

COUNCIL OF THE CITY OF PHILADELPHIA
COMMITTEE ON EDUCATION

Room 400, City Hall
Philadelphia, Pennsylvania
Tuesday, November 19, 2013
3:15 a.m.

PRESENT:

COUNCILWOMAN JANNIE BLACKWELL, CHAIR
COUNCILMAN KENYATTA JOHNSON
COUNCILMAN DAVID OH
COUNCILMAN BRIAN J. O'NEILL
COUNCILMAN MARK SQUILLA

RESOLUTION 130781 - Resolution authorizing
City Council's Committee on Education to hold
hearings to investigate the benefits of
integrating science, technology, engineering,
and mathematics into early childhood education
in Philadelphia.

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COUNCILWOMAN BLACKWELL: The City Council Committee on Education will begin its hearing with regard to Resolution No. 130781. We certainly want to commend Councilman Kenyatta Johnson, who sits to my left, with regard to this resolution and his work in this area.

We're going to ask the Clerk to read the title of the resolution.

THE CLERK: Resolution 130781, authorizing City Council's Committee on Education to hold hearings to investigate the benefits of integrating science, technology, engineering, and mathematics into early childhood education in Philadelphia schools.

COUNCILWOMAN BLACKWELL: Thank you very much.

We will begin our testimony.
Is Dr. Lori Shorr here?

Thank you. Thank you again for the briefing on college education last week.

(Witness approached witness

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2 table.)

3 DR. SHORR: Thank you for
4 having me.

5 COUNCILWOMAN BLACKWELL: Thank
6 you. Feel free to identify yourself for
7 the record and begin your testimony.

8 DR. SHORR: Good afternoon.
9 I'm Lori Shorr. I'm Mayor Nutter's Chief
10 Education Officer. Thank you, City
11 Councilmembers, for inviting me to
12 testify today regarding Resolution
13 130781. Again, my name is Lori Shorr.
14 I'm the Chief Education Officer for Mayor
15 Michael Nutter.

16 Philadelphia is known for
17 sometimes cheese steaks, Tastykakes, but
18 because of the large number of higher
19 education institutions and health
20 systems, we're also known as the "eds and
21 meds" city. There's a growing number of
22 job opportunities in the health
23 profession. The region has a long
24 history and strong background in
25 producing and employing health

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2 professionals, with 21 percent of all
3 degrees in the region in health-related
4 fields and 14 percent of all new job
5 creation in healthcare and social
6 services.

7 Four of the top seven
8 high-growth majors in the region are STEM
9 majors: agriculture and related sciences
10 23 percent, natural resources and
11 conservation 20 percent,
12 biological/biomedical sciences 18
13 percent, computer technology and
14 information 15 percent.

15 There's growing demand for
16 technology, engineering, and math majors,
17 but only 7 percent of regional degrees,
18 or 6,362 degrees, are granted in these
19 areas in the Greater Philadelphia region.

20 These are just a few statistics
21 of why STEM is so crucial for our city to
22 be competitive both locally and globally.
23 Fortunately there's a lot of work
24 happening around STEM that I wanted to
25 highlight and also to take this

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2 opportunity to share some exciting news
3 on this front.

4 The School District of
5 Philadelphia is currently reviewing its
6 STEM programming and is developing a
7 comprehensive STEM education strategy
8 with community partners such as Drexel
9 and Philadelphia Education Fund. They're
10 speaking here today, so I'm going to let
11 them really go deeply into that. I want
12 to talk about something that a lot of
13 people may not know about, but is about
14 growing our awareness of how important
15 STEM is. One of those things is the
16 Philadelphia Science Festival. It's a
17 ten-day community-wide celebration of
18 science that takes place annually in
19 April featuring lectures, debates,
20 hands-on activities, special exhibitions,
21 and a variety of other informal science
22 education experiences for Philadelphians
23 of all age.

24 The Philadelphia Science
25 Festival aims to provide opportunities

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2 for all Philadelphians to positively
3 engage with and build a community around
4 science, engineering, and technology by
5 showcasing the role that each plays in
6 the City and region.

7 The inaugural Philadelphia
8 Science Festival engaged more than a
9 hundred thousand participants as well as
10 over a hundred partnering agencies.

11 The exciting news, if you
12 haven't heard yet, is that the City of
13 Philadelphia was notified that it has
14 been selected as one of 13 first-round
15 finalists for the US2020 City Competition
16 amongst a national field of 52 entries.
17 It's a national competition under the
18 Clinton Global Initiative.

19 As part of our US2020
20 application, we're bringing together a
21 coalition of STEM partners from colleges
22 and universities, corporations and
23 businesses, research institutions, and
24 the non-profit community to impact their
25 collective knowledge and mentor

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2 Philadelphia students underrepresented in
3 STEM careers.

4 US2020 is a new organization
5 formed through a partnership of leading
6 education non-profits and corporate
7 leaders in the STEM fields. The
8 initiative emerged from a White House
9 call to generate big, innovative
10 solutions to our STEM education
11 challenge.

12 The US2020 City Competition is
13 a Clinton Global Initiative project that
14 seeks to capitalize on the role of cities
15 as centers for innovation, supporting
16 outstanding efforts to build science,
17 technology, engineering, and math
18 mentoring capacity at the local level.

19 The Philadelphia coalition will
20 be led by my office, and together we are
21 seeking to enhance and expand
22 STEM-related opportunities for
23 Philadelphia youth, particularly those
24 who are low income, of color or female to
25 provide focused, hands-on mentoring from

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2 local STEM professionals and/or college
3 students.

4 Philadelphia is a STEM city
5 with world-class institutions,
6 corporations, and professionals. Our
7 goal is to build on these strengths and
8 ensure we connect, expose, and ignite
9 children's, particularly those of
10 underrepresented, interests in STEM
11 careers through mentorship.

12 The Philadelphia team is going
13 to Boston to an Ideas Camp to strengthen
14 our proposal, with a second round of
15 applications due January 2014, with three
16 to five winners selected in February of
17 2014. The winning cities will share a
18 million dollars in resources from US2020.
19 While the competition is strong, I feel
20 confident we will prevail, because
21 Philadelphia is seen as a STEM city and
22 we have such strong institutions and
23 collaborations in that area.

24 As you heard from me today, our
25 citywide STEM initiatives have been

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2 particularly focused on older youth, but
3 I think the US2020 project will enable us
4 to focus attention on interventions in
5 the early grades starting at pre-K.

6 I thank City Council for
7 bringing this to our attention, as it's
8 definitely an area for us to explore and
9 to excel in. My staff is here, and we're
10 anxious to learn about STEM integration
11 to early childhood education from the
12 speakers testifying today, and I should
13 say I look forward to any of your staffs
14 being involved in the -- as we continue
15 in this competition for the US2020 grant.

16 Thank you so much for having me
17 today, and I can take any questions.

18 COUNCILWOMAN BLACKWELL: Thank
19 you, Dr. Shorr.

20 We note that Councilman Oh is
21 here, as well as certainly the sponsor of
22 this legislation. And the Chair
23 neglected to ask Councilman Johnson if he
24 wanted to make opening remarks about this
25 legislation.

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2 COUNCILMAN JOHNSON: Thank you,
3 Madam Chair.

