



Notes from Focus Group concerning Pennsylvania's Science,
Technology Engineering and Mathematics (STEM) Initiative

July 11, 2008

The following summarizes the proceedings, comments and action items of or from the focus group concerning the PA STEM Initiative held on July 11, 2008 in the DiBona Conference Room at the Greater Philadelphia Chamber of Commerce in Philadelphia. Also included is a list of those who either attended the meeting or participated by telephone and some comments received after the focus group.

Meeting Details:

Location: Philadelphia Chamber of Commerce

Room: 7th floor conference room

Time: 9:45 am– 12:30 pm

I. Meeting Background & Goal

PA STEM Initiative is a unique public-private partnership around education and training redesign. It was formed in August 2007 and comprised initially of Commonwealth Agencies (Education, Labor & Industry and Community & Economic Development), Team PA Foundation and the National Governor's Association and has continued to grow.

On July 11, 2008 the PA STEM Initiative convened a focus group in Philadelphia to discuss ways to motivate minority parents and children to achieve the four PA STEM Initiative objectives:

1. Increase the number and diversity of Pennsylvania's residents and workers with high quality post-secondary STEM education and training
2. Ensure that all graduates from Pennsylvania's high schools are proficient in STEM content areas
3. Increase the number and diversity of teachers well-prepared in STEM content areas who are working in Pennsylvania's P-20 educational institutions
4. Increase public support for STEM education as a priority for the Commonwealth's citizens

The focus group consisted primarily of the heads of the African-American, Hispanic-American and Asian-American professional and community organizations who were requested to come to the meeting prepared to discuss the following:

1. Strategies (promotional, political, educational, etc.) to encourage parents and children to meet the goals of the STEM initiative, as well as the best ways to implement any such strategies and their strengths and weaknesses
2. Obstacles (institutional, educational, environmental, political, financial, etc.) to achieving the STEM goals
3. Best practices to achieve the STEM goals
4. The role and extent the other targeted stakeholders (policymakers, private sector and education community) must play to achieve the STEM goals
5. The role and extent you and your organizations, businesses, etc., must play to achieve the STEM goals

Opening remarks were made by Secretary of Policy and Planning Donna Cooper. These remarks were followed by those of Secretary of Education Gerald Zahorchak and Deputy Secretary of Technology Rebecca Bagley. Each of the speakers emphasized the importance of this initiative to Governor Rendell and the improvement and well-being of the citizens of Pennsylvania. Sue Mukherjee, Special Assistant to the Secretary of Education and State Lead on the PA STEM Initiative, then gave an overview of the status of the initiative at the statewide level. She in turn was followed by Tony Girifalco, Executive Director of DVIRC and the point of contact for the SE Region STEM Initiative, who gave a summary of the efforts being made in the Southeast Pennsylvania Region.

The meeting was then opened up for discussion, which was facilitated by both, Lowell Thomas, Senior Policy Manager for the Governor's Policy Office, and Ms. Mukherjee. A targeted discussion ensued from key players in the Philadelphia area who are focused on opportunity building for minorities and women specifically in the STEM areas.

II. Participants' General Comments and Suggestions:

After the brief opening remarks, the floor was opened up to the participants for discussion. Their remarks have been divided into the five previously-identified areas of discussion, however, most of the comments in each section deal primarily with motivating the parents and children.

- A. Strategies: (promotional, political, educational, etc.) to encourage parents and children to meet the goals of the STEM initiative, as well as the best ways to implement any such strategies and their strengths and weaknesses
 - Kids need role models that look like them. It is important that they see that there is a future for them in STEM-related industries and they need to be able to make a meaningful connection between what they are expected to learn in school and potential employment opportunities.
 - We need to look at ways to utilize retired/retiring STEM professionals for educational and mentoring purposes.
 - We need to get intergenerational learning to play a larger role in education.
 - We need to expand mentoring programs by creatively using money from work study programs. By engaging college students to tutor/mentor, the younger students will have role models that they can relate to and it will keep the college students more engaged and connected to the minority community as well.
 - A couple of ways to engage the minority community is to produce and distribute a video of successful minorities and women in STEM-related fields and have people (minority and non-minority) come to schools to talk about different STEM field jobs, thereby opening the students' eyes and minds to the various employment possibilities that exist. For example, Latin NASA introduces Latino children to successful Latinos in STEM field professions.
 - We need to utilize various mediums that kids can relate to, such as movies and cartoons, to communicate with and motivate them.
 - We should develop a "Great Stars" publication of successful STEM professionals in the Philadelphia area and distribute the publication online and to the Philadelphia schools
 - We should develop mentoring networks that can, among other things, tutor students and demonstrate how various courses relate to STEM job opportunities. This will also increase civic engagement.
 - We need face to face involvement and we need role models that look like the children.

