

# Philadelphia Math + Science Coalition

## Strategic Plan

2009 - 2012

### Our Mission:

To address the urgent  
challenge of  
preparing our youth to  
excel in mathematics  
and science by  
enhancing the quality  
of math and science  
teaching and learning  
in the Philadelphia  
public schools.

### The Philadelphia Math + Science Coalition

is made possible through the  
leadership support of

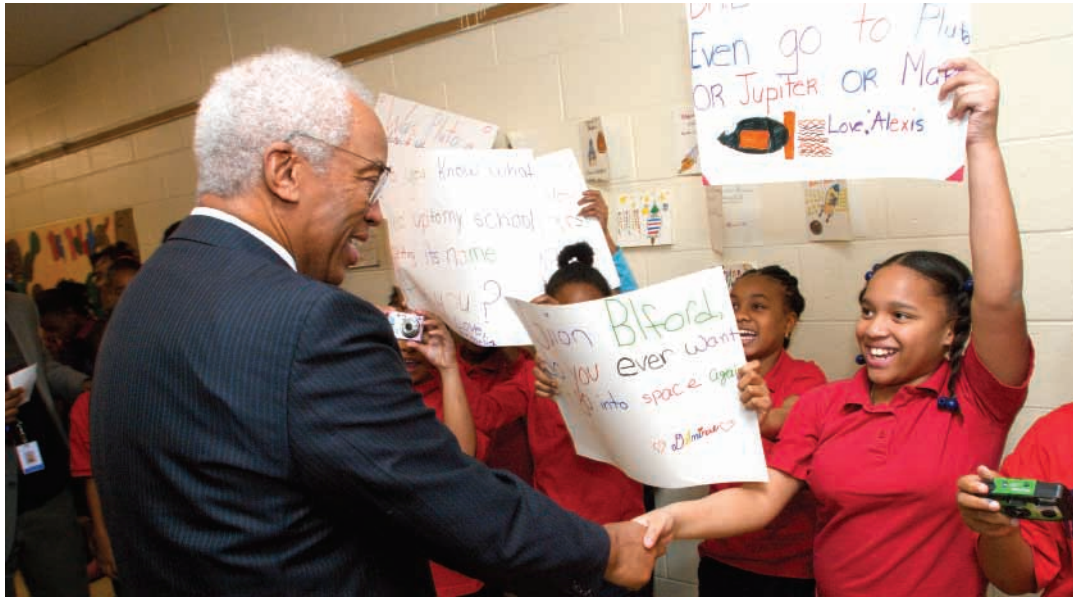


with additional funding from:

The Boeing Company  
The Dow Chemical Company  
Quaker Chemical Corporation

# Philadelphia Math + Science Coalition

## Executive Summary



*Dr. Guion S. Bluford, the first African American astronaut to fly in space, received a hero's welcome when he visited the Bluford Elementary School in November 2008.*

### Background

In 2005, the Philadelphia Education Fund convened the Philadelphia Math + Science Coalition to address locally an urgent national crisis: the quality of math and science instruction in our public schools. The Coalition was designed as a long-term partnership of representatives from corporations, universities, non-profit organizations, and the School District of Philadelphia. From 2006 to 2009, the Coalition was guided by its first strategic plan, which is available at [www.philaedfund.org](http://www.philaedfund.org). As the Coalition grew and developed over a three-year period, so, too, did its goals. The Coalition's 2009-2012 strategic plan builds on its significant work and achievements from 2006 to 2009, and outlines the six goals that will guide its work through 2012.

### Goals

1. Increase the number of highly qualified math and science teachers in School District of Philadelphia schools, grades 6 - 12.
2. Enhance the quality of pre-service math and science teacher preparation at partner universities and engage the universities and the School District in developing a well-articulated transition process among teacher preparation, hiring, induction, and professional development.
3. Enhance the quality of continuing professional development for current math and science teachers in grades 6 - 12.
4. Develop and implement a volunteer program for industry professionals to enhance math and science instruction in grades 6 - 12.
5. Identify instructional resources necessary for effective math and science teaching and learning.
6. Communicate with the public, in a multi-faceted way, the need for all children to excel in math and science.

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## Executive Summary

### Vision

Philadelphia public school students will graduate from high school positioned to succeed in post-secondary education and to compete successfully in an increasingly global workforce that requires 21st century math and science knowledge and problem solving skills.

