



Smart-City Education

**Educating the Innovators of the Future
to strengthen Ohio's economy
through Digital Transformation!**

Michael Beck,
President, Code for Kids



About Me



- Worked several years in High-Tech Fortune 500 company
- For the last 15 years focused on STEM/STEAM Education in under-served communities and on workforce development
- Founder/President of Code for Kids (www.CodeForKids.us)
- Member of SWORWIB Board
- Hispanic Chamber of Commerce Board of Directors
- Society of Hispanic Professional Engineers (SHPE) Cincinnati, Board of Directors
- Member of the University of Cincinnati's School of Information
- Technology Advisory Board
- Member of National Leadership Team of Education SuperCluster, a Smart City initiative of NIST/DHS/DoC
- Various Awards:
 - 2010 Ohio Hispanic Leadership Award
 - 2014 LULAC Presidential Medal
 - 2015 CPS Volunteer of the year
 - 2017 Finalist of Difference Makers (Children's Museum)
 - 2018 CAA Bridge Builder Award
 - 2x Spirit of Cincinnati Award (Diversity and Champion)

- CodeForKids is a 501(c)3 non-profit organization focused on building a pipeline of diverse IT students to strengthen Cincinnati's economy and prepare our region for the jobs of tomorrow!
- We accomplish this by promoting high-tech topics to students and providing hands-on experience.
- Our work has been featured on:
 - Channel 9 (on coding)
 - Channel 12 (on drones)
 - CPS Vision 2020 promotional videos
 - 2017 Difference Makers
- Thanks to our engagement, Hays-Porter Elementary School became Ohio's first "High-Tech" Elementary School



Our Premise



Digital literacy 'as important as reading and writing'

What drives us?

It is easier to build strong children
than to repair broken men.

Frederick Douglass

www.thequotes.in



BRIAN GREENE

Physicist & String Theorist • Author

***“When kids look up
to great scientists
the way they do to
great musicians and actors,
civilization will jump to
the next level”***

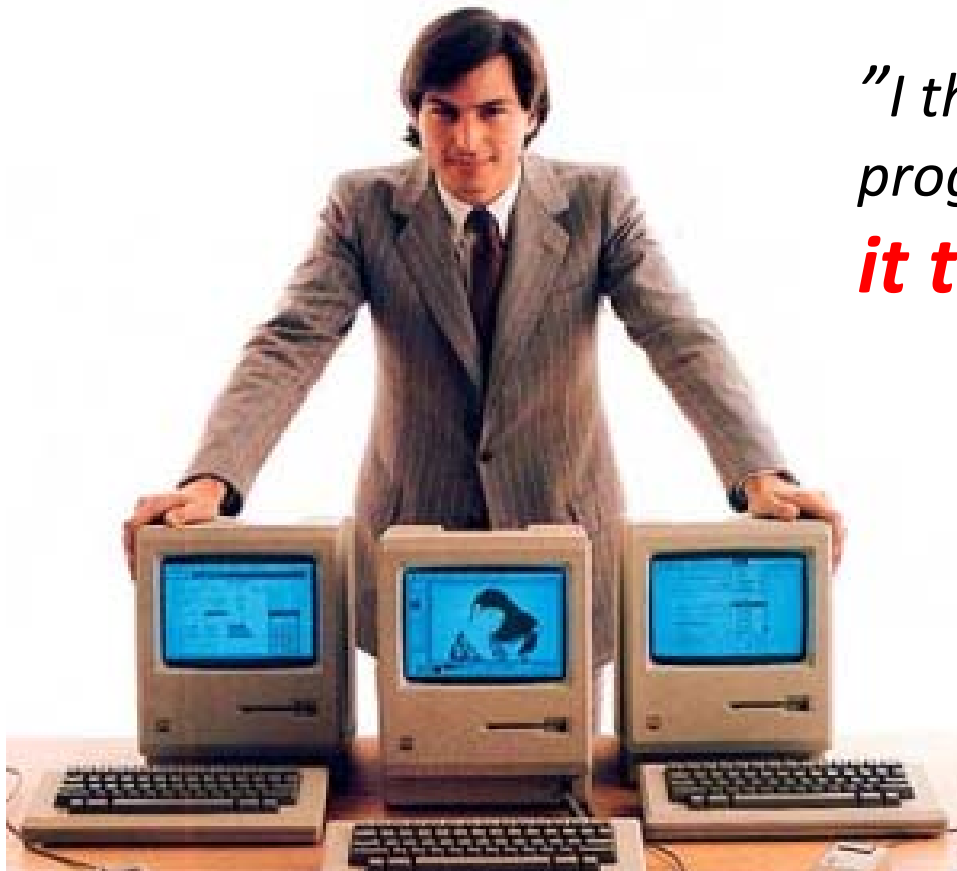
Our Mission/Vision



- Transform our region into a **Silicon Valley of the Midwest**
- Build a pipeline of **Digital Transformation** professionals that will strengthen the region's economy, develop new talent, and support the needs of companies in our community
- Help our residents to up-skill and re-skill in order to move to the **high-paying technology jobs of tomorrow**
- Ensure **inclusion and diversity** within the high-tech sector by creating life-changing opportunities for our under-resourced communities



Why to learn coding/programming?