- We need to motivate and challenge our society to re-think how STEM subjects/occupations are perceived. STEM majors are considered difficult and nerdy, but that is because we have taken the wrong approach. We need to approach the matter in the same way that we would learn a new language or learn to play music.
 - Parents need increased exposure as well. We need to demonstrate to the parents the importance of STEM learning and the potential employment opportunities and other benefits associated with it. These may entail workshops for the parents or tours and explanations of the businesses of STEM employers. Parents don't want to enter their kids into a program that they will probably fail or that doesn't provide an appropriate reward upon completion. If we get parents to buy into and support the program at home, the kids will more likely be willing to participate in these programs because they will receive additional support and reinforcement. Parents need to be our partners.
 - A communications strategy must be developed for the community level, the school level and general teacher communication.
 - There are so many moving parts to this program, careful planning and coordination will be required to ensure success and a central structure or clearinghouse where organizations can learn about and become engaged in the PA STEM Initiative will be required.
 - There are STEM-related learning opportunities in our community, like the Franklin Institute camp, that are not being utilized. There are open spots that aren't being filled, presumably because of costs and lack of awareness. Some type of funding is required to help disadvantaged kids participate in these types of activities.
 - We need to increase the awareness and access to science clubs.
 - Advocacy efforts need to be connected and coordinated.
 - Mentorship development efforts at numerous levels and throughout the community are required.
 - Marketing and media are key. By leveraging media we can better utilize the assets that are out there.
 - The PA STEM Initiative will require student involvement in the planning and implementation.
 - Branding: "21st century thinking deserves 21st century education."
 - We need to mobilize the alums of high schools to support this program through tutoring/mentoring, etc.
 - We need to develop an early high school model based on STEM occupations.
 - We should involve colleges and other institutions of higher learning in the development of the program and establish internships with STEM employers for high school students. Private industry can help provide financial support to continue these pathways.
 - We need to place greater emphasis on sustainability and developing a progressive structure.
 - We should work with the juvenile justice system and also think about ways to deal with the 3pm – 6pm window, which is when kids get in the most amount of trouble.
 - Career and technical schools are a great STEM opportunity that is underutilized.
 - Economic messaging works (i.e., kids need to know how STEM will benefit them financially in the long term).
- B. Obstacles (institutional, educational, environmental, political, financial, etc.) to achieving the STEM goals
- African-Americans and other minorities represent 1% of professionals in STEM fields.
 - The minority community is not very engaged in education and going down the pipeline, as kids get older, they become less and less engaged.

- Some students are unable to participate in after-school STEM-related programs such as science clubs because they need to work. Some type of stipend must be created for these students so that they can participate in after-school STEM-related programs.
- Math and science are not introduced early enough so kids can connect it to real world experiences. Site visits to STEM employers are a great way to change this.
- We must remember that a blanket decision will not work for all kids.
- We need to think about and plan for the full continuum of students that will be impacted by this program and the support services they'll need to succeed.
- There needs to be greater diversity among STEM teachers.
- In general, teachers need to be afforded more prestige. That is even more true for STEM teachers.
- We need to address the bridge between under/unemployed parents and distressed communities.
- We need to address kids that are “in the system” and forgotten. They need to understand the short and long term benefits of a STEM education – invest now, gain later.

