

CEO Briefing

Engineering

December 17, 2013

Dr. Kamela Patton, Superintendent



VISION

That all students will complete school prepared for ongoing learning as well as community and global responsibilities.

MISSION

To provide exceptional educational opportunities that motivate and engage each student.

GOALS FOR ENGINEERING PROGRAM

- **Engineering program in 7 high schools**
- **Provide rigorous STEM instruction**
- **Teach students to learn and apply the design process, teamwork, communication, critical thinking and problem solving strategies**
- **Build potential employees for local businesses and stakeholders**
- **Provide work based learning opportunities for high school students**

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NATIONAL ACADEMY FOUNDATION - AOE



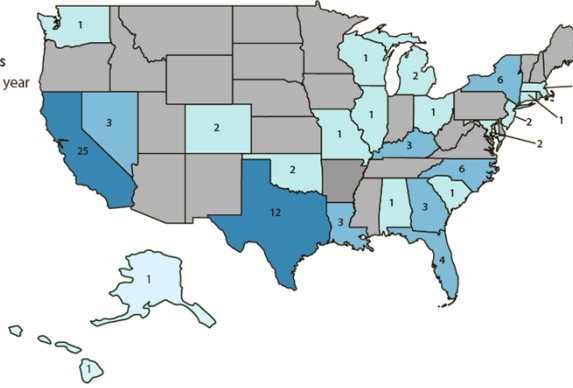
- **integrates career-themed subject matter with project-based learning**
- **rigorous, industry-validated curriculum**
- **cutting-edge methods of increasing literacy**
- **industry standards and practices informed by industry**

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AOE NETWORK

NETWORK

88 academies
+42% from last year



26 states

highest concentration of academies
 25 California
 12 Texas
 6 New York
 6 North Carolina
 4 Florida

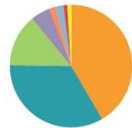
58 districts

highest concentration of academies
 8 Dallas
 6 Charlotte-Mecklenburg
 4 Miami-Dade
 4 New York City

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AOE STATISTICS

STUDENTS



11,396 students
+83% in the last two years

- 42% Hispanic/Latino
- 34% Black/African-American
- 14% White
- 5% Asian
- 2% Other/Multi-Racial
- 2% Unreported
- 1% Pacific Islander
- 1% Native American/Alaska Native

28% of students are young women
In 2010, women earned only 18% of undergraduate engineering degrees

69% of students qualify for free and reduced price lunch

14% are English Language Learners

OUTCOMES



97% of seniors graduated



82% of graduates plan to go to college

- 50% plan to attend a 4-year college
- 28% plan to attend a 2-year college
- 4% plan to attend college part-time
- 5% plan to work full-time

ADVISORY BOARD MEMBERS

1,244 advisory board members

INTERNSHIPS

442 internships (2011-2012)

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WHAT WERE THE OPTIONS?

- CCPS explored three options:



the **STEM** academy®
establishing engineering habits of the mind

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PLTW CURRICULUM— AT A GLANCE



SPECIALIZATIONS



Foundation Courses

IED

Introduction to Engineering Design

Students use the design process and industry standard 3D modeling software to design solutions to solve proposed problems.

POE

Principles Of Engineering

Students are exposed to major concepts like mechanisms, energy, statics, materials and kinematics.

Specialization Courses

AE

Aerospace Engineering

Students explore the evolution of flight, flight fundamentals, navigation and control, aerospace materials, propulsion, space travel, orbital mechanics, ergonomics, remotely operated systems and related careers.

BE

Biotechnical Engineering

Hands-on projects engage students in engineering design problems related to biomechanics, cardiovascular engineering, genetic engineering, tissue engineering, biomedical devices, forensics and bioethics.

CEA

Civil Engineering & Architecture

Students design and develop residential and commercial properties using 3D architectural design software.

CIM

Computer Integrated Manufacturing

Students explore manufacturing history, individual processes, systems and careers. The course also incorporates finance, ethics and engineering design.

