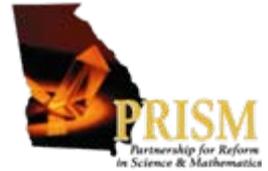
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Students' Assessment of Sources of Influence



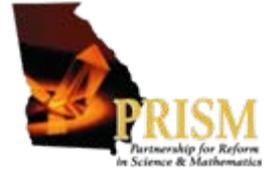
Q: Please rate how influential each of the following people is on your interest and achievement in school.

Students' Top Role Models



Q: Who are your top two role models? In other words, who do you look up to or want to be like?

Key Sources of Influence

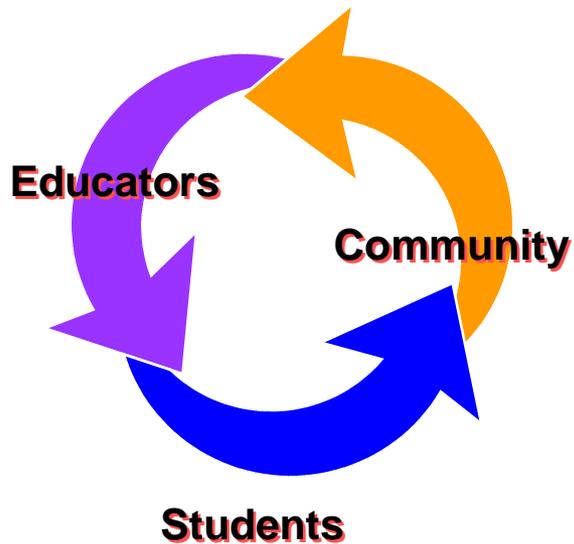


- **Parents are students #1 influence**
- Teachers and students' friends and other family members are the next most influential.
- The groups with the least influence are:
 - People on TV or other celebrities
 - Athletic coaches
 - Guidance counselors
 - School administrators
 - Ministers/Priests