C. Best practices to achieve the STEM goals

- Philadelphia has two nationally recognized examples of best practices – (1) the Philadelphia School District's Robotics program, which partners with Drexel, UPenn and Villanova. Students who participate in these types of programs out perform their peers in higher math classes; and (2) the NSF-funded Louis Stokes Alliance for Minority Participation at Drexel University which has produced over 6,000 college students, as well as several masters' degree and Ph.D. graduates, in STEM-related majors and fields. The Robotics program invites parents to take a computer class with their child and gives each child a computer upon completion of the program.
- We should follow New York's example - Denzel Washington donated money and went to the schools to remind kids how important math and science are.
- The longer students are connected with multigenerational mentorships the longer they will remain interested and continue on that path
- We need to take a greater look at promising practices and see what other states are doing. (Southern States are light years ahead)
 - In San Jose, CA, they made it a goal to increase rigor and decrease the dropout rate.
 - In LA, CA, a disadvantaged school district showed the parents the curriculum of the nearby wealthier schools to get parents rallied up.
 - In North Carolina, they created “Raising achievements, closing the gaps” which aligned all schools to state standards.
- We need to look at best practices in terms of how students learn. Examples of programs to look into are the apprenticeship model and what Cal Tech has done.
- There needs to be an organizational structure change in how we educate and provide education. We should look into programs like Ameri-corps and their stipend system.
- We should look into models like cognitive apprenticeships (“I have a dream” programs). They identify a group of students in kindergarten and follow and support them throughout their education.

D. The role and extent the other targeted stakeholders (policymakers, private sector and education community) must play to achieve the STEM goals

- There needs to be a seamless transition from middle school to high school.
- If this truly is a State initiative, then the State must put serious support into it.
- We need to provide students the opportunity to learn languages at a younger age.

- We need to provide students with interesting STEM experiences at a young age to get them engaged
 - Students need to understand the price of college and the price if you don't go and how much you'll get paid if you do.
 - Students need to know how to go from theory to application.
 - More education must be experiential learning. Since parents are less and less engaged as kids get older, this will help the children stay engaged longer. An example would be to invite parents to go along on STEM site industry tours.
 - The public sector has not done its part and needs to be more engaged.
 - Pennsylvania has not sent anyone to the Intel Science talent search. In Pennsylvania there are only 7 high schools participating in the program – there are none in Philadelphia. There are 11 in New Jersey and more in New York – we need to see what they are doing differently.
 - The fundamentals need to be taught at the earliest stages. Having basic skills learned at an early level makes math and science easier at higher levels.
 - We need to look at creative ways to get STEM in the classroom. For example, integrate STEM into homeroom activities. Use this time to discuss different STEM occupations and their salaries.
 - We need safer and smaller schools.
 - Science does not seem to be included in multidiscipline learning like reading and history. We need to integrate STEM into other subjects too.
 - Public schools should begin science instruction earlier.
 - Elementary teachers should have preparation in STEM areas.
- E. The role and extent you and your organizations, businesses, etc., must play to achieve the STEM goals
- Donna F. Greenwood is willing to help with media.
 - Stanley Greene is willing to participate on a media work team and also take the lead in getting Comcast to provide facilities and equipment to film a video and organizing high alum organizations to support the program.
 - Dr. Sandra McGrutter – The members of Black physicians' organization are available to serve as mentors
 - Varsovia Fernandez is willing to commit the resources of the Hispanic Chamber of Commerce of Philadelphia to support the program

III. Action Items:

The following action items were decided upon by the participants:

- 1) State schools need to provide more courses in STEM-related majors
- 2) The PA STEM Initiative needs to get more high level political, private sector and education individuals involved
- 3) There needs to be a greater focus on diversity for all faculties (i.e., high school, community college, college, etc.)
- 4) Cheyney and Lincoln Universities should be part of the dialogue
 - a. Samuel Patterson is on the board at Cheyney and will brief the rest of the board on what he has learned today
- 5) One key strategy would involve allocating more funding for technology development in order to get more technologies available in the marketplace.
- 6) Paths to STEM careers must be as diverse as the people in them

- 7) We need a call to action to make the public aware of the urgent problem facing us
- 8) We need to place greater emphasis on workforce development for women and minorities.
- 9) We need to think of media alternatives as a substitute for having people/role models in the classroom for those occasions or circumstances when they are not available.
- 10) We should produce and distribute a video with minority and women role models who have succeeded in STEM-related fields to help engage and inspire parents and students
- 11) We should have people (minority and non-minority) come to schools to talk about different STEM field jobs, thereby opening the students' eyes and minds to the various employment possibilities that exist. For example, Latin NASA introduces Latino children to successful Latinos in STEM field professions.

IV. Next Steps:

1. Develop a video of role models
2. Leverage Media to Increase High School Alumni Participation

*Notes were compiled by Mike Cecire, Kate Meeley and Tanza Pugliese. If you have any questions or follow up suggestions please contact Tanza Pugliese at tanza@teampa.com or 717-233-1375.