DE

Digital Electronics

Students are introduced to the process of combinational and sequential logic design, engineering standards and technical documentation. They are also exposed to programming integrated circuit kits and microcontrollers.

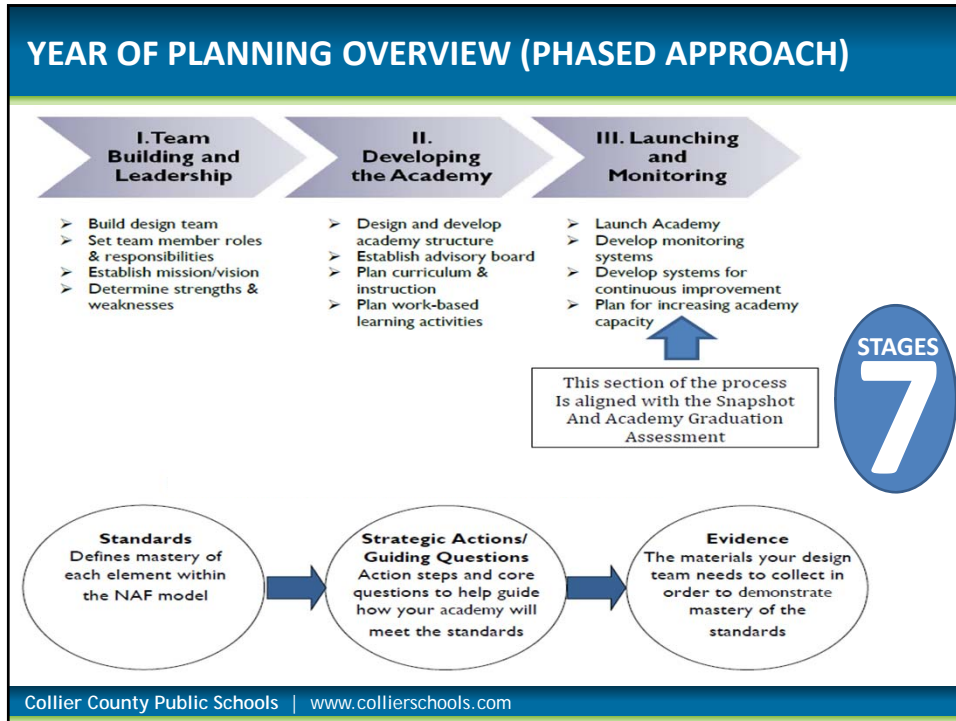
Capstone Course

EDD

Engineering Design & Development

Students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process.

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CURRENT STATUS

- NAF Partnership in each high school
 - Year of planning, full implementation for the 2014-15 school year
 - Commitment of technology and engineering laboratories in each school
- Continuation of Project Lead the Way engineering program at Naples High School
 - Expansion of PLTW curriculum/program to other high schools
- Immokalee Technical Center PLTW affiliation for Machining
- East Naples Middle School provides the Gateway to Technology Program
 - Expansion of program to Immokalee Middle School
- Partnership with PLTW for teacher professional development, curriculum support and hands on instructional materials.
- Establishment of a district wide engineering advisory board

DISCUSSION TOPICS

What experiences do students need to have in order to become successful in STEM focused industries?

What does an engineering company, such as yours, look for in future employees?

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DISCUSSION TOPICS

What opportunities can be developed for student internships and teacher externships?

What opportunities exist in the community for support?

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DISCUSSION TOPICS

Do you have any suggestions of how to reduce the cost of implementing the engineering programs in Collier County Public Schools?

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DISCUSSION TOPICS

How can the program be structured to best fit the needs of community stakeholders?

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DISCUSSION TOPICS

Would you be interested in joining an advisory board for the engineering programs in Collier County Public Schools?

Who would you recommend to be part of an advisory board for the engineering programs in Collier County Public Schools?