Philadelphia public school graduates will be well informed global citizens able to make responsible decisions in their personal and public lives regarding issues of personal finance, health, the environment, the economy, and related local, national, and international policy issues that they will encounter throughout their lives.

Philadelphia public school students will have the skills needed to contribute to the future economic growth of our region and our nation.

### Mission

To address the urgent challenge of preparing our youth to excel in mathematics and science by enhancing the quality of math and science teaching and learning in the Philadelphia public schools.



*The Philadelphia Math + Science Coalition encourages and develops highly qualified math and science teachers.*

### Operating Principles

1. The Coalition will function as a long term partnership among universities, the School District of Philadelphia, businesses, and professional organizations.
2. The Coalition will collaborate with other alliances and professional organizations regionally, statewide, and nationally as appropriate to fulfill the Coalition's mission and goals.
3. The Coalition will identify and recognize effective practices that address its goals, coordinate and align current efforts, identify gaps, and collaborate to fill these gaps. It will facilitate collaboration that will add value to efforts of the partners to achieve Coalition goals.
4. The Coalition will engage in ongoing measurement and evaluation of its goals and their implementation, in order to assess its progress and to align the partners' efforts with local, regional, and national needs.

### Funding

The Philadelphia Education Fund is grateful to the following businesses and foundations (listed in alphabetical order) that have invested in the Philadelphia Math + Science Coalition since its founding in 2005: Arkema, Inc.; The Boeing Company; Ford Motor Company; GlaxoSmithKline; IEEE Foundation; Lockheed Martin Corporation; Quaker Chemical Corporation; Rohm and Haas, a subsidiary of The Dow Chemical Company; and SAP America, Inc.



*The Coalition motivates community stakeholders to enhance educational opportunities for all children.*

## **INCREASE THE NUMBER OF HIGHLY QUALIFIED MATH AND SCIENCE TEACHERS IN SCHOOL DISTRICT OF PHILADELPHIA SCHOOLS, GRADES 6 – 12.**

- Increase by 25% in three years the number of candidates who enter Coalition partner universities' middle grades and high school math and science teacher preparation programs, undergraduate and graduate, including traditional and alternative certification programs. Place special emphasis on candidates of color.
- Increase by 25% in three years the number of teachers who graduate from these teacher preparation programs, traditional and non-traditional.
- Engage teacher preparation programs and the School District of Philadelphia in ongoing collaboration to facilitate recruiting and hiring of qualified graduates, especially teachers of color.
- Influence the development of institutional and, as needed, public policies that can help increase the number of highly qualified math and science teachers.

# Goal 2

## **ENHANCE THE QUALITY OF PRE-SERVICE MATH AND SCIENCE TEACHER PREPARATION AT PARTNER UNIVERSITIES AND ENGAGE THE UNIVERSITIES AND THE SCHOOL DISTRICT IN DEVELOPING A WELL-ARTICULATED TRANSITION PROCESS AMONG TEACHER PREPARATION, HIRING, INDUCTION, AND PROFESSIONAL DEVELOPMENT.**

- Develop agreement on key components of effective math and science teacher preparation to guide programs at area universities and School District teacher induction and professional development.
- Increase the level and quality of collaboration among math and science faculty and education faculty to improve teacher preparation.
- Influence the development of institutional policies that can help enhance the quality of pre-service math and science teacher preparation, as well as the transition among teacher preparation and District hiring, induction, and professional development.

## ENHANCE THE QUALITY OF CONTINUING PROFESSIONAL DEVELOPMENT FOR CURRENT MATH AND SCIENCE TEACHERS IN GRADES 6 – 12.

- Develop, pilot, and promote approaches to professional development that help teachers create professional “learning communities” that focus on collaborative inquiry. These communities should be formed within schools and among schools and could include, in addition to teachers, other professional resources.
- Convene external providers of professional development to work with the School District in developing math and science professional development that is 1) effective, 2) grounded in research and student data, and 3) relevant to Philadelphia classrooms. Pilot programs that meet these standards to enhance teaching and learning.
- Create networks of math and science teachers across the School District to share best practices and intellectual resources, and to share tenets that underpin effective teaching and learning in math and science. These networks can include university faculty and corporate scientists and mathematicians.

# Goal 4

## DEVELOP AND IMPLEMENT A VOLUNTEER PROGRAM FOR INDUSTRY PROFESSIONALS TO ENHANCE MATH AND SCIENCE INSTRUCTION IN GRADES 6 – 12.