4 I just want to thank you for
5 taking time out of your schedule to host
6 such a hearing on what I believe is a
7 critical issue as it relates to the
8 development of our young people. When
9 you talk about thinking globally and
10 acting locally, STEM is a very vital part
11 of our local, state, and national
12 economy. And I remember growing up as a
13 young man. I attended Edward Bok High
14 School, so I didn't have a vision of
15 going on to Mansfield University and then
16 going on to University of Pennsylvania,
17 but my background trade in Edward Bok
18 High School was machine shop. So I'm a
19 machinist by trade. I thought I was
20 going to go work for Boeing. I thought I
21 was going to be a tool and die maker.
22 But also having the opportunity to attend
23 Edward Bok High School, I also have a
24 background in architectural drawing as
25 well as carpentry and welding.

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2 And so as we move forward in
3 society, when this issue was brought
4 forth -- and I did a little bit of work
5 on STEM while certainly as a State
6 Representative -- when I see the changing
7 growth that society is taking -- the
8 changing role that education and
9 employment is taking in this country,
10 it's critically important under the area
11 of science, technology, engineering, and
12 math that we begin developing our young
13 people as early as possible to engage in
14 those areas.

15 For instance, when we met
16 with -- my staff and I, we did a tour of
17 waste management. It's a waste
18 management company, and they talk about
19 the importance of having young people
20 that can actually come in and do the math
21 to operate the heavy machinery.

22 Another group that's going to
23 participate today called Stenmasium, they
24 have a very interesting program where
25 young people are working on creating

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2 apps. Now, these are children.

3 And so I thank all the
4 panelists who will be participating at
5 today's hearing, but my question to
6 Ms. Lori Shorr -- and thank you for the
7 work you're doing on behalf of the
8 Administration and on behalf of the young
9 people who attend the Philadelphia School
10 District. I think the Clinton Global
11 Initiative is great and I see we're doing
12 some great things. In terms of our
13 actual curriculum inside the actual
14 School District, that pre-K -- well, the
15 early education curriculum, is there any
16 way that we can kind of, as we move
17 forward, begin to intertwine the
18 particular STEM-type model that's a
19 District-focused curriculum?

20 DR. SHORR: Yeah, and I'm going
21 to let Dave Hardy, who is here from the
22 District, answer that. I think he has
23 more depth on that, but I would say that
24 pre-K, we have so many different
25 providers in the City, and one of our

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2 challenges I think is to have a
3 comprehensive strategy for how that can
4 be of high quality so that you can look
5 at whether you're a Keystone STAR or a 3
6 or 4, but what does that mean about what
7 they're teaching around STEM, are they
8 doing some introductory lessons around
9 patterns, which is a key part of math and
10 engineering, can you recognize patterns,
11 what do you do with those.

12 I think we have a lot of growth
13 to do in this area in the City around
14 having high-quality pre-K and K for all
15 the kids. So that's a larger issue about
16 how we get there. It has a lot to do
17 with what the hearing that we had right
18 before this about funding, Linda
19 Darling-Hammond talking about -- that was
20 the number one bullet on her slide about
21 how do you get to good, sustainable
22 education, was funding, and it was early
23 pre-K and K education, and that's what
24 we've got to work on.

25 In terms of how you get the

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2 curriculum changed, I'm going to defer to
3 my new friend from the School District.

4 COUNCILMAN JOHNSON: Okay. All
5 right. Thank you. I wasn't here at the
6 last meeting, so it will be interesting
7 for me to connect the funding component,
8 because I'm big on supporting funding,
9 but I think sometimes when it comes down
10 to curriculum or creating a culture of a
11 certain type of achievement within the
12 District, sometimes I don't think it
13 comes down to money. I think it comes
14 down to how you create that culture for
15 high expectations in a particular area.
16 Like the Mastery Charter Schools, they're
17 big on college. So from the day you walk
18 in -- and it doesn't cost a lot of money.
19 I know some of the advocates will say,
20 Well, Mr. Johnson, what do you mean? But
21 it doesn't cost a whole bunch of money to
22 come inside the school and see a sign
23 that says Morehouse College or Harvard or
24 Princeton to put in that young person's
25 mind, okay, that's something that I

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2 aspire to from day one. But I guess
3 maybe the money part revolves around --

4 DR. SHORR: I think the money
5 part was for getting pre-K and K funded.

6 COUNCILMAN JOHNSON: Okay. I
7 got you.

8 DR. SHORR: Actually, we need
9 more pre-K slots. We need more
10 kindergarten slots. But I hear what
11 you're saying. I think money is part of
12 the equation, but there is a culture
13 piece that has to do with do we look at
14 our young children and think we're
15 preparing them to be scientists, to be
16 engineers, to be innovators, and how does
17 that change the way we practice and
18 interact.

19 COUNCILMAN JOHNSON: So I kind
20 of think that's more program-based, but I
21 hear you clearly in terms of the level of
22 slots that may be needed to expand the
23 program on scale. But okay. It seems
24 like we're off to a good start in terms
25 of things that we're doing in partnership

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2 with the District, but I just want to
3 thank you, and that's the only comment I
4 have.

5 DR. SHORR: Thanks.

6 COUNCILWOMAN BLACKWELL: Thank
7 you very much. Again, we thank you,
8 Dr. Shorr.

9 DR. SHORR: Thank you.

10 COUNCILWOMAN BLACKWELL:
11 Mr. David Hardy, Chief Academic Support
12 Officer, School District of Philadelphia.
13 Thank you.

14 Ty Holmberg is next and Darren
15 Spielman, President and CEO of the
16 Education Fund thereafter. So you all
17 can feel free to come and sit inside in
18 one of the black chairs inside the gate
19 and you'll be here.

20 (Witness approached witness
21 table.)

22 COUNCILWOMAN BLACKWELL: Thank
23 you very much. Please identify yourself
24 for the record and begin your testimony.
25 Thank you for being here.

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2 MR. HARDY: Thank you for
3 having me.

4 Good afternoon, Chairwoman
5 Blackwell and members of the Education
6 Committee. My name is David Hardy. I'm
7 the Chief Academic Support Officer for
8 the School District of Philadelphia, and
9 I want to thank Councilman Kenyatta
10 Johnson for inviting me to provide
11 testimony on this important issue of STEM
12 education.

13 I am thrilled that City Council
14 is authorizing hearings to investigate
15 the benefits of integrating science,
16 technology, engineering, and mathematics
17 into early childhood education in
18 Philadelphia schools, as we as a district
19 have already determined that STEM
20 education is critical to the nation's
21 economy. The jobs of the future are STEM
22 jobs, and having some degree of STEM
23 proficiency is associated with higher
24 earnings.

25 The United States is in the

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2 middle of the pack in international
3 comparisons in the quality of mathematics
4 and science education. The World
5 Economic Forum ranks the United States
6 52nd in the quality of mathematics and
7 science education and fifth, and
8 declining, in overall global
9 competitiveness. The United States ranks
10 27th in developed nations in the
11 proportion of college students receiving
12 undergraduate degrees in science or
13 engineering. In addition, progress on
14 STEM throughout pre-kindergarten through
15 Grade 12 is important to build a just and
16 inclusive society, as women and
17 minorities are substantially
18 underrepresented in STEM fields.

19 Students need to be confident
20 in their abilities in math and science so
21 they are prepared to implement the
22 ambitious programs recommended by
23 professional associations. Students with
24 stronger performance in science and math
25 may be more likely to major in sciences.

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2 Life experiences before 8th grade may
3 have an important impact on future career
4 plans. We must expose students early to
5 science, technology, engineering, and
6 mathematics, as it will unlock potential
7 and provide choices for student
8 engagement.