*"I think everyone should learn how to program a computer, because
it teaches you how to think."*

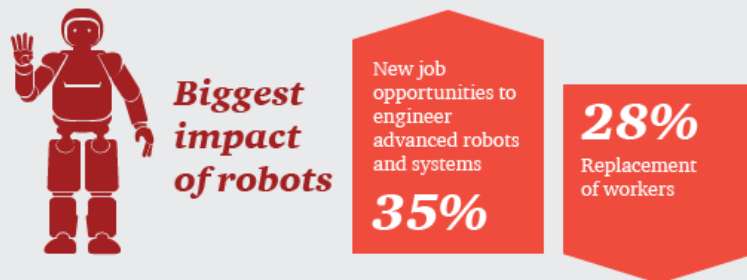
Steve Jobs

Coding helps kids develop essential skills for the future,
such as **problem solving and critical thinking.**

AI & Automation Impact on Job Market

Robots: Jobs taker or jobs maker?

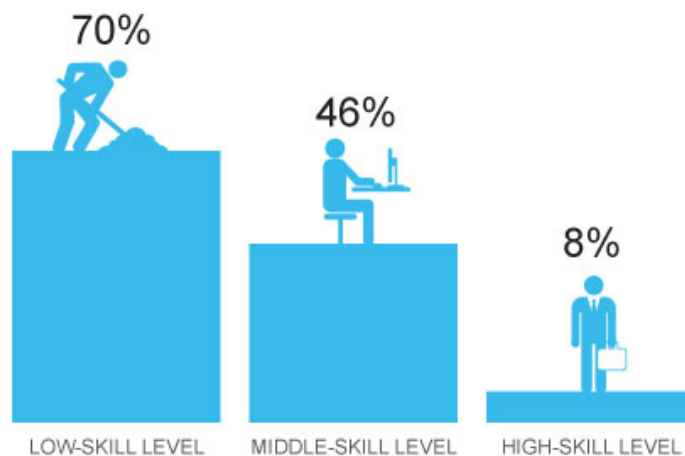
How technologies affect jobs has been perennial question ever since the first Industrial Revolution. A PwC survey of US manufacturers finds that US manufacturers see robotics technology as generating new high-skilled jobs while at the same time displacing workers.



Source: PwC and Zpryme survey and analysis, "2014 Disruptive Manufacturing Innovations Survey," conducted in February 2014. Q: What will be the biggest impact of robots on the US manufacturing workforce in the next 3-5 years? Number of respondents: 105.

Low-skill jobs at greatest risk

Percentage of jobs, by skill level, at a high risk of being automated in 20 years.



YOUNG PEOPLE NEED SKILLS AND EXPERIENCE FOR JOBS OF THE FUTURE, NOT THE PAST

70%
of young people currently enter the workforce in jobs that will be radically affected by
AUTOMATION

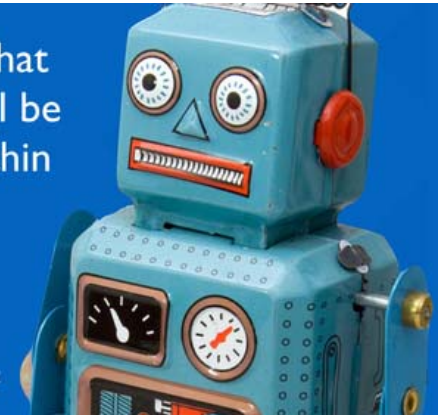
OCCUPATIONS:
ENTRY LEVEL
roles for young people are
DISAPPEARING



TRAINING:
60%
of students are being trained in jobs that will be radically
CHANGED BY AUTOMATION

