Calhoun Academy of the Arts S.T.E.M. Action Plan

Written by: Jenna Hallman, Casi Esqueda, Barbara Koch, Quinn Pearson

S- Science
T- Technology
E- Engineering
M- Math

Big Ideas
To integrate S.T.E.M. into the curriculum at Calhoun the S.T.E.M. proposes the following BIG IDEAS!!

1. The students will need to start thinking like engineers
   The students will need to adapt to the trends of the future
   The students will need to improve their ability to:
   a. think critically
   b. imagine and create
   c. think abstractly
   d. become divergent thinkers
   e. ask intelligent questions
   f. communicate ideas

2. The teachers will need to become Facilitators: Not Sage on the Stage
   The teachers will need to plan lessons that allow for the ideas listed above in 1.
   The teachers need to sell it, don’t tell it: Stop giving answers.
   The teachers need to give students time to imagine and create

Timeline
To implement S.T.E.M. at Calhoun a timeline must be set into place. The action plan team proposes the following:

1. All fourth and fifth grade students will create and use Engineering Journals daily to write notes, create, and put their ideas down in the journal.
2. All fourth and fifth grade students will complete a week long S.T.E.M. capstone project at the end of each nine weeks, designing and creating based on the Science and Math Indicators.

Assessments
To assess achievement, our students will create portfolios each nine weeks using authentic documentation such as notes, journals, diagrams, graphs, and pictures. The teachers will also assess using teacher made rubrics.
Resources
In order to implement the S.T.E.M. action plan Calhoun will need to use resources from the following areas:
1. Office of Innovation
2. Business Partners
3. Area Marinas
4. Race Tracks
5. Parents and Friends of Calhoun students and faculty

Learning Experiences
Overall: Include engineering design process journals in daily science lessons
Specific Goals: 1 capstone project per nine weeks focused on that 9 week’s indicators.

Examples:
Fourth Grade:
**Weather:** Design a new or improved weather instrument that would function in severe weather. The project must include:
   a. directions for use
   b. buying materials
   c. a test to compare with actual tool
   d. share with group
   e. market their product
   f. design their portfolio

**Properties of Light and Electricity:** Use Safety Buzzers Lesson on page 38. The project must include:
   a. a series or parallel circuit
   b. an open or closed circuit
   c. a diagram with symbols
   d. information on buying their materials for the project by foot: cost vs. waste

Fifth Grade:
**Forces and Motion:** Design a Boat page 98.

**Landforms:** Problem: We need to explore the ocean floor. Students will create a submersible vehicle to explore both oceanic and continental landforms. Also Consider:
   a. the effect this will have on Earth’s ocean (Constructive or Destructive)
   b. the ability to explore all types of landforms including estuaries and barrier islands
   c. withstand waves, currents, and tides
   d. keep a log of data comparing landforms (Venn diagram/Chart)
e. find measurements to scale

**Ecosystems: Zoo Concept:** To create a self sustaining ecosystem. Project must include:

a. ecosystems
b. food web
c. limiting factors
d. buying materials
e. calculating area