9 With those challenges before
10 us, over the past eight months the School
11 District of Philadelphia, through the
12 Office of Curriculum and Assessment,
13 partnering with Drexel University and the
14 Philadelphia Education Fund as the three
15 leads in this task, convened a work group
16 consisting of representatives from higher
17 education, businesses, parents, teachers,
18 administrators, and central office staff
19 to define STEM education and to determine
20 goals and objectives to implement a STEM
21 initiative in the District. We have
22 defined STEM education as the
23 interdisciplinary way of thinking and
24 learning about the world that enables
25 students to integrate the skills and

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2 knowledge from science, mathematics,
3 engineering, and technology into their
4 learning. Students who are STEM literate
5 are able to apply their skills to solve
6 everyday problems, transfer their STEM
7 learning to other academic coursework,
8 and are prepared for careers in the STEM
9 workforce.

10 Our vision is to design and
11 deliver vigorous STEM instruction across
12 grade bands that is aligned with the
13 District's definition of STEM education
14 compatible with national, state, and
15 professional STEM guidelines and
16 standards, accessible and appropriate for
17 all students and cross-curricular and in
18 alignment with STEM pathways to
19 post-secondary STEM education and STEM
20 careers. This curriculum must promote
21 student engagement in STEM concepts and
22 practices while integrating 21st century
23 skills. This curriculum will begin in
24 the early grades as students must
25 practice problem-solving throughout their

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2 academic careers. Students will gain
3 early exposure to science, technology,
4 engineering, and math principles and be
5 given opportunities to explore concepts
6 in each of these areas. Students will
7 learn to work collaboratively to create
8 solutions to real-life issues and will
9 use evidence from sources to inform or
10 make an argument justifying their
11 answers.

12 Teachers will be given
13 professional development to learn how to
14 use STEM resources and strategies
15 effectively in their classroom. We will
16 engage community stakeholders to
17 facilitate 21st century student learning,
18 curricular enhancements, and
19 District-wide professional development.
20 We will know we have reached these goals
21 when students demonstrate understanding
22 of STEM concepts and practices across all
23 disciplines when students apply STEM
24 understanding in real-world situations
25 and when students personally value and

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2 demonstrate relevance of STEM concepts.

3 I thank you for listening to my
4 testimony.

5 COUNCILWOMAN BLACKWELL: Thank
6 you very much.

7 Are there questions or
8 comments?

9 Thank you. Thank you very
10 much. Councilman Johnson.

11 COUNCILMAN JOHNSON: Thank you,
12 Madam Chair.

13 Welcome to Philadelphia,
14 Mr. Hardy.

15 MR. HARDY: Thank you. Thank
16 you for having me here.

17 COUNCILMAN JOHNSON: I just
18 want to -- can you just give us an update
19 on the progress you have been partnering
20 with -- well, the District partnership
21 with Drexel High School, which I think is
22 a great partnership as relates to STEM,
23 and where we're at in that process. Just
24 a brief update.

25 MR. HARDY: Absolutely. So at

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2 this juncture, we have now moved into the
3 direction of figuring out what that
4 curriculum will specifically look like
5 across all grade levels, and as a
6 district, we're engaging in deep
7 conversation to figure out exactly what
8 our students need at a very early age,
9 when we think about our kids coming into
10 pre-kindergarten, going into
11 kindergarten, them having the exposure
12 that's necessary for them to understand
13 the concepts that STEM education
14 provides.

15 So we're in the early stages of
16 establishing that and looking forward to
17 building that going forward.

18 COUNCILMAN JOHNSON: And over
19 the past eight months, so right now over
20 the past months, it's just figuring out
21 what it will look like. So what have you
22 all been exploring to kind of gather that
23 information together to take a look at
24 what's going to be the final curriculum?

25 MR. HARDY: Absolutely. Great

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2 question. So a lot of it has been
3 digging into the research of what works
4 and understanding where we've seen STEM
5 education excel, understanding the
6 products that we are shooting for so that
7 we can create a strong vision of what
8 STEM education will look like in
9 Philadelphia. Once we're able to
10 establish that and have it very clear
11 based on this definition that I provided
12 you, we can then move into the next phase
13 of now that we have that clear
14 definition, now figuring out how that
15 will live and breathe in our district.
16 And so that's the next critical step and
17 juncture.

18 COUNCILMAN JOHNSON: Any models
19 from any other cities across the country
20 that y'all are looking at as prototypes
21 to help you develop your curriculum or
22 any other school districts?

23 MR. HARDY: There are a bunch
24 of different segments of models in which
25 I can provide you that information,

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2 because it's a rather lengthy list of
3 options, but I think what we've done in a
4 very creative manner is pulling from the
5 best. Rather than aligning ourselves
6 just to one, we want to make sure that
7 it's tailor made for our kids here in
8 Philadelphia.

9 COUNCILMAN JOHNSON: Okay.
10 Thank you very much.

11 MR. HARDY: Thank you.

12 COUNCILWOMAN BLACKWELL: Thank
13 you again.

14 Mr. Ty Holmberg, Director of
15 the Urban Nutrition Initiative. Thank
16 you. Welcome.

17 (Witness approached witness
18 table.)

19 MR. HOLMBERG: Good afternoon.
20 Thank you so much for having me, to
21 Councilwoman Blackwell, Councilman
22 Johnson, for convening this hearing and
23 the opportunity to testify here. So my
24 name is Ty Holmberg and I'm the Executive
25 Director of the Community Farm and Food

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2 Resource Center at Bartram's Garden,
3 which is in Southwest Philadelphia. I
4 work with the Agatston Urban Nutrition
5 Initiative, which is a part of the
6 program of the Netter Center for
7 Community Partnerships at the University
8 of Pennsylvania.

9 So like some other folks said,
10 many people understand the importance of
11 STEM education for Philadelphia's
12 students and also agree that it is
13 critical in our nation's future.

14 I want us to look a little
15 about from my experience working on a
16 farm doing youth development programming
17 and working with a program such as the
18 Agatston Urban Nutrition Initiative. We
19 work with around 9,000 school children a
20 month and we work with around 150
21 students that get paid to do after-school
22 education around gardening and farming
23 and also teaching nutrition.

24 I'm looking through that lens,
25 but I'm also looking through the lens of

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2 a teacher. I taught out at a small
3 democratic school in Colorado and I also
4 taught in South Philly and West Philly.
5 I taught science out there. So those are
6 kind of the different lenses I'm looking
7 at this through.

8 But I believe that early
9 childhood education in general is needed
10 and that studies show that early
11 childhood STEM, such as critical
12 thinking, deductive reasoning, using
13 numbers, hearing at least ten words a
14 day, affect all aspects of development,
15 including literacy. So even if you're
16 working with numbers, that hits on the
17 literacy as well.

18 I think if we kind of take a
19 step back and look at this, not just as
20 a -- at STEM not just as creating kind of
21 students as a commodity to provide kind
22 of future economic security, but it's
23 more about redefining early childhood
24 education to be more hands-on and to
25 experience leadership at a young age, at

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2 this formative age is important.

3 We heard from the testimony
4 from the previous hearing that one-third,
5 one-third of the deficits we're seeing in
6 the achievement gap happen from one to
7 five years old, before kindergarten. So
8 we really need to address that.