Half the jobs that exist today will be automated within 20 years*

http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

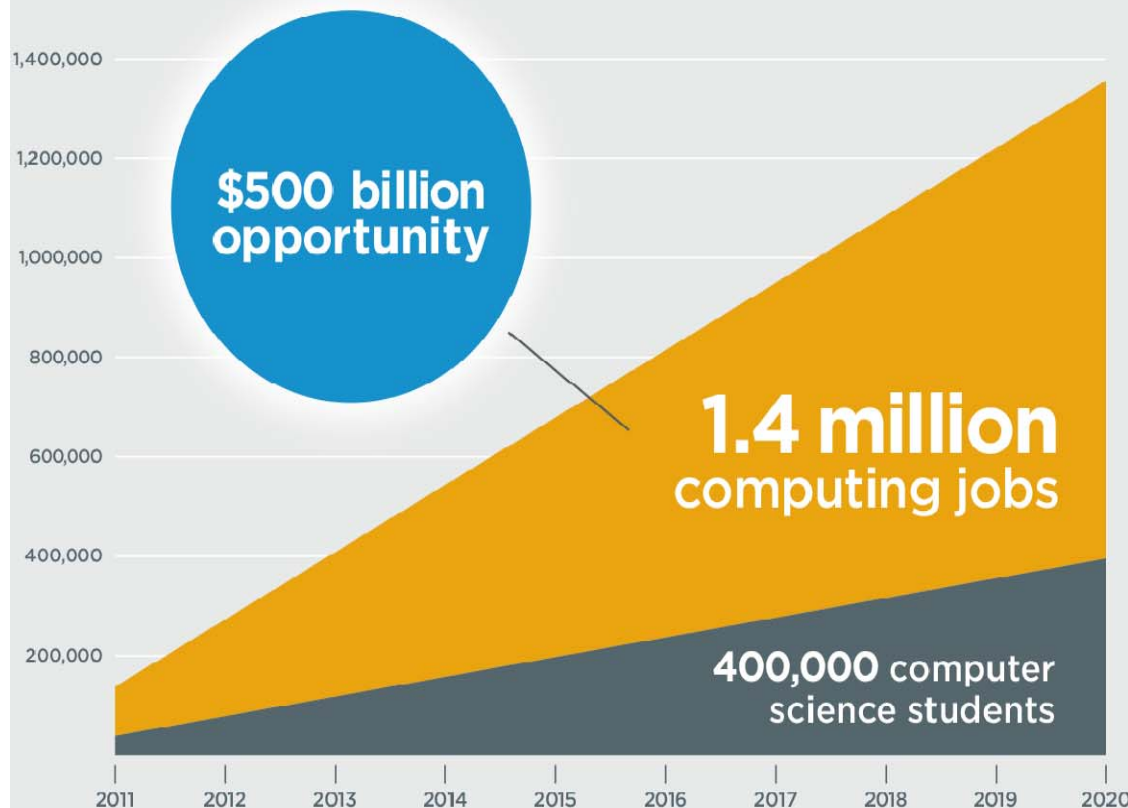


The Demand For IT Students Is Growing



School of
Information Technology
Experience+
Collaborate | Innovate | Apply

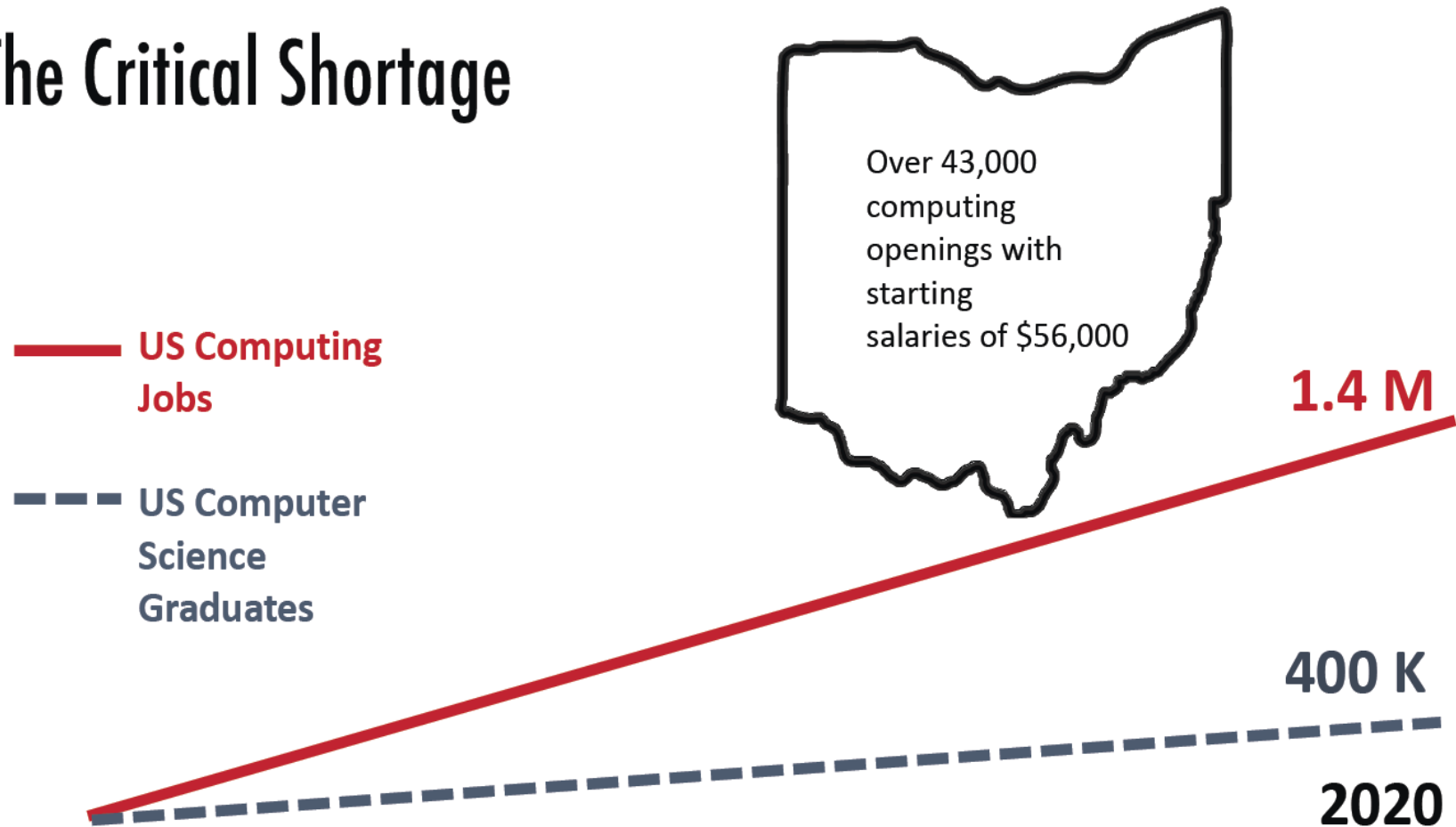
1,000,000 more jobs than students by 2020



