

Presentation to the Board of Education
December 11, 2014





Engineering

- Students apply what they know to invent, design, build, and/or improve structures, machines, devices, materials, and processes.
 - Our goal is for students to continue to be exposed to engineering principles and build on that knowledge
 - Teachers will continue to incorporate STEAM/Engineering concepts into students' coursework
 - Students will be able to apply what they are learning to context outside the classroom
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Engineering at Jackson Avenue

The students are constructing devices that demonstrate how electricity is created and converted from one form to another.

Students are building circuits and are using mechanical energy (energy from themselves) to produce electricity which will travel and provide the electricity needed to light up a light, sound a horn, or spin a wheel.



Engineering & NGSS

- Science labs (grades 3-7) are using Knowing Science Program which has Engineering curriculum embedded within
- Knowing Science is aligned with the Next Generation Science Standards



Engineering at the Middle School


Students in the Engineering & Design class use the jigsaw to construct a fully functioning desk clock that demonstrates the creative concepts that go into the building process.



Engineering at the Middle School

- Students design and race vehicles that are levitated a short distance away from a guide using magnets to create both lift and propulsion.
- The students research and write a short paper on maglev transportation. They then build and construct an air powered maglev model that is evaluated on the track using precise optical gates located at the beginning of the track and the end of the track spanning 12 feet.
- The maglev car is timed and the time elapsed may be used to calculate average velocity. General design principles and practices such as iteration and efficiency (weight), tradeoffs, etc. are emphasized and practiced by the students.



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- Technology & Art will be integrated
 - Learning across disciplines will be seamless
 - Candy Bar project
 - Maker Space
 - Coding with 5th & 6th grade
 - Greenhouse Project

Future of Engineering at MMS


Engineering at the High School

- Technology for 2015-2016
 - Options for students to take Robotics course
 - Redesign Design & Drawing for Production I to include engineering principles & mechanics
 - Possible creation of an Introduction to Engineering principles
 - Physics
 - Students work with classmates to design a small car and adapt the car so that it can go the farthest without an engine.
 - Science 8
 - Flight & Resistance: Students researched on iPads the best designs for airplanes and constructed their own to test out in class
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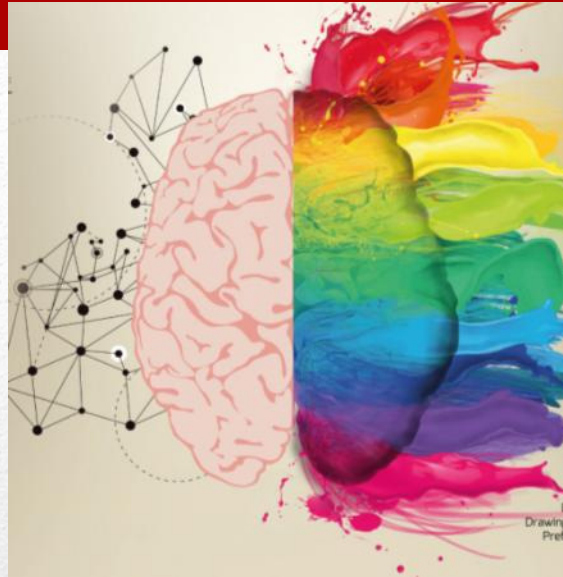
Engineering at the High School

- All 8th graders complete quarterly STEAM projects in Algebra
 - Quarter 1: The Art of the Fibonacci Numbers
 - Quarter 2: Buildings and Building
- Library Maker Space: Little Bits, Legos, Erector Sets, Electronics Graveyard
 - Challenges to focus Makers
- Exploring Computer Science
 - All 9th Graders



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- Work with Business, Technology & Art teachers to create opportunities for students to explore Engineering principles
 - Expand the Technology lab
 - Digital Production class
 - Music/TV studio
 - Maker Space expansion

Future of Engineering at MHS



art...

Where does it fit?



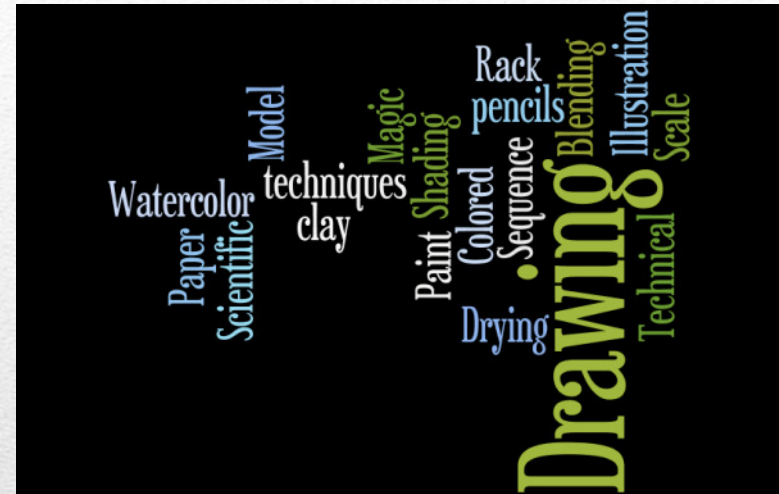
Curriculum Writing – Summer 2014

- Rewrote curriculum for grades 3-6
 - Interdisciplinary Focus (NGSS)
 - Collaboration with colleagues in science
 - Focus on Artistic Skills
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- Scientific Drawing of “never discovered” frog or plant
- Sculpture of new species
- Reinforcing of science vocabulary
- Introducing artistic vocabulary



3rd Grade



3rd grade continued...

- Stable Sculpture



6th Grade

- **Flower Painting**
- Students will study plants in nature and create a close up painting of a section of a flower/plant.
- They will use an iPad to work with cropping and composition. Tempera paint will be used to create the painting.
- Microscope inspired abstract leaf prints



6th grade continued...



6th grade continued...

Middle
School
3d
Design



3D and beyond...

High School Development

- New Materials
- Areas for Exploration
 - AP Art, Digital Artistry,
Computer Graphics/Web Design



Moving Forward

Careers





A word cloud of college majors on a black background. The text is arranged in several diagonal lines. The colors of the text are red, yellow, and white. The majors listed are: Design And Visual Communications, English, Electrical Engineering, Communication Sciences And Disorders, Architecture, Art History, Criticism And Conservation, Theater Arts, Computer Science, Film Studies, Mass Communications, and Studio Arts.

Design And Visual Communications
English
Electrical Engineering
Communication Sciences And Disorders
Architecture
Art History
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College Majors