- Develop policies in industry and in the School District that support this program.
- Develop training programs to prepare industry volunteers and teachers for this service.
- Develop a system to monitor industry volunteers and to evaluate their effectiveness.
- Impact institutional policies that enable industry professionals to assist with math and science instruction.

**According to a 2007 report by the Business-Higher Education Forum, the U.S. will need more than 280,000 new math and science teachers by 2015, a shortfall already felt in schools serving the poorest students. Philadelphia, where most of the public school students are from low-income, historically underserved minority backgrounds, has an especially urgent need for greater numbers of qualified math and science teachers.**



## IDENTIFY INSTRUCTIONAL RESOURCES NECESSARY FOR EFFECTIVE MATH AND SCIENCE TEACHING AND LEARNING.

- Promote the use of national professional standards for effective math and science instructional facilities. Collaborate with Coalition partners and other professional organizations to adapt and apply these standards.

# Goal 6

## COMMUNICATE WITH THE PUBLIC, IN A MULTI-FACETED WAY, THE NEED FOR ALL CHILDREN TO EXCEL IN MATH AND SCIENCE.

- Purchase a license agreement from the University System of Georgia to access the trademark, *Math + Science = Success*.
- Determine, based on resources developed, key communications vehicles to produce and to disseminate to the public.
- Seek free and inexpensive media coverage for the Coalition, its initiatives, and its partners. Include press releases, OpEds, PSAs, letters to the editor, coverage in company and organizational newsletters, and links from partners' websites. Consider social networking opportunities.
- Drive partners to the Coalition website, send regular update emails, create materials that market the initiatives of the Coalition to targeted constituencies – businesses, potential career changers, classroom volunteers, math and science teachers, and elected officials.

The Ed Fund examined math course-taking and achievement trends across the School District, beginning with 9th graders in 2002-2003 and following them through to 2005-2006. Alarming, the percentage of seniors taking math declined during the four years: in 2005-2006, just 62% of seniors enrolled in math compared with 82% who enrolled in math in 2002-2003. Our study also showed that only one-third of students graduating from the six high schools studied took high-level math courses.

## Philadelphia Math + Science Coalition

# An Initiative of the Philadelphia Education Fund



## THE PHILADELPHIA EDUCATION FUND

In collaboration with schools, school districts, and other partners, the Philadelphia Education Fund enhances teaching and learning; conducts research studies that fuel its work and that of others; directly assists students to access and succeed in postsecondary education; convenes public education stakeholders in support of school reform policy and practice; and informs and engages citizens as public school advocates. The Ed Fund is one of the largest of over 80 local education funds affiliated with the national organization, Public Education Network. The Ed Fund's current initiatives include: Philadelphia Math + Science Coalition, Diplomas Now, Philadelphia Teacher Residency, College Access Program, Philadelphia Scholars, Citi Postsecondary Success Program, Education First Compact, the Small Schools Initiative, and ArtsRising. The Ed Fund is also actively involved in research studies and civic engagement activities.

[www.philaedfund.org](http://www.philaedfund.org)

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## Strategic Plan 2009 - 2012

### Philadelphia Math + Science Coalition Partner Organizations

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21st Century Partnership for STEM Education	Holy Family University
Academy of Natural Sciences	IBM Corporation
American Philosophical Society Museum	Ipraxis
Arcadia University	LaSalle University
Arkema, Inc.	Life Science Career Alliance
AstraZeneca LP	Lockheed Martin Corporation
Ben Franklin Technology Partners of Southeastern Pennsylvania	Pennoni Associates, Inc.
The Boeing Company	Philadelphia Biotechnology and Life Sciences Institute
Bryn Mawr College	Philadelphia Federation of Teachers
Chemical Heritage Foundation	Philadelphia Higher Education Network for Neighborhood Development
Chestnut Hill College	Philadelphia Teaching Fellows
Cheyney University	Philadelphia Zoo
Community College of Philadelphia	Quaker Chemical Corporation
Delaware Foundation for Science & Mathematics Education	Saint Joseph's University
Delaware Valley Grantmakers	SAP America, Inc.
Delaware Valley Industrial Resource Center	School District of Philadelphia
The Dow Chemical Company	Teach for America
Drexel University	Temple University
E.I. DuPont De Nemours & Company	University of Pennsylvania
Engineer's Club of Philadelphia	University of the Sciences in Philadelphia
Ford Motor Company	Urban STEM Strategy Group
The Franklin Institute	Villanova University
General Electric	West Chester University
GlaxoSmithKline	Widener University
	Philadelphia Education Fund