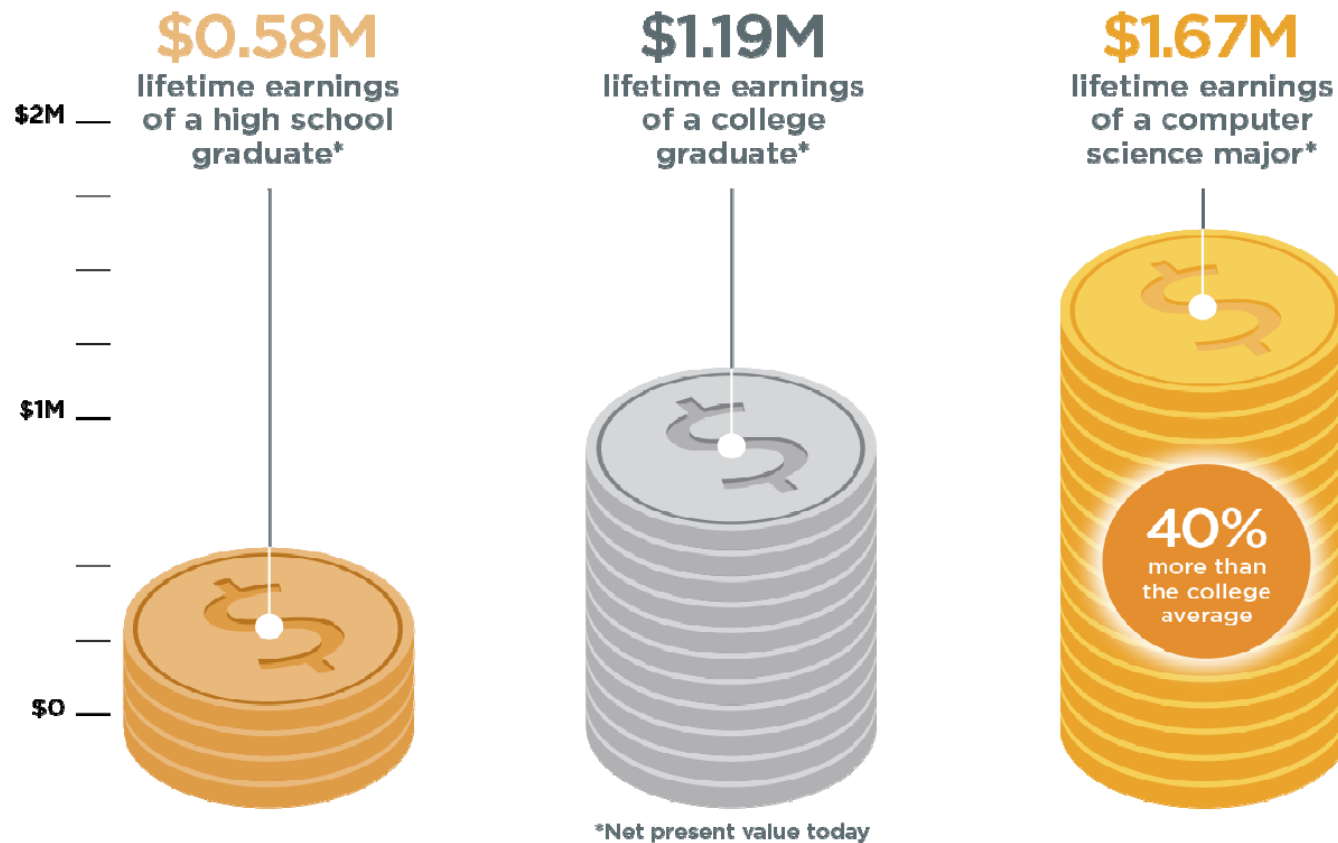
Computer science
is a top paying
college degree
and computer
programming
jobs are growing
at 2X the
national average.

Ohio Shortage of IT Graduates

The Critical Shortage



The Value of a Computer Science Education



Some of the best-paying jobs are in IT



- **More minorities are going to college than ever before.**
- **However, Georgetown University study has shown that African-American college students are more likely to pursue majors that lead to low-paying jobs, setting up many for future debt and under-employment**
- **African-Americans make up only a small percentage of some of the highest-paying majors, including those in STEM and business.**
- **They're only 8 percent of engineering, 7 percent of mathematics and 5 percent of computer science majors.**

	Percentage African American	Median Earnings†
Health and Medical Administration Services	21%	\$46,000
Human Services and Community Organization	20%	\$39,000
Social Work	19%	\$41,000
Public Administration	17%	\$52,000
Criminal Justice and Fire Protection	15%	\$48,000
Sociology	14%	\$44,000
Computer and Information Systems	14%	\$63,000
Human Resources and Personnel Management	14%	\$51,000
Interdisciplinary Social Sciences	13%	\$44,000
Pre-Law and Legal Studies	13%	\$46,000

Facebook unveils site expansion, raising Licking County investment to \$1 billion

Craig McDonald Newark Advocate

Published 1:46 p.m. ET Feb. 6, 2020 | Updated 8:09 p.m. ET Mar. 12, 2020

The 970,000-square-foot expansion of the data center announced Thursday will result in a 2.5-million square foot campus at the site, employing somewhere between 100 and 150 people.

Facebook extends grant to Licking Heights Schools

One of the local beneficiaries of the new data center is the Licking Heights School District, which is receiving a \$190,000 grant from Facebook for STEM/STEAM education.

That money, according to Superintendent Dr. Philip Wagner, will help fund a new lab and science, technology, engineering, arts and math education efforts.

