Formal Education

► MC2 STEM High School
  ▪ Started in 2009
    ► (State initiative – Platform School)
  ▪ Focus on STEM
    ► (Science, Technology, Engineering and Math)
    ► Project-Based Learning
    ► Partnerships (GE Lighting, Science Museum, Universities)
  ▪ First graduated class 2012
    ► 98% graduated – 97% going onto college or military
    ► Many following STEM disciplines
<table>
<thead>
<tr>
<th>Grade</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>9th Grade</td>
<td>Great Lakes Science Center, Downtown Cleveland, Exposure to exhibits, Partnerships, NASA, FABLAB, Situated on Great Lakes</td>
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<tr>
<td>10th Grade</td>
<td>General Electric (GE) Lighting and Industries Headquarters, Tutoring &amp; Mentorships, Sophomore Engineering &amp; Design Project, First Industrial park started by Thomas Edison, FABLAB</td>
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<tr>
<td>11th &amp; 12th Grade</td>
<td>Community / Business Internships, College Level Classes, Real world experiences, FABLAB</td>
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</tbody>
</table>

**Mobile FABLAB:**
- City, State, Country wide exposure
- Local K-8 Curriculum and Implementation
Mobile FABLAB

- Grant Funded Outreach to District, City, Community, and Education
- STEM Pedagogy
- Increase DIY, Maker, Hacker awareness and network
Benchmark Alignment

National / State Benchmarks

Capstone Units

Capstone BIG IDEA

SCIENCE

MATH

ENGINEERING

ENGLISH

ART

SOCIAL STUDIES

National / State Benchmarks
Project Based Learning
Lightbox Capstone

Sketch-Up

1. Draw a built 3D box
   a. 11 1/4" x 23 3/4"
   b. Make it a component

2. Draw Front
   a. 11 1/4" x 11 3/8"
   b. Yokes tall
   c. Make component
d. Duplicate to other side

3. Draw Side
   a. 23 3/4" x 3/8"
   b. Yoke tall
   c. Make component
d. Duplicate to other side

4. Add dimensions
   1/4" 2" 4" 1/8" on all sides

5. Add Tabs
   a. Under each component...
      i. Me tape measure to mark 1" marks along edge
      ii. Draw 2" box on center
      iii. Will reach back 3/8" to create a tab
   b. Repeat for all sides

6. Add animation
   a. Create 4 scenes: Isometric, Top, Front, Side
   b. Export to .avi graphs x 4
   c. Export to movie (animation)

7. Put on TASS/STREAM
Lightbox Capstone
Poem: 

**English** 
**Earth 3000**

It’s 2009 and everyone is committing a crime  
By picking up dog poop and then in the garbage it droops

When you try and to be sustainable  
But then you want a wooden table

You are cutting down trees  
And leaving no where for leaves

It’s 2020 and the streets are dirty and crummy  
That’s how it’s going to look if make a 1000 page book

Trying to live right but always putting up a fight  
With the Earth by making a sunny skirt

It’s 2020 and the streets are clean as day  
We can walk outside and breathe the clean way

It’s now 3000 there’s barely any human life  
People are dead or living in strife

Point blank stop treating the earth like dirt!
CMSD PreK-8 STEM Initiative

- Race to the Top – Federal STEM initiative
- Cohort of six newly designated STEM school
  - Project Based Units
  - Science driven projects
  - Benchmark alignment
  - Teacher development
  - Vertical and horizontal collaboration

- Mobile FABLAB experience
  - http://www.pk8stem.com
  - http://mc2stemhs.wordpress.com
K-8 Capstone Process

Standards / Benchmarks

Big Idea
Essential Questions
Learning Outcomes
Lantern Project

Geometry
Social Studies
Art
English
Engineering
Professional Development

► Workshops
  ▪ Teaching the teachers
  ▪ Teaching Students
  ▪ Mobile Fablab usage

► PDI Professional Development Planning
  ▪ Project Prototyping

► Center for Innovation in STEM
  ▪ Great Lakes Science Center 2012-2013
Professional Development

- Small group + Long Hours
  - 2-3 individuals
  - Long (All) Nights

- Practice, practice, experiment
  - Demo
  - Trial
  - Experiment