9 I also want to think about as
10 we are getting our students ready for
11 STEM, if we're talking about jobs in
12 industry, that we're really lacking a
13 tangible pipeline right now. Using a
14 farm analogy, as I am a farmer, we cannot
15 start these seeds in a greenhouse and
16 then broadcast them out into the farm
17 hoping that they will find good soil to
18 grow in. We need to not only start the
19 seeds but plant them in healthy soil, and
20 we need to encourage industry leaders in
21 the area to really help to provide that
22 pipeline program. And this comes from my
23 experience working with a neuroscience,
24 cardiology, and infectious disease
25 pipeline out of the University of

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2 Pennsylvania connecting high school
3 students and medical students to really
4 see how that pipeline process can work.

5 We also need to talk about
6 process, and one of the other things that
7 we learned a lot about is the process in
8 which we are doing this STEM education.
9 There is a really interesting study out
10 of the Wolf Trap Institute that actually
11 uses art initiatives to teach STEM work
12 at a young age that really creates
13 creativity and the type of STEM thinking
14 that is needed but through arts
15 education. And I've included a link
16 within my testimony that provides that
17 case study.

18 And then in a recent article
19 put out by Education Week, a man by the
20 name of JD Chesloff said -- he works with
21 Massachusetts, which was one of the
22 leaders that we also saw in doing this
23 work. He says, To remain competitive in
24 a global economy, investment is needed to
25 ensure a workforce pipeline that would

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2 rather engage in science, technology,
3 engineering, and math than cleaning
4 bathrooms and eating broccoli. And the
5 best way to shore up that pipeline is
6 starting to investing in early childhood
7 STEM.

8 Now, as a farmer and someone
9 who works with food, I say that our most
10 pressing issue before we can talk about
11 this global economy and talk about
12 engineering within two-year-olds, that we
13 really need to make sure that students
14 are getting good, nutritious, healthy
15 food in their bellies and that this is
16 primary, and that as we talk about
17 Maslow's hierarchy of needs, that that's
18 a start and we really need to make sure
19 our children are eating well before they
20 can really start to be learning.

21 So thank you so much for having
22 me again and for letting me testify.

23 COUNCILWOMAN BLACKWELL: Thank
24 you.

25 Are there any questions or

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2 comments?

3 (No response.)

4 COUNCILWOMAN BLACKWELL: The
5 Chair also notes that Councilman Brian
6 O'Neill is here. We're all members of
7 the Education Committee.

8 Thank you very much.

9 MR. HOLMBERG: Thank you so
10 much.

11 COUNCILWOMAN BLACKWELL: Thank
12 you.

13 Mr. Darren Spielman, President
14 and CEO of the Education Fund,
15 Philadelphia Education Fund.

16 (Witnesses approached witness
17 table.)

18 COUNCILWOMAN BLACKWELL: Thank
19 you very much. Good afternoon.

20 DR. SPIELMAN: And let me
21 introduce my colleague Don Kinney, who
22 directs our Math and Science Coalition.

23 COUNCILWOMAN BLACKWELL: Thank
24 you.

25 DR. SPIELMAN: Thank you,

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2 Councilwoman Blackwell and Councilman
3 Johnson, for convening this hearing and
4 for the opportunity to testify today.
5 Thank you, Council, for your commitment
6 to the education of Philadelphia's
7 children. My name is Darren Spielman. I
8 am CEO of the Philadelphia Education
9 Fund.

10 I think most folks in this room
11 understand the importance of STEM
12 education for Philadelphia's students.
13 Growth in STEM jobs has been three times
14 greater than that of non-STEM jobs over
15 the last ten years, and throughout the
16 next decade, STEM occupations are
17 projected to grow by 17 percent, compared
18 to 9.8 percent growth for other
19 occupations. Unfortunately, many U.S.
20 businesses frequently voice concerns over
21 the supply of STEM workers. In
22 Philadelphia, as demand continues to
23 grow, we grant only 7 percent of our
24 regional degrees in STEM fields. Even
25 for those not pursuing STEM careers, as

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2 the wise educator before me noted,
3 building the ability to think and learn
4 in this manner yields benefits across
5 academic disciplines, across careers, and
6 into everyday problems-solving.

7 For these reasons, STEM
8 education has been an Ed Fund priority
9 for many years. The Fund's Philadelphia
10 Math/Science Coalition, now in its
11 seventh year, has more than 50
12 institutional partners, including the
13 School District, many of the City's
14 colleges and universities, STEM companies
15 such as GSK and Dow, and informal
16 education institutions such as the
17 Franklin Institute and the Academy of
18 Natural Sciences at Drexel. The
19 Coalition works to recruit, prepare, and
20 support the long-term development of math
21 and science teachers across the City as
22 well as to ensure students have access to
23 high-quality STEM opportunities. We are
24 now gearing up the Coalition with our
25 partners in an effort to coordinate

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2 across sectors to ensure we as a city can
3 deliver on these goals. We look forward
4 to partnering with Council on this
5 effort.

6 I applaud Council's interest in
7 early STEM education. I also think we
8 should at this moment applaud the
9 District for the planning process in
10 which they have engaged over the last
11 eight months. The District, in
12 partnership with Drexel University and
13 the Ed Fund, has driven a process to
14 shape a K-12 STEM education strategy.
15 Teachers, administrators, parents, higher
16 education, businesses, informal educators
17 have all been at the table. The draft
18 plan establishes a definition of STEM
19 education and sets goals for student
20 achievement, curriculum and instruction,
21 professional development, and community
22 involvement. We are excited about the
23 progress made to date and, given some
24 reasonable investment in public
25 education, are hopeful about

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2 implementation. The District deserves
3 credit for their proactive approach to
4 this issue.

5 At the Ed Fund, we are also
6 excited about an effort you will hear
7 from Lori Shorr about the US2020 City
8 Competition, which under the leadership
9 of the Mayor's Office, Philadelphia -- I
10 don't want to blow it, but anyway, I'm
11 going to let her do that. So at any
12 rate, however, it's a national
13 competition to establish a citywide STEM
14 mentoring initiative, and we are proud to
15 support that initiative.

16 As I hope Council hears, many
17 parties share their concern for early
18 STEM education and there are multiple
19 initiatives afoot to move us ahead. If
20 the right people come to the table and
21 stay at the table and the right pressure
22 and resources exist, I think we have a
23 chance to make real progress for our
24 young people.

25 I thank you for your commitment

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2 to this cause.

3 COUNCILWOMAN BLACKWELL: Thank
4 you very much. Thanks for coming.

5 Councilman Johnson, any
6 comments, questions?

7 (No response.)

8 COUNCILWOMAN BLACKWELL: Thank
9 you very much.

10 DR. SPIELMAN: Thank you. Good
11 to see you all.

12 COUNCILWOMAN BLACKWELL:
13 Certainly.

14 Tariq Al-Nasir, Stemnasium
15 Learning Company. Is Sharon Easterling
16 here?

17 MS. EASTERLING: Yes.

18 COUNCILWOMAN BLACKWELL: You
19 can come forward and sit inside. You'll
20 be next.

21 Maria Ferzola, you can come
22 next. And then I'm told, Dr. Matthew
23 Riggan, we're getting to you very quickly
24 and Marguerite Anglin, and that will
25 conclude our testimony.

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2 (Witness approached witness
3 table.)

4 COUNCILWOMAN BLACKWELL: Thank
5 you. Good afternoon.

6 MR. AL-NASIR: Thank you. Good
7 afternoon, Councilwoman Blackwell, and
8 good afternoon, City Council Education
9 Committee members, for allowing me to
10 speak here today and a special thank you
11 to Councilman Johnson for inviting me to
12 testify at today's hearing.