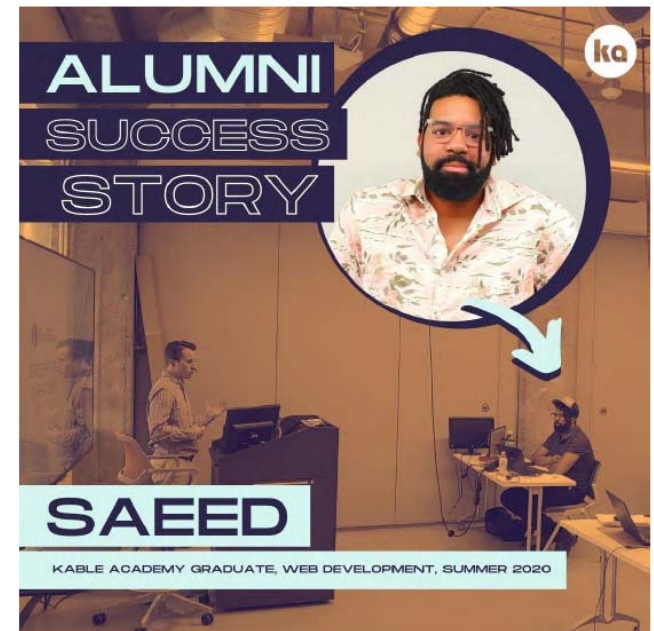
Wagner told those assembled Thursday, "This entire project is within the Licking Heights School District."

"This grant is going to help us be even more ready for the future, by helping us keep students on track," Wagner said. "Obviously we're going to hone in more on STEAM and work force development."

What Have We Done So Far?



- DBA of Code for Kids
- To create scholarships & provide financial support to those who are
 - underemployed and/or low paying jobs
 - qualify to attend a 12-week IT Bootcamp,
 - want to attend, but are unable to support themselves over the 12-week period.
- The new jobs are in technology and having a skilled workforce will attract companies to Cincinnati.
- We have partnered with Kable Academy, which provides training in Cybersecurity and Web Development



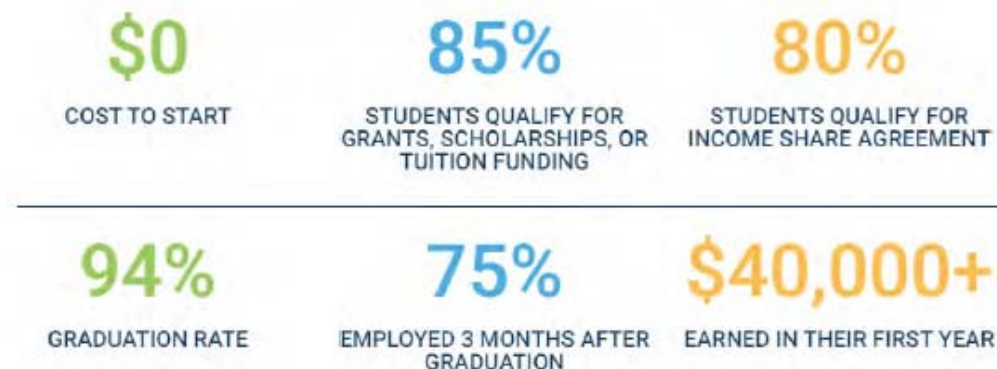
Our Partner: Kable Academy



- For our partner, Kable Academy, it's about changing lives. They put tech careers within reach for those willing to explore a life in IT. They are change agents, who wield the tools of education, accessibility, and connection.
- The Program:
 - 12-week programs for Cybersecurity and Web Development
 - Unique model of onboarding, learning, and placement
 - Hands-on instruction, relevant curriculum, flex-it strategy
 - Commitment to cohort diversity
 - Development workshops, career coaching, and job placement strategies



Kable Academy by the Numbers



Hays-Porter: Ohio's First "High-Tech" Elementary



Cincinnati Public Schools

**Vision
2020** ★ High
Technology

at

Hays-Porter School

Learn more at cps-k12.org



Hour of Code



Hour of Code Kick-off

December 7, 2015



PLEASE DON'T HIDE

YOUR PANTHER PRIDE

**HOUR
OF
CODE**

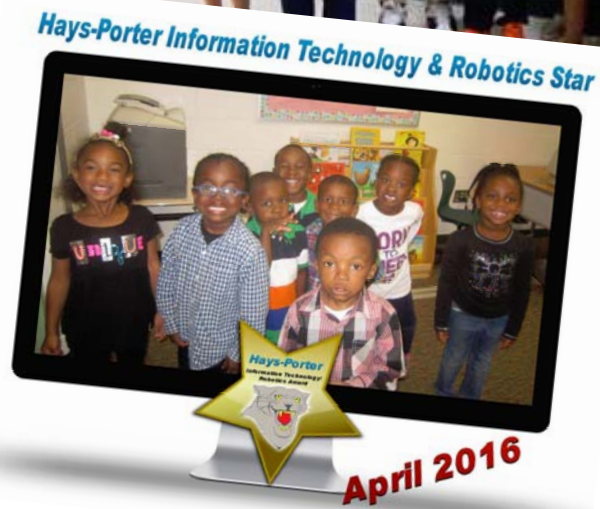
Anybody can learn!
Start with an Hour of Code