Public Awareness Campaign Market Research

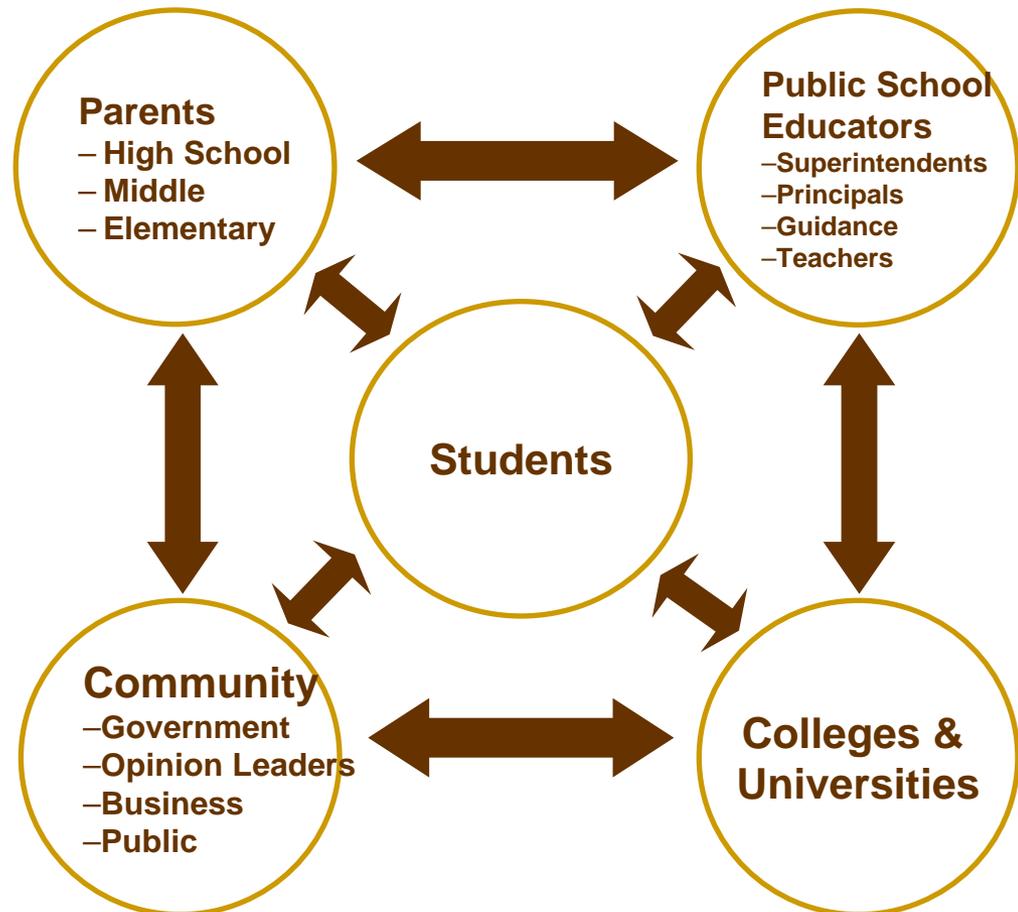


Public Awareness Campaign

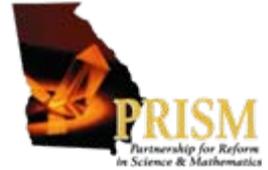


Original Implementation

New Implementation Plan



Public Awareness Campaign Mission & Goals



Conduct a public awareness campaign of the need for all K-12 students to have access to, be prepared for, and succeed in challenging courses and curricula in science and mathematics.

- To encourage parents to be more involved in student learning.
- To encourage students to start taking tougher science and mathematics courses.
- To see students tackle math and science the way they tackle skateboards and rap music.

The Challenge



PRISM is charged with developing and implementing a public awareness campaign that will result in:

More Georgia students
taking **more** math and science courses –
especially those courses with **more** rigor.

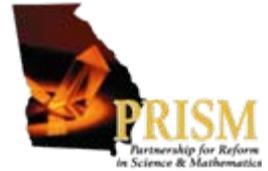
The success of the awareness campaign will be measured by shifts in:

Attitudes -- Greater willingness to tackle math and science courses

Behavior -- Increased enrollment in math and science courses, especially higher level ones

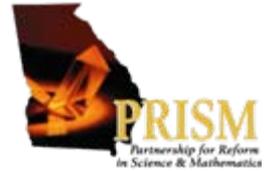
Contribution -- **Increased** parental involvement in student math and science course selection

Campaign Advertisement Mediums



- Bus Shelters**
- Billboards**
- Bus Wraps**
- Transit System Ads**
- Magazine/Newspaper Ads**
- Mall Kiosks**
- Public Service Announcements**
- Posters**
- Flyers/Brochures**
- Website**
- Press/Media Releases**
- Broadcast (Radio/TV) Interviews**

Campaign Logo



Bus Shelter Ads



Kids who get into chemistry
get into college.



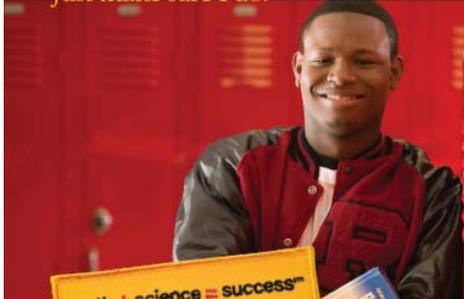
math + science = success™

And kids who get into college earn an additional \$500,000 (or more) during their working career than those without a degree. For a **free parent guide** filled with tips on getting your kid fired up about math and science, visit our website:

MATHSCIENCESUCCESS.ORG

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You don't have to
know calculus.
Just make sure I do.



math + science = success™

By the time your child enters the workforce, almost every good job will require technical skills. Your job? To make sure your kid stays interested and keeps taking the tough courses. For a **free parent guide**, go to:

MATHSCIENCESUCCESS.ORG

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She's not afraid of spiders,
snakes, or science.
Especially not science.



math + science = success™

Why? Because she got interested in it early. Now she'll keep taking math and science courses, which will give her far more opportunities later on. For tips on keeping your kid on track, get your **free parent guide** at:

MATHSCIENCESUCCESS.ORG

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Outdoor (billboards)



Free Parent Guide

If your kids can do equations they can do anything.

math + science = successsm

MATHSCIENCESUCCESS.ORG



Free Parent Guide

Kids who get science get great jobs.

math + science = successsm

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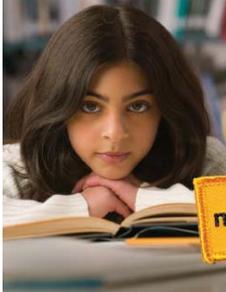


Free Parent Guide

Kids who get math get great jobs.

math + science = successsm

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Free Parent Guide

Multiply your child's opportunities.

math + science = successsm

MATHSCIENCESUCCESS.ORG



Free Parent Guide

Help your kid go places in life.

math + science = successsm

MATHSCIENCESUCCESS.ORG



Free Parent Guide

One formula can change your child's future.

math + science = successsm

MATHSCIENCESUCCESS.ORG

Student Poster & Parent Guide



Who cares about math and science?