Appendix A: Philadelphia Focus Group Participants July 11, 2008

FirstName	LastName	Organization	Title	Email	Phone
Rebecca	Bagley	Department of Community and Economic Development	Deputy Secretary of Technology		
Jamie	Bracey	Temple University Center for Intergenerational Learning	Assistant Director of Training	jamie.bracey@temple.edu	(215)204-4327
James	Bryant	Field Engineering & Operations Sprint	Business Continuity Project Manager	james.bryant@sprint.com	(215)408-2614
Darlene	Callands-Curry	Black Alliance for Educational Options Philadelphia Chapter	President & CEO	Darlene@beao.org	(215)-851-1862
Denis	Carlson	John P. McGowan & Company	Senior Vice President, Investment Banking	DCarlson@JPMcGowan.com	(215)735-9791
Elsie	Casimir	New Era Dental Society	President	elsiedmd@yahoo.com	(215)643-7766
Michael	Cecire	Department of Labor and Industry	Deputy Director	mcecire@state.pa.us	(717)787-9268
Ron	Chu	ExelonCorp	Ph.D., PE	ron.chu@peco-energy.com	(215)841-4894
Lisette	Cintron	Congreso de Latinos Unidos	Vice President for Children and Youth Services	agostol@congreso.net	(215)763-8870 x1423
Donna	Cooper	Governor's Office of Policy and Planning	Secretary of Policy and Planning	dcooper@state.pa.us	
Pedro	Cortes	Commonwealth of Pennsylvania	Secretary of the Commonwealth	pcortes@state.pa.us	(717)787-8727
Pat	Coulter	Urban League of Philadelphia, Inc.	President & CEO	pcoulter@urbanleaguephila.org	(215)985-3228
Steve	Cox	Drexel University, Philadelphia Alliance for Minority Participation		srcox@drexel.edu	
Marla	Davis	PA Dept. of Health	Chief of Staff	marldavis@state.pa.us	(717)787-6436
Pheralyn	Dove	School District of Philadelphia		pheralyn@aol.com	
Varsovia	Fernandez	Greater Philadelphia Hispanic Chamber of Commerce	President & CEO	vfernandez@greaterphilachamber.com	(215)790-3723
Arlene	Finkelstein	Toll Public Interest Center - University of Pennsylvania Law School	Assistant Dean & Executive Director	arfinkelstein@law.upenn.edu	(215)898-0459
Carol	Fixman	Philadelphia Education Fund	Executive Director	cfixman@philaedfund.org	(215)665-1400 ext. 3313
Donna	Frisby-Green	School District of Philadelphia		dafrisbygreenwood@phila.k12.pa.us	

*For list of Attendees, please refer to Appendix A
For feedback from Focus Group please refer to Appendix B*

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T.J.	Fuller	Segment Marketing at Endo Pharmaceuticals	Director	Fuller.TJ@Endo.com	(484)832-4769
Doug	Gaston	Comcast	Senior Vice President & General Counsel	douglas_gaston@comcast.com	(215)286-7736
Isaac	Gatling	Lockheed Martin Corporation	Configuration Management Lead	Isaac.h.gatling@lmco.com	(610)354-5266
Angela	Gilbert	Rose Tree Media School District	Director of Teaching & Learning for Elementary Education	agilbert@rtmsd.org	(610)627-6007
Shirl	Gilbert II	School District of Philadelphia	Regional Superintendent	shigilbert@phila.k12.pa.us	(215)471-2271
Tony	Girifalco	DVIRC	Executive Vice President	ajg@dvirc.org	(215)464-8550
Stanley	Greene	Sprinturf	President & CEO	sgreene@sprinturf.com	(215)219-8409
Claire	Greenwood	Select Greater Philadelphia	Director, Policy Development	cgreenwood@selectgreaterphila.com	(215)790-3664
Eric	Hardaway	Office of State Representative Dwight Evans	Legislative Assistant	EHardaway@pahouse.net	(215) 549-0220
Bernadine	Hawes	Project RISE small business initiative	Director	bhawes@amcities.org	(215)476-8091 x112
Ken	Henderson	Commonwealth of Pennsylvania	Deputy Chief Counsel of Revenue	khenderson@state.pa.us	(717)787-1382 ext. 3045
Wendell	Holland	Public Utility Commission	Chairman	wfh@state.pa.us	(717)783-7349
Duane	Ingram	Urban League of Philadelphia, Inc.	Vice President of Programs and Planning	dingram@urbanleaguephila.org	(215)985-3228
Harry	Kao	Governor's Advisory Committee	Executive Director	hkao@state.pa.us	(717)214-7737
Tsiwen	Law	Law & Zaslow LLC	Attorney at Law	tmlaw50@verizon.net	(215)751-0500
James	Logan	LSCA		jlogan@lscalliance.org	
Ivelisse	Lopez-Ruiz	Greater Philadelphia Hispanic Chamber of Commerce	Associate – Corporate Recruitment Program	ilopezruiz@greaterphilachamber.com	(215)843-3845
Sara	Manzano-Diaz	Commonwealth of Pennsylvania	Deputy Secretary for Regulatory Programs	smanzano-d@state.pa.us	(717)783-0402
Sandra	McGruter	Region II of the National Medical Association, Inc.	Chair	AL304J@aol.com	(215)843-3410
Andrea	Mead	Pennsylvania Department of Labor and Industry	Policy Director	amead@state.pa.us	(717)772-0740