Hays-Porter Elementary School, West End, Cincinnati, OH

IT Competitions



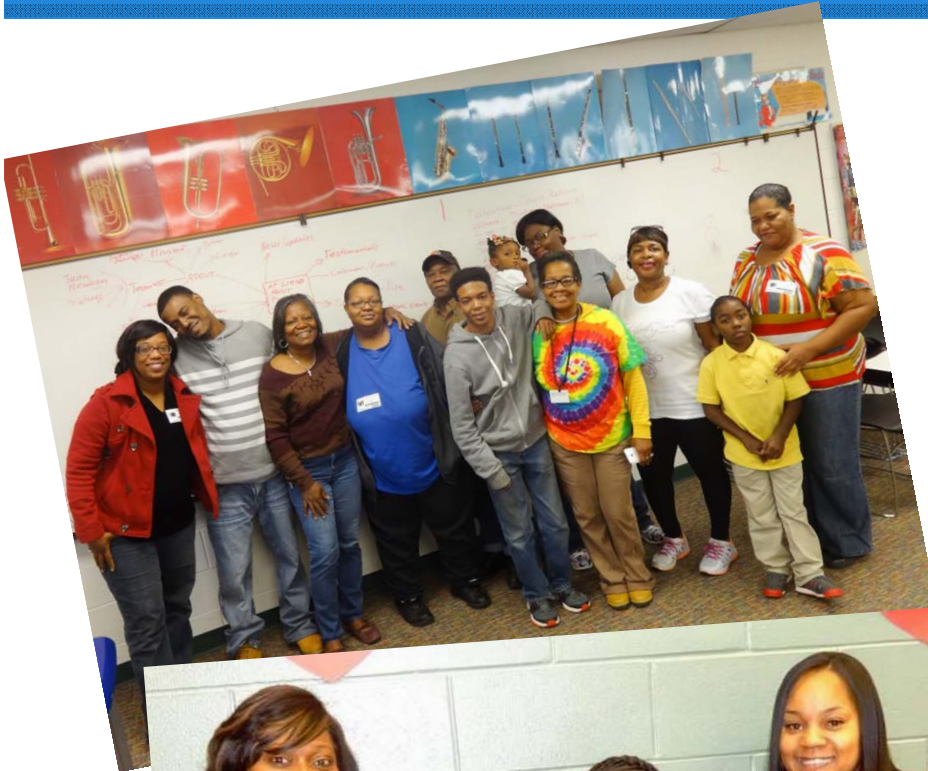
Changing the Mindset: What Is “Cool”



Changing the Mindset: Girl Power



Parents Engagement



CCMEP Video



https://drive.google.com/drive/u/0/folders/1RTLxswVH-6_NZ7cp5SY2ucOw-4zs72Ru



Competing in TechOlympics



Success Story: CCMEP Tech



Where Do We Go From Here?



Opportunities




1. Applied Learning through **Robotics** and other after-school activities
2. More Job Training for Adults
3. Broadband for the whole region

Robotics @ Wesley Chapel Mission Center



**We would love to see a Robotics Club in every school in Cincinnati,
but we need more funding!**

Rapper will.i.am Expands Local Robotics Program To Get Kids Excited About STEM

 Njera Perkins. Jun 24, 2021.

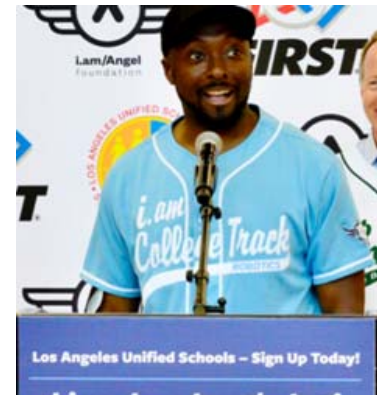
Musician and tech entrepreneur [will.i.am](#) is taking his love for robotics to the next level with his co-created [robotics program](#).

The Black Eyed Peas band member has a goal to ease the struggles of the next generation in terms of accessibility to educational resources. [With that said, his i.am Angel Foundation is partnering with the Los Angeles Unified School District \(LAUSD\) to expand their robotics program to what could be 12,000 students throughout the entire district.](#)

According to an [announcement](#) from the Foundation, the LAUSD has witnessed the positive impact the organization has had on local neighborhood Boyle Heights for the past 11 years, serving close to 1,400 students in their STEAM (Science, Technology, Engineering, Arts and Math) education.

This summer, the two entities want to continue this community work and bring [STEM skill sets to more than 400 new robotics clubs from middle and high schools](#) and sign up as many students as possible for the FIRST Robotics program ahead of the upcoming school year.

“Every school has a basketball court and many have football fields, but only two businesses benefit from these skill sets, and it’s mostly for boys,” will.i.am said in a [statement](#). “Football is great, but my niece will never play for the NFL. [With robotics clubs, boys and girls can learn valuable STEM skills and how to work in teams – knowledge that helps secure college scholarships and, eventually, high-paying jobs. With FIRST Robotics, every child can be a winner in school, work and in life. My mission is to put a robotics club in every public school, and we are off to a great start with this new program in Los Angeles.](#)”



Singapore Economic Model

(Education + High Value-Add)

Countries with Average Scores Higher than the U.S. Average

Science	Reading	Mathematics
Singapore	Singapore	Singapore
Japan	Hong Kong (China)	Hong Kong (China)
Estonia	Canada	Macau (China)
Taiwan	Finland	Taiwan
Finland	Ireland	Japan
Macau (China)	Estonia	China*
Canada	South Korea	South Korea
Vietnam	Japan	Switzerland
Hong Kong (China)	Norway	Estonia
China*	New Zealand	Canada
South Korea	Germany	Netherlands
New Zealand	Macau (China)	Denmark
Slovenia	Poland	Finland
Australia	Slovenia	Slovenia
United Kingdom		Belgium
Germany		Germany
Netherlands		Poland
Switzerland		Ireland
		Lithuania

GDP per person* as % of United States



Singapore Implements Applied Learning Program

- The **Applied Learning Program** is an initiative by the Ministry of Education to enhance student's educational experience and provide the opportunity for students to see the usefulness of their learning in the real world.
- "Students learn by applying and by doing, and they learn beyond the classroom. They see for themselves how they can apply what they have learnt to the real world"

Ng Chee Meng, Education Minister



Starving Artist or Digital Designer?