13 My name is Tariq Dionea Evans
14 Al-Nasir and I'm the Founder and CEO of
15 Stemnasium Learning Academy.

16 Integrating STEM education into
17 early childhood education is important
18 because it helps to establish an early
19 identity in STEM and it creates an
20 interest in the STEM fields. STEM
21 education is also important in early
22 childhood development because it
23 encourages a child to learn and grow
24 organically.

25 Children are naturally curious

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2 and excited about almost any and
3 everything. So by integrating a
4 structured learning environment by which
5 the child as early as three can begin to
6 discover; for example, the early concepts
7 behind fulcrums, gears, levers, pulleys,
8 and simple machines, can almost stimulate
9 their environment naturally. In his
10 book, "The Seven Habits of Highly
11 Effective People," Dr. Stephen Covey says
12 that the best way to predict the outcome
13 of your future is to create it. And so
14 when we introduce STEM into early
15 childhood education systems, we can
16 almost guarantee an expected interest in
17 STEM.

18 In 2010 to 2012, an independent
19 study by Partners in Brainstorms,
20 Incorporated was conducted on Stemnasium
21 Learning Academy program participants and
22 found that prior to introducing the
23 students to STEM education via robotics,
24 video game programming, science
25 competition, and research activities,

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2 most of the children that were in the
3 program ages 5 through 12 were not
4 interested in STEM or did not have any
5 awareness to what STEM was. The study
6 included 225 students from 2010 to 2012,
7 which included one summer session in
8 2010. The control group consisted of 25
9 students who had attended Stemnasium
10 and/or students who had previously been
11 exposed to some aspect of STEM.

12 Since participating in the
13 program, 96 percent of the students
14 surveyed expressed an interest in the
15 STEM fields. Eighty-six percent of the
16 students expressed a desire to come back
17 to the program the following year.
18 Thirty-seven percent of the students
19 surveyed were girls and 63 percent were
20 boys. All students met the guidelines
21 for low income and the free and reduced
22 lunch program.

23 The importance of STEM
24 education in early childhood education is
25 to foster engineering habits, and through

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2 early integration or involvement in STEM,
3 we can help students develop these habits
4 by developing their skills, increasing
5 their desire, and improving their
6 knowledge of STEM and the careers
7 associated with it.

8 What are the measurable
9 outcomes of STEM in early childhood
10 education? Some measurable outcomes are
11 increased awareness of STEM and the
12 selection of STEM career choices via
13 colleges that focus on STEM disciplines.
14 From 2010 to 2012, Stemnasium Learning
15 Academy has helped prepare more than 225
16 students for careers in STEM. In 2012
17 and 2013, several students who attended
18 the Stemnasium Learning Academy program
19 from grades 5 through 8 have gone on to
20 attend top-tier high schools in
21 Philadelphia such as George Washington
22 Carver, Science Leadership Academy,
23 Central High School, High School of the
24 Future, and the Franklin Learning Center.

25 In 2013, four students who

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2 attended the Stemnasium Learning Academy
3 program have been accepted to colleges
4 and/or universities such as Temple,
5 University College of Engineering,
6 Rutgers School of Engineering, and
7 Villanova College of Engineering. One
8 aforementioned student received a full
9 scholarship to Temple University College
10 of Engineering and was also the winner of
11 the 2013 Google Hangout hackathon
12 contest, beating out professional
13 programmers and coders here in the City
14 of Philadelphia.

15 In 2012, Stemnasium Learning
16 Academy was able to foster an interest of
17 two female students that previously had
18 no interest in STEM, and those two
19 students went on to have major
20 accomplishments in the area of STEM by
21 participating on a team that designed and
22 presented a mobile app idea to the White
23 House Council on Women and Girls.

24 Why invest in integrating STEM
25 into early childhood education? Firstly,

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2 STEM really is a language, and like most
3 languages or new languages, it can be a
4 challenge when you introduce a new
5 language to children who already have a
6 deficit such as poverty, crime, and
7 blight in their communities. However, it
8 has been proven and is well documented
9 that early exposure increases the ability
10 to learn exponentially. An example of
11 this can be seen in the example of Zora
12 Ball, 7-year-old, who after being taught
13 the Cartesian math using a technique that
14 we call bread crumbs was able to produce
15 a mobile video game, donning her the
16 youngest mobile app developer ever.

17 Secondly and lastly, the best
18 way to predict or create your future is
19 to create it. We are most certainly
20 helping children who are the future to
21 establish engineering habits of the mind
22 when we introduce STEM into early
23 childhood education.

24 Thank you for allowing me to
25 speak here today.

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2 COUNCILWOMAN BLACKWELL: Thank
3 you very much.

4 Are there any questions or
5 comments?

6 Councilman Johnson.

7 COUNCILMAN JOHNSON: Thank you,
8 Tariq. In terms of your Stemnasium
9 Learning Academy, how many young people
10 have you worked with over the past two to
11 three years?

12 MR. AL-NASIR: The past two to
13 three years, so we'll say the range from
14 2012 to current would be about 225.

15 COUNCILMAN JOHNSON: And what
16 does a typical day look like with your
17 program with the children?

18 MR. AL-NASIR: That's a good
19 question. So our typical day starts at 9
20 o'clock in the morning. And so the
21 students come into the program and we
22 start with identity. And so coaches on
23 football teams you will hear say, Well,
24 there's no "I" in team, which is correct.
25 If you spell team, there is no "I."

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2 However, before you can become a part of
3 a team, you first have to declare
4 something in yourself. And so we have
5 the students choose who they are, because
6 you are how you see yourself. And so the
7 students identify with I am science, I am
8 technology, I am engineering, and I am
9 mathematics. And by doing that, we are
10 able to accept them really where they are
11 to help them continue on the path of
12 being that scientist, technologist,
13 engineering, and mathematician. And by
14 focusing this way, we're not necessarily
15 working on behavior. We're working on
16 how they see themselves, which is the
17 real paradigm shift. If you change how a
18 person sees themselves, then ultimately
19 their behaviors will line up to what it
20 is that they're trying to aspire.

21 And so right around 9:45 to
22 10:45 or so, about an hour, we engage in
23 a variety of different discussions and
24 activities centered around real-life
25 problems. And so right now, we're

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2 working on building a robot that will be
3 able to solve things that happen when
4 nature doesn't quite go correct. And the
5 students, they have to solve problems
6 that are handed down from real engineers
7 via different entities. So first Lego
8 League, for example, was involved in this
9 initiative. So the children will compete
10 with their robot to solve real missions
11 and present their research by way of an
12 engineering journal and then
13 presentation.

14 COUNCILMAN JOHNSON: And the
15 last speaker talked about the importance
16 of a pipeline, right, and creating
17 partnerships with other agencies or
18 entities that will support young people
19 to go into careers in the areas of STEM.
20 Give us an idea of what programs or
21 corporations or non-profits that you
22 partner with that support your program of
23 encouraging young people to engage in
24 STEM.