Kate	Meeley	Pennsylvania Department of Labor and Industry	STEM Research Analyst	kate@teampa.com	(717)233-1375
Jim	Mentzer	Team Pennsylvania Foundation	Communications Director	james@teampa.com	(717)233-1375
Steven	Mills	Medical Society of Eastern Pennsylvania	Representative	smills@nphs.com	(215)787-2123
Velda	Morris	School District of Philadelphia - Office of Specialized College, Career & Technical Education	Robotics Education Specialist	Vmorris@phila.k12.pa.us	(215)400-4130
Sue	Mukherjee	Department of Education	Special Assistant to the Secretary	smukherjee@state.pa.us	(717) 214-6570
Eric	Nelson	Philadelphia Workforce Investment Board		enelson@pwib.org	
Wanda	Novales	Congreso de Latinos Unidos	Principal of Pan American Academy Charter Elementary School	novalesw@congreso.net	
Lisa	Nutter	Philadelphia Academies, Inc.	President	lnutter@academiesinc.org	(215)546-6300
Cheryl	Oakman	United Way of Southeastern Pennsylvania	Director, Center for Youth Development	coakman@uwsepa.org	(215)665-2559
Edie	Paige	School District of Philadelphia		epaige@phila.k12.pa.us	
Samuel	Patterson	Veridyne, Inc.	CEO	spatterson@veridyneinc.com	(610)328-7990
Wesley	Payne	White and Williams LLP	Partner	Paynew@whiteandwilliams.com	(215)864-7076
Mel	Payne	Knowledge & Success, Inc.	Consultant	melpayne1@comcast.net	(215) 230-4128
Tanza	Pugliese	Team Pennsylvania Foundation	Grant Manager	tanza@teampa.com	(717)233-1375
Pedro	Ramos	Blank Rome LLP	Attorney at Law	Ramos@BlankRome.com	(215)569-5374
Domy	Raymond	Department of Education	Special Assistant	draymond@state.pa.us	(717) 214-4391
Nancy	Santiago-Negron	Philadelphia Youth Network		nnegron@pyninc.org	(267)502-3800
John	Seymour	School District of Philadelphia		jseymour@phila.k12.pa.us	
Melonease	Shaw	Maven, Inc.	President and CEO	mel@maven-inc.com	(215)965-1587
Sandi	Sheppard	PA Academy for the Profession of Teaching and Learning	Assistant Director	ssheppard@passhe.edu	(717)720-7238
Carole	Smith	Mayor's Commission on Technology	Executive Director	Carole.Smith@phila.gov	(215)685-0770
Tim	Smith	Philadelphia Workforce Development Corporation	Manager Business Services	tsmith@pwdc.org	(215)854.1977

*For list of Attendees, please refer to Appendix A
For feedback from Focus Group please refer to Appendix B*