\$50-100/day?



\$80,000/year

Same talent, same number of hours to learn and master their craft

The difference: the tool they are using

STEM/STEAM Education Impact



- **Technical skills**, troubleshooting, repairing, and utilizing software and modern equipment.
- **Communication and cooperation skills** to listen to customer needs or interact with project partners.
- **Teamwork skills** for successful project completion.
- **Creativity** to solve problems and develop new ideas.
- **Leadership skills** to lead projects or help customers.
- **Organization skills** to keep track of lots of different information.
- **Time management skills** to function efficiently.

Statistics of Impact of FIRST Robotics Programs

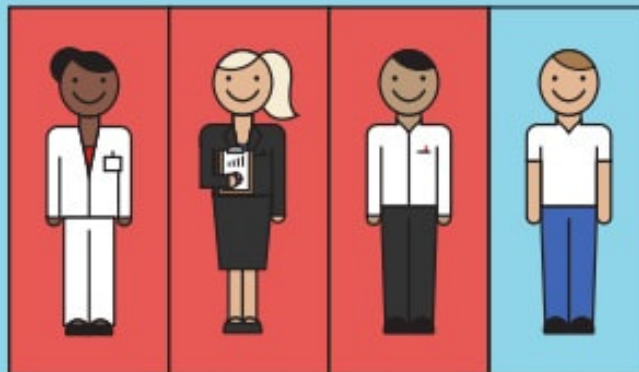
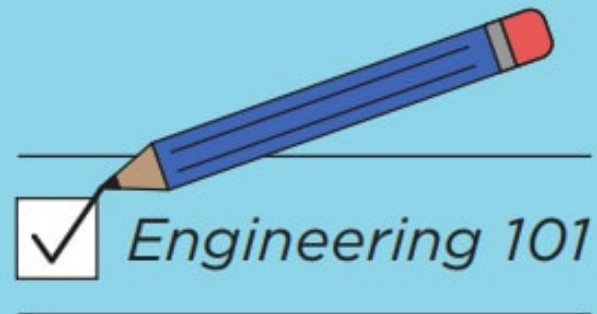
READY FOR A CAREER IN STEM.

FIRST ALUMNI ARE

2.6x

more likely to enroll in an
ENGINEERING
course their freshman year

(than a matched comparison group of students)



OVER
75%

of *FIRST* Alumni are in a
**STEM FIELD AS
A STUDENT OR
PROFESSIONAL**

Statistics of Impact of FIRST Robotics Programs

GAINS IN WORKFORCE SKILLS.