25 MR. AL-NASIR: Thank you for

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2 that question. So so far to date, our
3 partners have included, but certainly not
4 limited to, Duke University, Carnegie
5 Mellon University, MIT, locally Drexel
6 University and Temple University, and
7 probably globally we're talking about
8 Lego Education, first Lego League most
9 notably, and then also one of our
10 partners would be the DOD, although they
11 changed their -- "DOD" meaning Department
12 of Defense. They've adjusted their model
13 a little bit, so that program now is
14 called Math Counts. And then lastly
15 would be the collaborative effort that we
16 have with 3M Young Scientists
17 Competition, which is part of Discovery
18 Education's initiative to bring science
19 into the elementary.

20 COUNCILMAN JOHNSON: That's the
21 only question I have. The last statement
22 is, I know oftentimes we're advocating
23 and surely my colleague Councilman David
24 Oh as well as Chairwoman Blackwell are
25 staunch advocates in making sure our

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2 young people get a quality education, and
3 oftentimes I know we have to get better
4 at this, but sometimes Philadelphia can
5 be seen as a tale of two cities. We have
6 issues when it comes to our education
7 system, and we're working on those
8 issues, but also we have some of the best
9 and greatest universities in the country
10 down the street from a school that may be
11 struggling. So I think it's going to be
12 important as we move forward to create
13 better partnerships on the university
14 level when it comes to STEM-related
15 programs. Like I think every university
16 should be adopting some school along the
17 lines of STEM that they have an
18 engineering, science, and math program.
19 That's just my personal opinion. But
20 also making sure those major corporations
21 get involved. I think GlaxoSmithKline,
22 they're doing some things, but there are
23 also various other corporate entities
24 down in the Navy Yard like Aker Shipyard
25 and so forth to participate as a pipeline

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2 partnering with such programs. And that
3 will be something we'll look at moving
4 forward, but just thank you for your
5 testimony.

6 MR. AL-NASIR: You're welcome.
7 Thank you.

8 COUNCILWOMAN BLACKWELL: Thank
9 you very much and thank you for the
10 services you provide.

11 MR. AL-NASIR: You're welcome.

12 COUNCILWOMAN BLACKWELL: Sharon
13 Easterling.

14 (Witness approached witness
15 table.)

16 MS. EASTERLING: Good
17 afternoon.

18 COUNCILWOMAN BLACKWELL: Good
19 afternoon.

20 MS. EASTERLING: Thank you for
21 asking these important questions. My
22 name is Sharon Easterling. I'm the
23 Executive Director of the Delaware Valley
24 Association for the Education of Young
25 Children, DVAEYC. DVAEYC is the local

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2 affiliate of the National Association for
3 the Education of Young Children, which is
4 the largest professional association of
5 early childhood educators in the nation.
6 And so on behalf of our Board of
7 Directors and 2,000 members here in
8 Southeastern Pennsylvania, I want to
9 speak to the issue of STEM education in
10 early childhood education.

11 So students in the United
12 States lag behind our global competitors
13 in academic achievement and most notably
14 in math and science. There is
15 overwhelming evidence from
16 neuroscientists that the skills that are
17 foundational to the fields of science and
18 technology, skills like curiosity and
19 persistence and problem-solving, are all
20 developed in the years before kids
21 actually begin formal schooling.

22 So while it's important to
23 address STEM education in K to 3
24 classrooms, if we only do that and we
25 fail to understand what's happening with

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2 children before they arrive at the school
3 door, we are missing a significant part
4 of the equation, no pun intended.

5 I thought that was supposed to
6 be funny.

7 Preschoolers in Philadelphia
8 are having a myriad of experiences.
9 Unfortunately, most of them are not very
10 good. Of the hundred thousand plus
11 children under the age of five who live
12 in the City today, two-thirds are cared
13 for by someone other than their parents.
14 And if we add up all of the slots that we
15 know about in Head Start and pre-K and
16 child -- STARS 3 and 4 child care center,
17 which is how we would define high quality
18 here in Philadelphia, we find that we're
19 reaching just over 12,000 kids, or about
20 12 percent, of our preschoolers with
21 early education programs that are
22 fostering school readiness and a love of
23 learning.

24 Adding insult to injury,
25 childhood has really changed in the last

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2 two generations. Access to the outdoor
3 world has just about vanished for our
4 kids. Today's child is spending about 1
5 percent of their time outside, and those
6 early experiences with nature where
7 skills of observation, investigation,
8 curiosity, and exploration are born are
9 mostly missing from our kid's daily
10 experiences.

11 So DVAEYC is really committed
12 to ensuring educational opportunity for
13 all young children in our region. We are
14 deeply concerned about the current state
15 of early childhood education and this
16 missed opportunity when we fail to
17 provide what children need in those early
18 and formative years.

19 So I want to tell you about a
20 couple of things that DVAEYC is doing in
21 partnership with others in direct service
22 and then what we're doing on the policy
23 front.

24 We worked with PNC's Grow Up
25 Great initiative to do a whole series for

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2 teachers and parents around math, and we
3 went into child care programs and helped
4 them set up math centers and brought
5 parents in and really worked with them to
6 understand how to build these skills with
7 their own children. We've partnered with
8 the Franklin Institute to develop science
9 kits for preschoolers, and each kit has
10 an instructor guide for teachers that
11 covers an investigation in science and it
12 has books and materials to support that
13 investigation. And our latest effort is
14 partnering with Smith Memorial Playground
15 to develop the nation's first urban
16 nature preschool. The idea is that we
17 would serve the children around Smith
18 Playground, particularly Strawberry
19 Mansion, with a very high-quality
20 preschool experience that's really
21 centered and focused on giving them
22 outdoor -- experiences with the natural
23 world and the outdoor environment and
24 really cultivating that love of learning
25 in those early science skills. We would

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2 also use it as a center for training
3 early childhood teachers so that those
4 practices can be replicated throughout
5 the City.

6 On the policy front, we're
7 working statewide to try to make
8 universal access to high-quality pre-K a
9 front-and-center issue in the 2014
10 election. We're working with partners
11 like the Economy League, United Way, and
12 PCCY to do that.

13 And then finally here in the
14 City, DVAEYC is part of a group of
15 organization and individuals called PECE,
16 Philadelphia for Early Childhood
17 Education, and most of you saw some
18 members of PECE last spring during the
19 budget negotiations as we really called
20 for an investment from the City of
21 Philadelphia, and through your support as
22 well as the Mayor's, we established or
23 reestablished the Child Care Facilities
24 Fund, and the purpose of that is to
25 support high-quality early childhood and

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2 to get more children into those
3 high-quality programs.

4 The bottom line is that
5 high-quality preschools in Philadelphia
6 are delivering good STEM education
7 through hands-on learning experiences.
8 Children are not just learning important
9 math and science concepts, but they're
10 learning how to learn, and they're
11 becoming confident, persistent learners.

12 The problem is that most of our
13 kids aren't in these programs. Quality
14 is expensive, and the early childhood
15 field is deeply underresourced.

16 So here are some very specific
17 suggestions for what the City and the
18 School District can do. First of all,
19 the City of Philadelphia needs to
20 encourage parents to choose high-quality
21 child care through a whole menu of
22 incentives and disincentives. I
23 encourage you to build on the action of
24 last year to expand funding for
25 high-quality early childhood education.

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2 We need to encourage businesses to make
3 tax-deductible donations to scholarship
4 programs to open the doors to high
5 quality for the kids who need them most,
6 and then to launch a marketing campaign
7 to parents about the importance of
8 high-quality early childhood education.

9 The School District of
10 Philadelphia needs to do the math and
11 understand that by investing in
12 high-quality early childhood, we will
13 save so much money down the road in
14 things like reduced special education
15 costs.