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Lowell	Thomas	Governor's Office of Policy and Planning	Senior Policy Manager	lowthomas@state.pa.us	(717) 787-1954
Prince	Thomas	Fox Rothschild LLP	Attorney at Law	pthomas@foxrothschild.com	(215)299-2079
Jenifer	Trachtman	Philadelphia Education Fund	Director of Development and Marketing	jtrachtman@philaedfund.org	
Walter	Tsou	Drexel University School of Public Health	Professor	walter.tsou@verizon.net	(215)435-5769
Sharon	Tucker	City of Philadelphia	Deputy Education Officer	sharon.tucker@phila.gov	(215)686-0335
Sandra	Vance	KidZone Philadelphia	Associate Director	svance@foundationsinc.org	(215)527-5602
Kelly	Whitman	Pennsylvania Department of Labor and Industry	Executive Assistant for Deputy Director of Workforce Development	kwhitman@state.pa.us	(717)783-1951
Dana	Wilson	National Society of Black Engineers			
Chad	Womack	Philadelphia Biotechnology and Life Sciences Institute	President and Executive Director	cwomack@philabiotech.org	(301) 910-6667
Kay	Yu	Pepper Hamilton LLP	Attorney at Law	yukay@pepperlaw.com	(215)981-4188
Matt	Zieger	Team Pennsylvania Foundation	Initiatives Director	matt@teampa.com	(717)233-1375
Gerald	Zahorchak	Pennsylvania Department of Education	Secretary of Education		

Appendix B: Follow Up Commentary from Philadelphia Focus Group Participants

Jamie M. Bracey

Temple University Center for Intergenerational Learning

Congratulations on an excellent job on Friday. I was initially hesitant to attend, but the quality and obvious commitment in the room was well managed and insightful.

As a result of the meeting I've revised some of the research questions we've developed to ask deeper, more targeted questions about how minority parents view STEM for themselves and their children.

Great job, and thank you for the opportunity to participate.

James M. Bryant

Sprint Nextel Corporation

Thank you for giving me the opportunity to participate in the S.T.E.M. focus group on Friday, July 11, 2008 in the DiBona Conference Room of the Greater Philadelphia Chamber of Commerce.

I wanted to make sure I circled back on the possibility of supporting the creation a video with Science, Technology, Engineering and Math Role Model professionals. I have reached about 26 of my friends and peers in those stated areas. Whenever the actual idea begins its growth I should have a good number of people available to aid as well.

So far I have 7 people that have noted they are very interested in participating!

- 2 – Engineers (Six Sigma Performance & Systems Engineer)
- 1 – Technology Entrepreneur
- 1 – PhD Scientist, Medicine-Neuroscience
- 1 – Banker, Regional VP
- 1 – Accountant
- 1 – Financial Analyst

Nancy Santiago Negrón

Philadelphia Youth Network

The session today was great. The following links are on the MIE program (the article I gave you this morning). You guys may have already looked at this, but I found it quite interesting.

http://www.nsf.gov/news/news_summ.jsp?cntn_id=110124

<http://www.mieprogram.org/>

Sharon Tucker

City of Philadelphia

I regret not being able to stay for the entire meeting, but it was clear that our region has very dedicated educators and other professionals that know how important STEM is to our young people and to the future of our region. If the Mayor's Office can be of help in planning your next steps, just let me know. Thanks and have a great day.

Pedro Ramos
Blank Rome LLP

Congratulations on a successful meeting this morning. I wanted to pass on a few thoughts while I could still decipher my notes. These thoughts by no means constitute a plan and I have no pride of ownership.

1. **Exploit Synergy Between STEM, Energy, Environment and Economic Development Goals.** As we discuss ways to coordinate and leverage business and nonprofit efforts, make sure that we are integrating the STEM efforts into the Governor's economic development, environmental and infrastructure priorities. Let's build the STEM strategy into these agendas. Let's find corporate leaders among the many companies that benefit from the Governor's forward-looking support of their industries and companies. Also, through the investments of the state pension funds, we probably have access to other corporate leaders and potential leaders in the STEM fields.
2. **Increase and leverage diversity throughout the pipeline.** State system schools as well as other colleges and universities in the area, if charged, may be able to devise ways sharing or pooling public and private efforts and resources to increase the number of minority STEM faculty, and STEM post-secondary students. With faculty, this could mean creative use of "visiting faculty," "adjunct faculty," and "post-doctoral fellowships."
3. **Measure Parts of the STEM Pipeline.** Types of measures that I heard mentioned included minority:
 - K-12 student interest in STEM (measurable by surveys; participation in certain science fairs, competitions, clubs, etc.)
 - Enrollment in STEM Advanced Placement courses (This was not mentioned)
 - Enrollment/graduation in STEM degree programs
 - Enrollment/graduation in STEM majors
 - Enrollment/graduation in STEM minors
 - Employment as STEM faculty
 - Licensed in STEM professions
4. **Sophisticated, Informed Marketing Must Target Attitudes and Expectations.** We need to have the best marketing minds, rather than the best government or education minds, devise a true **MARKETING** campaign to **SELL STEM** to kids, families, and teachers. Share the psychology research with the marketing folks and let loose their creativity. Top-notch marketing firms and the corporate marketing vice presidents that hire them should be enlisted.
5. **Powerful Leadership to Build Momentum and Sustain Effort.** The Governor should ask someone like Raj Gupta to lead this effort.
6. **Tangible Short-Term Results and Measurable Progress.** We have so few historically underrepresented minorities in the STEM pipeline that we must be able to afford and effectuate dramatic increases without waiting for the whole system to be fixed. We need a plan that sets short term goals for portions of the pipeline that we can achieve through effort (including public and private spending) and creativity. For example, tactical efforts could include having the business community agree to commit a certain dollar amount to a two-year strategy to increase the number of quality robotics clubs, increase STEM scholarships for minority students, and recruit some number of minority engineering faculty from other states.