COMMUNICATION

76% of students reported gains



CONFLICT RESOLUTION

93% of students reported gains



TIME MANAGEMENT

95% of students reported gains



PROBLEM-SOLVING

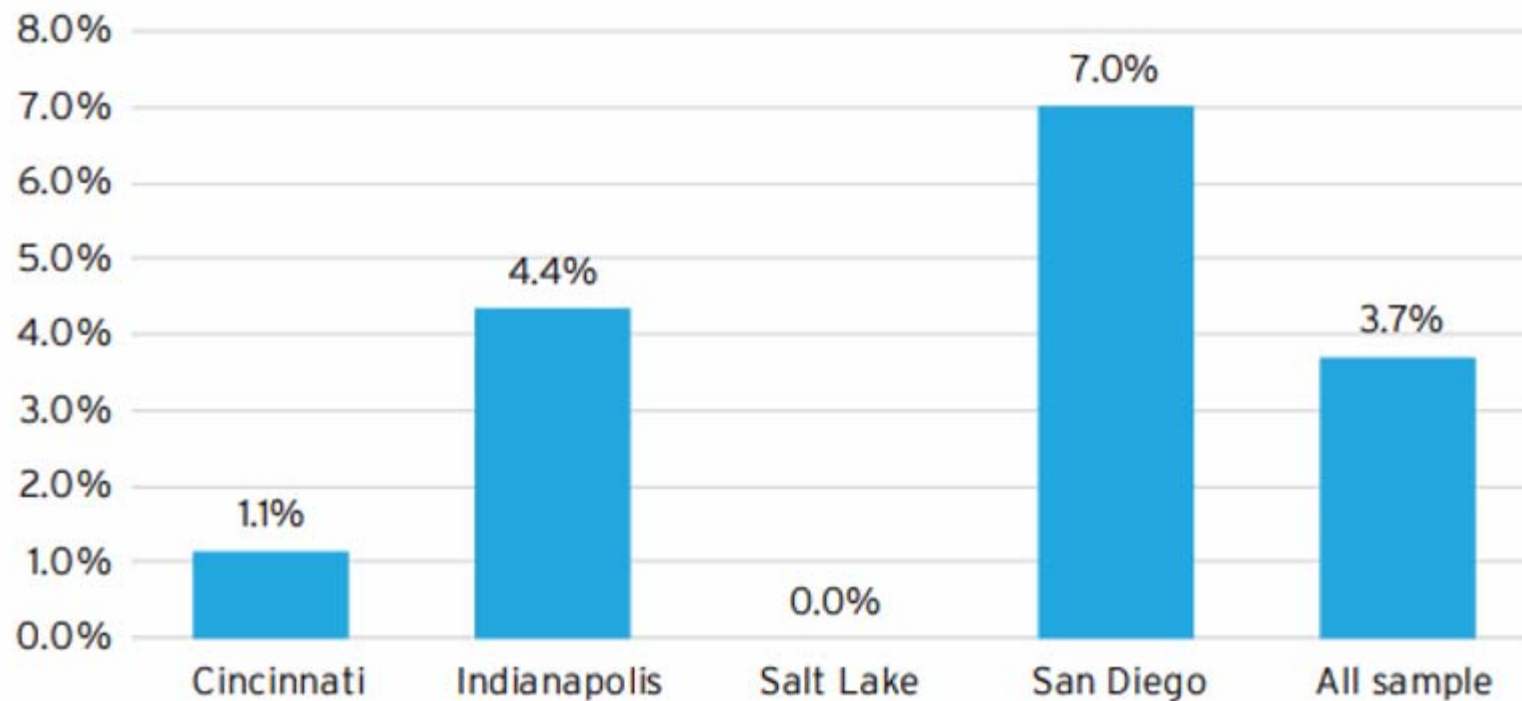
98% of students reported gains



2) Cincinnati needs more job training incentives

Job training is not a significant share of incentives

Share of incentives targeting job training



Source: Brookings analysis of data from city of Cincinnati, city of San Diego, Indy Chamber, Salt Lake County,

Increased focus on Workforce in other cities



Developing high-tech Valley workforce at YSU's new Excellence Training Center

\$12M center opens on YSU's campus

NEWS

JUL 27, 2021

YOUNGSTOWN — It started as a vision to develop and sharpen the Mahoning Valley's skilled workforce to meet a growing need in the region, then evolved into something tangible with a \$12 million facility, but the work is just beginning.

3) Broadband for the whole region

NETWORKING

Businesses Benefit from Municipal Broadband

High-speed networks spur economic development in Hudson, Ohio and Chattanooga, Tenn.

In September 2015, Velocity Broadband began connecting businesses. "We have a backlog of companies that want us to hook them up," Hilbish says. The broadband network has also helped Hudson court other companies.

"As soon as we announced the 1 gigabit service, we got calls from businesses outside the city who wanted in," says Comeriato. "Realizing they'd have access to fast, reliable broadband was the tipping point in finally making the decision to come to Hudson."



Businesses need access to fast, reliable bandwidth if they're going to compete, and we needed to do whatever we could to provide that to them. ”

Bill Hilbish, IS Manager for Hudson



The City That Was Saved by the Internet

Job opportunities are drying up in towns without broadband. Chattanooga, Tennessee turned around its fortunes by building the fastest internet in the United States.

How Google Fiber Changed Kansas City

Updated November 10, 2017

By [Jeremy Hobson](#) 



In the last four years, first-time employers — many of them startups — added 84,000 jobs in the city, according to the data firm [KCSOURCELINK](#). Available investment capital has increased 290 percent. New tech businesses have sprung up offering online marketplaces, farming analytics, pet data, public finance systems, athlete-only social media networks and plenty of others.

● ECONOMICS

Kansas City clocks the fastest internet in the US — if you can afford it

Google Fiber recently announced its upgraded 2-gig internet service in Kansas City. It will help families who can afford it, but doesn't solve the region's digital divide.

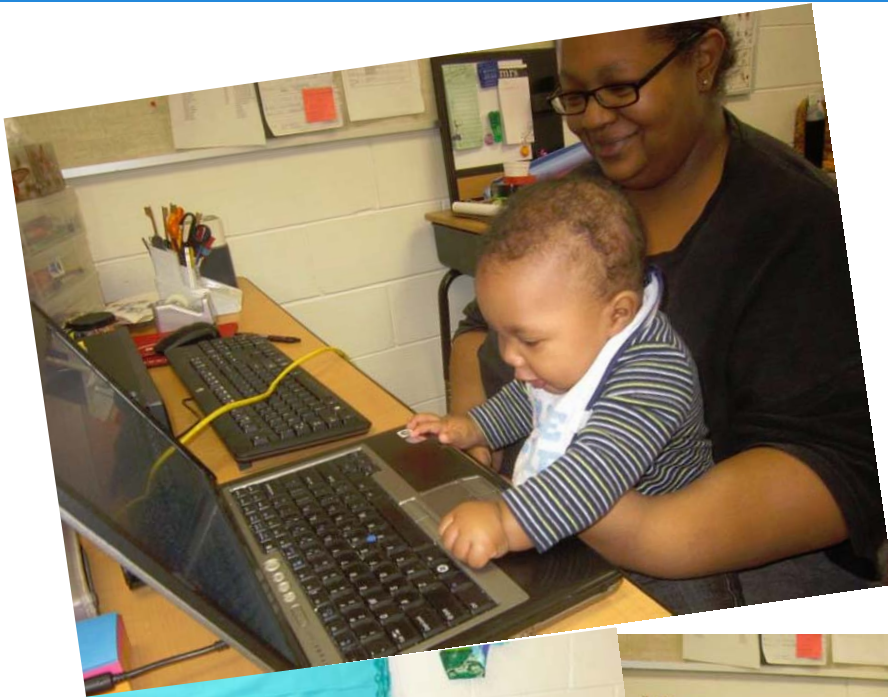


by [Celisa Calacal](#)

April 19, 2021



Future Steve Jobs from Cincinnati?



What will it take to have the next Steve Jobs come from Cincinnati?