More people than you might think, in some pretty cool careers: animal behaviorist + astronomer + entomologist + code-breaker + ecologist + game developer + oceanographer + software specialist + veterinarian + rocket scientist + quantum physicist + psychologist + DNA researcher + special effects artist + web designer + criminologist + astronaut + medical illustrator + political strategist + park ranger + meteorologist + FBI agent + forensics expert + marine biologist + venture capitalist + geophysicist + landscape architect + chef + physical therapist + immunologist + genetic researcher + neurosurgeon + hominid + speech pathologist + atmospheric scientist + cancer researcher + urban planner + environmental advocate + animator + paleontologist + organic farmer + robotics engineer + artificial intelligence expert + musical engineer + interior designer

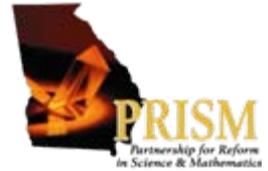
math + science = success™

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A parent's pocket guide.

math + science = success™

Elementary, Middle & High School Parent Guides



math + science = successsm

Parents have the power.
A guide to helping your child succeed.

elementary school

The cover for the elementary school parent guide features a 2x2 grid of photos of diverse elementary school children. A yellow banner with the slogan "math + science = successsm" is positioned across the bottom of the grid. Below the grid, the text "Parents have the power. A guide to helping your child succeed." is written in white, with "elementary school" in a large, faint font at the bottom.

math + science = successsm

Parents have the power.
A guide to helping your child succeed.

middle school

The cover for the middle school parent guide features a 2x2 grid of photos of diverse middle school students. A yellow banner with the slogan "math + science = successsm" is positioned across the bottom of the grid. Below the grid, the text "Parents have the power. A guide to helping your child succeed." is written in white, with "middle school" in a large, faint font at the bottom.

math + science = successsm

Parents have the power.
A guide to helping your child succeed.

high school

The cover for the high school parent guide features a 2x2 grid of photos of diverse high school students. A yellow banner with the slogan "math + science = successsm" is positioned across the bottom of the grid. Below the grid, the text "Parents have the power. A guide to helping your child succeed." is written in white, with "high school" in a large, faint font at the bottom.

mathsciencesuccess.org website



Georgia's future just might depend on two simple words: math and science. Fortunately, with the right encouragement, Georgia's children can excel in these subjects. Here, you'll learn how parents and students in your

math + science = success™

community can make math and science add up to success.



Students

Parents

Schools



School Banner



Our school gets it!

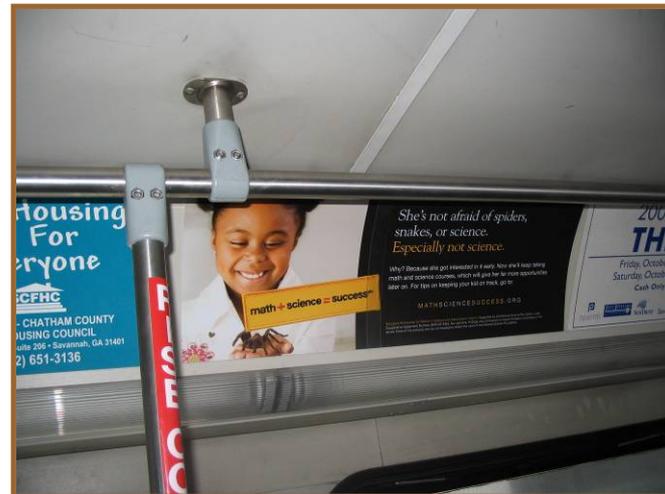
math + science = success™

We're proud to be a PRISM partner.

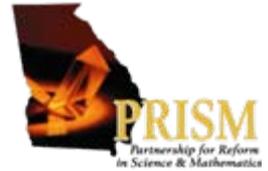
Billboard & Bus Shelter Ads across Georgia



Transit Ads across Georgia



Parental Outreach



Math/Science Family Night:

Create opportunities for parents and students to come together in a non-threatening atmosphere to experience hands-on math and science activities.

math + science = success[™]



Math & Science Family Nights

Math & Science Family Nights



Metter Intermediate (4th & 5th Grades, October 23, 2006)



Parental Outreach



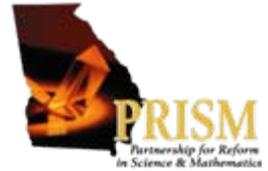
Goals of Math/Science Family Nights

- 1. To demystify science for children and parents by providing:**
 - Time for families to test, tinker and talk about Math and Science in a non-threatening atmosphere;
 - Activities that build on direct experiences with hands-on materials

- 2. To create a partnership between home and school through:**
 - Dialogues between parents and teachers;
 - Experiments to reinforce the math and science curriculum taught at school.

- 3. To improve attitudes towards math and science by illustrating:**
 - That both subjects are for *all* students;
 - The day-to-day ways math and science are already a part of their lives;
 - That doing math & science can be fun!

Coming Soon....



Math/Science Family Night CD-ROM



Public Service Announcements