16 We can investigate the
17 potential of social impact bonds. There
18 are few cities around the country that
19 are beginning to leverage the money to
20 pay for these programs through future
21 savings when we do this early for kids.
22 And, finally, incorporating best
23 practices in early education in K to 3
24 grades instead of overemphasizing testing
25 and narrow academic competencies.

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2 So sum it all up, a recent
3 editorial in Scientific American cites a
4 study where kindergartners, when asked to
5 talk about science, expressed almost no
6 positive feelings toward it. We can
7 change the situation for Philadelphia's
8 youngest children. When they have early
9 childhood teachers who are excited about
10 the physics of ramps, the biology of
11 seeds, the math of recipes, they will be
12 excited too. Their natural curiosity
13 will be engaged, and they will come to
14 kindergarten eager and ready to delve
15 deeper into science and math and grow
16 into adults who can work together and do
17 the problem-solving that our world so
18 urgently needs.

19 Thanks for the opportunity to
20 speak to you today.

21 COUNCILWOMAN BLACKWELL: Thank
22 you very much.

23 Are there any questions or
24 comments?

25 (No response.)

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2 COUNCILWOMAN BLACKWELL: Thank
3 you again.

4 Councilman Johnson.

5 COUNCILMAN JOHNSON: Just one
6 question. Can you just elaborate on the
7 social impact bonds.

8 MS. EASTERLING: Yes. So in
9 Philadelphia we know that kids who go to
10 Pre-K Counts programs, their special
11 education rate is 4 percent as opposed to
12 14 percent in the general population. So
13 that's just one example of future
14 savings. So the idea is that you find
15 investors, and they could be public or
16 private investors, who front the money
17 for these programs, and then as you
18 realize those savings when kids go into
19 school and it doesn't cost as much, you
20 don't have as many kids needing those
21 high-intensive services, you're able then
22 to pay back on those investments. Salt
23 Lake City is actually experimenting with
24 it now.

25 COUNCILMAN JOHNSON: Thank you.

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2 COUNCILWOMAN BLACKWELL: Thank
3 you very much.

4 Maria Ferzola, CEO of Teach.
5 (Witness approached witness
6 table.)

7 MS. FERZOLA: Good afternoon.

8 COUNCILWOMAN BLACKWELL: Good
9 afternoon.

10 MS. FERZOLA: First I'd like to
11 thank all of the Councilmen and
12 Councilwomen for inviting me to testify
13 in favor of Resolution No. 130781, and
14 thank you for your dedication to
15 education in our city.

16 I am in strong agreement with
17 the points of the resolution regarding
18 the integration of science, technology,
19 engineering, and mathematics into early
20 childhood education within Philadelphia
21 schools. In my experience, the earlier
22 students receive exposure to STEM
23 subjects, the more likely they are to
24 develop critical thinking and deductive
25 reasoning skills at an early age, to set

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2 the foundation for greater success in
3 these skills at the middle school and
4 high school levels, and to pursue
5 STEM-related careers later in life. In
6 my opinion, proficiency in STEM is more
7 important today than ever before in our
8 constantly evolving and competitive
9 technological economy.

10 As a female with proficiency in
11 STEM, I know STEM can dramatically
12 further one's career opportunities. Due
13 to my degrees in math and chemistry, I
14 had an opportunity to pursue multiple
15 careers, including law, education, and
16 business. As a former high school math
17 teacher in Philadelphia's Mastery Charter
18 School, it was evident that early
19 exposure to STEM could have a dramatic
20 impact on my student's level of
21 proficiency once they reached my high
22 school classroom.

23 Students with a strong
24 foundation in STEM and the critical
25 thinking and reasoning skills that STEM

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2 provides were able to progress through my
3 course with greater ease. Those lacking
4 such a foundation struggled through the
5 year. It became increasingly difficult
6 for me to rework a foundation during
7 those later years, because many of my
8 students had a fear or pre-conceived
9 notion about their mathematical abilities
10 by the time they reached my classroom.

11 I am currently employed as the
12 founder and CEO of a Philadelphia-based
13 tutoring organization called Teach.
14 Without a doubt, the majority of the
15 phone calls we receive pertain to
16 tutoring requests in math and science
17 from high school, college, and adult
18 learners. STEM content is ubiquitous.
19 My organization is consistently asked to
20 provide math and science educational
21 services for a wide range of reasons,
22 entrance exams for college, graduate and
23 business school, and those pursuing
24 careers in teaching and medicine, to name
25 a few.

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2 My company Teach is currently
3 partnered with organizations such as the
4 Franklin Institute and Philadelphia
5 Academies Incorporated to provide a wide
6 range of academic services in
7 STEM-related content. Through my
8 observations, students with greater
9 exposure to STEM content early in their
10 educational experience are much more
11 likely to view the content favorably and
12 pursue increasingly critical STEM-related
13 careers later in life.

14 The City of Philadelphia must
15 ensure that its educational system is
16 adequately preparing our youth to compete
17 in our increasingly technological
18 economy. My vision for the future of
19 STEM education is to observe STEM being
20 introduced into every Philadelphia
21 classroom at an early age and to continue
22 to be reinforced throughout middle and
23 high school. Teachers and
24 non-traditional educators such as myself
25 must receive training regarding the

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2 introduction of more educational
3 technology into the classroom at an
4 earlier age.

5 Math and science teachers must
6 encourage and allow students to explore
7 STEM within their classrooms through
8 technology and hands-on activities which
9 further their critical thinking and
10 reasoning skills.

11 Proficiency of our citizenry in
12 STEM fields should absolutely be a top
13 priority as it affects our country's
14 competitiveness and economic
15 productivity.

16 Thank you for having me today.

17 COUNCILWOMAN BLACKWELL: Thank
18 you very much.

19 Any questions or comments?

20 (No response.)

21 COUNCILWOMAN BLACKWELL:

22 Dr. Matthew Riggan, Executive Director of
23 the Workshop School. Thank you for
24 staying. They told me you had to leave.
25 Thank you very, very much. We appreciate

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2 your being here today.

3 (Witness approached witness
4 table.)

5 MR. RIGGAN: Thank you,
6 Councilwoman Blackwell. Thank you,
7 Councilman Johnson, for convening this
8 hearing. And I would be remiss if I
9 didn't give Councilwoman Blackwell a huge
10 thank you on behalf of the Workshop
11 School, because without you, we probably
12 wouldn't exist, and we certainly would
13 not exist in our current home in West
14 Philadelphia, which we love.

15 COUNCILWOMAN BLACKWELL: How
16 kind of you to say. We love it too.
17 Thank you.

18 MR. RIGGAN: So we are a new
19 high school inside the School District of
20 Philadelphia and we are, in every sense,
21 a STEM school. You know it the minute
22 you walk into our building, and for lots
23 of different reasons. All of our
24 students have their own laptops. All of
25 their work is done electronically and

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2 online, and we are a project-based
3 school. And so if you walk through our
4 building, especially in the morning --
5 and I would invite all of you to come and
6 do so -- what you'll see is kids working
7 on projects that are interdisciplinary,
8 that are hands-on, that are focused on
9 problem-solving.