Stanley H. Greene
Sprinturf

I think that you are onto something very special. It was a good group and great brainstorming.

We CAN pull this off!

I want to inform you that I am very interested in leading the effort to leverage the media to increase high school alumni participation in their respective schools. As we agreed in the focus group meeting a few weeks ago, these areas may be key in helping to increase STEM awareness and involvement.

Velda Morris
Urban STEM Strategy Group

I await the notes from the meeting. Many showed up that I invited and the remaining I will send the follow-up notes. I think the meeting was a much better interactive one. Some left expressing or wondering the next steps (where they can actually see what they espoused is actually put onto ACTION).

Thanks for being a champion.

Carol Fixman
Philadelphia Education Fund

At the Ed Fund's annual celebration this year, November 13, we will be presenting an award to a distinguished alumnus of the Philadelphia public schools. The Star Alumnus Award will be given to Dr. Guion S. Bluford, Jr. (<http://www.jsc.nasa.gov/Bios/htmlbios/bluford-gs.html>). Dr. Bluford has had a distinguished career as an astronaut with NASA including 688 hours in space on four space flights. Mr. Bluford is a graduate of Overbrook High School. He is the first African American astronaut in the U.S. He has a Ph.D. in aeronautical engineering.

Remembering the focus group conversation at the Philadelphia Chamber, we thought this might be a good opportunity to create a video of Dr. Bluford that would highlight him as a successful African American scientist, a role model for kids.

James Bryant
Sprint

A couple of ways to engage the minority community is to produce and distribute a video of successful minorities and women in STEM-related fields and have people (minority and non-minority) come to schools to talk about different STEM field jobs, thereby opening the students' eyes and minds to the various employment possibilities that exist. For example, Latin NASA introduces Latino children to successful Latinos in STEM field professions.

" Changing Expectations Tour" - 11 Black professional organizations toured 14 schools within the School District of Philadelphia and spoke with over 1100 students. This effort was aided by the support of Velda Morris at School District of Philadelphia - Office of Specialized College, Career & Technical Education. The professionals exposed the students to a variety of career and life alternatives. The organizations included: NBMBA, NSBE, NABA, ULYP, Barristers, NBA-WLD, NSN, UFSC, NABJ, NAHSE and BDPA.

Sandi Sheppard
Pennsylvania State System of Higher Education

I have a contact at Alcatel-Lucent. They were willing to have some of their award winning scientist talk to students via video conferencing, so I think they might be willing to participate in the video. Please let me know when it is time to contact scientists for the video.

Chad Womack, Ph.D.
Philadelphia Biotechnology and Life Sciences Institute

Thanks for your efforts on this front. I've read through the notes and found them to be very representative of the discussion. The only thing I would ask is to include examples of existing programs (in addition to the robotics programs) including the Philadelphia Biotechnology and Life Sciences Career Academy and the Biomedical Scholars Program, both of which were launched at the beginning of this summer. Both are bio/life sciences focused STEM programs that I believe serve as examples of effective partnerships between existing stakeholders including the School District of Philadelphia, the Philadelphia Academies, Inc., Life Sciences Career Alliance/Philadelphia Workforce Investment Board and the Philadelphia Biotechnology and Life Sciences Institute.

With regards to connecting with the School District of Philadelphia, I welcome the opportunity to work with the stakeholders including the STEM Compact and all of the members of the PA STEM Team. As Tony has mentioned, I am the Chair of the STEM Taskforce for the School District of Philadelphia and have had many productive interactions with Tony and others in the Greater Philadelphia Region's STEM Compact. Tony and I have discussed integrating the SDP STEM Taskforce into the larger mission and what the next steps might be in addressing this challenge given the size and complexity of the problem the City and SDP face with STEM education. To that end, I am appreciative of Tony's leadership and that of the Greater Philadelphia STEM Compact in providing an opportunity for this discussion to happen and look forward to working with Tony and others as we move forward.

Varsovia Fernandez
Greater Philadelphia Hispanic Chamber of Commerce

Although civic engagement is included; I cannot emphasize enough the need for members of all communities to become engaged by contributing in some meaningful way: reading to children every week, doing career days at schools, anything they can do to say to a child "it is OK to be you and to be successful" while telling their story about how some class (STEM) helped their career/degree/job/etc. One of the biggest problems I see with kids learning the value of education is the general lack of recognition [by community adults] of the basic things that make us a community including helping and protecting all our children. Most children would benefit from having us engaged on informal role modeling activities such as: reading, doing homework, explaining how sum and multiplication translates to making or fixing a car. When people get engaged we all do better, including the state, because no body needs to pay them to go and read to a child. The members of our informal mentoring program do not get paid and want to go out there and tell kids to stay in school; they are also under 40, which encourages them to take responsibility for community at a reasonable age.

Pat Coulter

Urban League of Philadelphia, Inc.

Thanks for the notes, looks like some great ideas came out of the session and there is much to follow up on.

The Urban League is very committed to STEM in that it is a key to future economic growth for African Americans and other emerging minorities. Please keep me in loop on the progress.

Carole Smith

The Workforce 2000 Initiative and Mayor's Commission on Technology

Carole Smith is committing the support of the Mayor's Commission on Technology (MCOT) and The Workforce 2000 Initiative to achieve STEM goals. She is currently working with Representative James Roebuck, Councilwoman Jannie Blackwell and the Urban STEM Strategy Group to convene a November Urban STEM Conference, and will continue to focus her webcast/cable television program, Philadelphia's Got IT, on STEM topics.

Action Item/Recommended Next Steps

- 1) Develop baseline data on number and types of:
 - a. Community-based STEM programs
 - b. STEM related programs in public and parochial Philadelphia schools and institutions of higher education,
 - c. Minority students taking STEM related subjects
 - d. Graduating from STEM related programs
 - e. STEM related businesses supporting STEM education in the city
- 2) Workforce development/transition into STEM related careers
 - a. Identify number and type of career transition opportunities
 - b. Types of skills, degrees or certifications required

Velda Morris

The Workforce 2000 Initiative and Mayor's Commission on Technology

Urban STEM Strategy Group Recommended changes to the notes:

In Section E add:

- USSG will continue to identify minority professionals to support the PA STEM initiative

For III. Action Items:

- (delete) 1) not a group action item
- (move) 4) to section "E"

Change IV. to "RECOMMENDED Next Steps" and add:

- 3) Build capacity of existing STEM programs working with underserved populations (Secondary Robotics Initiative (SRI), Alliance for Minority Participation (AMP), UYRS)
 - a. Mentors
 - b. Money
 - c. Establish partnerships to create a pathway to post-secondary STEM education

- 4) Dedicated research funding to assess cognitive development for cultural and linguistic minorities in STEM
- 5) Funding for community wide civic engagement mentoring initiative featuring/targeting STEM professionals of color involvement with students and parents
- 6) Identify, leverage, and implement professional development for urban teachers using impact instructional strategies to teach STEM subjects to underrepresented populations
- 7) Develop baseline data on number and types of:
 - a. Community-based STEM programs
 - b. STEM related programs in public and parochial Philadelphia schools and Institutions of higher education,
 - c. Minority students taking STEM related subjects
 - d. Minority graduates from STEM related programs
 - e. STEM related businesses supporting STEM education in the city
- 8) Workforce development/transition into STEM related careers
 - a. Identify number and types of career transition opportunities
 - b. Types of skills, degrees or certifications required
- 9) Implement STEM programming that works with developing the entire student and builds transferable skills (communication, decision making/problem solving, listening). A major focus on scholarship and building talent, not just interest and awareness.