10 So, for example, in one of our
11 classrooms this morning, we have a group
12 of students embarking on a project where
13 they're learning how to build generators.
14 These are human-powered generators. And
15 so the purpose is to understand how much
16 electricity you can actually make on your
17 own and what you can do with that
18 electricity. That leads us into a
19 conversation about, Okay, that's not
20 sufficient to what we need to do to, say,
21 power a classroom, let alone a building.
22 So where does the rest of our energy come
23 from? That leads us to how much energy
24 are we using? How do we measure it?
25 That leads to how do we reduce the amount

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2 of energy we are using, both because of
3 its effect on the environment and on the
4 School District of Philadelphia's bottom
5 line? And that leads to a project that
6 we're going to be doing in the spring in
7 which our entire school works on trying
8 to reduce our energy usage as much as
9 possible, reporting back on both our
10 carbon footprint and the changes in that,
11 as well as the amount of money we're
12 saving the School District.

13 This to me -- and it's why
14 hearing Mr. Hardy talk about the way this
15 new initiative is defining STEM got me so
16 excited. This to me is the essence of
17 that work. It's real world, it's
18 relevant, it's problem-solving, it's
19 super rigorous because it requires that
20 you learn new technical skills and
21 knowledge in order to solve problems of
22 ever-increasing complexity.

23 As a high school educator,
24 seeing the interest in focusing more on
25 STEM and early childhood I think is

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2 tremendously important, and I also think
3 there are some lessons that early
4 childhood can probably learn from frankly
5 what I think are some of the mistakes
6 that have been made over the last 10 or
7 15 years in how we've approached STEM in
8 high schools. And I think the biggest
9 one of those mistakes is that we have
10 focused primarily on teaching the content
11 in the same way that content has
12 traditionally been taught, and we haven't
13 focused as much on the interdisciplinary
14 nature of the work and we haven't focused
15 as much on the problem-solving nature of
16 the work.

17 So, for examples, in lots of
18 school districts, STEM problems are
19 really just the same science and math
20 that they've all taught, with a few
21 electives at that end maybe for
22 engineering or technology. And so you
23 have to go through the same kind of
24 traditional school that you've always
25 gone through before you get to actually

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2 get to the hands-on stuff, the
3 problem-solving stuff.

4 So our roots, as Councilman
5 Kenney was so kind to point out earlier,
6 are in the West Philly Hybrid X Team,
7 which I think is a great example of this.
8 This was an after-school program where
9 kids who, in a lot of cases, were
10 struggling in traditional classroom
11 environments were doing extraordinarily
12 high level and sophisticated engineering
13 work outside the confines of the
14 traditional school day. And a big part
15 of what created us at the Workshop School
16 was that impulse to say, why can't that
17 be school, why can't we make that what
18 we're doing during the school day.

19 Now, having an incoming group
20 of 9th graders at the Workshop School, I
21 find that we spend an awful lot of time
22 trying to reconnect kids with their love
23 of learning. They've been through enough
24 years of school now that they've sort of
25 been taught that school is not a place

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2 where you engage your curiosity, school
3 is not a place where you try and solve
4 real problems, school is something you
5 sort of have to survive. And so the work
6 we're doing with our freshmen now is
7 really focused on how do you rekindle
8 that curiosity.

9 So when we talk about STEM for
10 early childhood, I think the big lesson
11 or, I guess, the one really important
12 thing I want us to remember as this stuff
13 gets off the policy level, which is super
14 exciting, and into classrooms is that
15 while young children in Philadelphia face
16 lots and lots of disadvantages -- we're
17 one of the poorest large cities in the
18 country -- the one thing that all little
19 kids have in abundance is curiosity and a
20 love of learning. And the one thing that
21 I would hate to see happen as we move
22 towards STEM education with very young
23 children is, in an effort to make sure
24 that we're introducing this subject
25 matter, that we forget that engaging that

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2 curiosity and using that curiosity as the
3 engine of learning about science and
4 technology and mathematics is at the
5 heart of the work that we're trying to
6 do, and if we do that effectively, then
7 we are not going to have to spend as much
8 time trying to convince our 9th graders
9 that learning is relevant and important
10 and even fun.

11 Thank you for your time.

12 COUNCILWOMAN BLACKWELL: Thank
13 you very much. It is obvious that if
14 they have your enthusiasm, they're going
15 to be successful. Thank you for all you
16 do. It's so important.

17 MR. RIGGAN: You're welcome.

18 COUNCILWOMAN BLACKWELL: Love
19 of learning is half the battle. Thank
20 you very much.

21 Are there questions or
22 comments?

23 (No response.)

24 COUNCILWOMAN BLACKWELL: Thank
25 you very much.

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2 I understand Marguerite Anglin,
3 President of PhilaNOMA, is not here. Is
4 there anyone else here who would like to
5 testify?

6 (No response.)

7 COUNCILWOMAN BLACKWELL: Anyone
8 else here?

9 (No response.)

10 COUNCILWOMAN BLACKWELL: Are
11 there further comments by any of my
12 colleagues who are here?

13 Councilman Johnson.

14 COUNCILMAN JOHNSON: Well,
15 first and foremost, I want to thank all
16 the panelists for coming out today and
17 giving your perspective on such an
18 important issue. In just listening to
19 the most recent testimony, it seems like
20 one thing we need to take out of this
21 hearing is making sure that as we go from
22 a policy to an implementation component,
23 that we make sure that this is an
24 engaging process for young people,
25 because I understand the traditional, and

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2 I'm not in the classroom setting, but I
3 would think it would probably be pretty
4 interesting to see how young people even
5 pay attention, because I know in the
6 technology age, everything is on the
7 smart phone, you know, and young people
8 like realtime information constantly
9 24/7.

10 But I want to thank everyone
11 for coming out. This is something I will
12 definitely follow up with Mr. Hardy on as
13 it relates to the work that the School
14 District is doing to move forward to see
15 how we can continue to engage in taking
16 STEM to the next level. But I'm
17 definitely going to make sure I circle
18 back with the component on how do we get
19 some of our major corporations, some of
20 our major institutions of higher learning
21 on board, because, again, sometimes when
22 I sit back and look at the big picture,
23 Philadelphia can be a tale of two cities.
24 We have some of the best education and
25 medical institutions in the country, and

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2 this cannot be tolerated, but for a
3 school district where young people, the
4 graduation rate may be 50 percent or
5 less, and that's -- and I don't say
6 that's one person's fault. I think as a
7 society everybody has to step up and put
8 some skin in the game to make sure our
9 young people are successful, because at
10 the end of the day, it's the young people
11 that will lead this city, they will lead
12 this state, and they will lead this
13 country. And so when you talk about
14 investment, we have to invest on the
15 front end as opposed to the back end.

16 But I thank Madam Chairwoman
17 Jannie Blackwell for hosting the meeting
18 and my colleagues for being here, and
19 thank you all for coming out today.

20 COUNCILWOMAN BLACKWELL: Thank
21 you very much.

22 And we note that we have
23 testimony from Marguerite Anglin, who is
24 architect and associate with WRT Planning
25 and Design and President of the

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2 Philadelphia Chapter of National
3 Organizations of Minority Architects,
4 PhilaNOMA. So we will submit her
5 testimony as though she were here today
6 for the record. It will be included in
7 our testimony. And if all minds are
8 well, we will conclude our hearing
9 subject to the call of the Chair.

10 Thank you all very much.

11 Let us note that Mark Squilla
12 was here. He is part of this committee
13 and will be noted as being present.

14 Thank you.

15 (Committee on Education
16 concluded at 4:15 p.m.)

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CERTIFICATE

I HEREBY CERTIFY that the
proceedings, evidence and objections are
contained fully and accurately in the
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foregoing matter, and that this is a true and
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