Lesson Plan – Graph Paper Programming

Teacher: Ms. Mills Course: STEM

Date: 4/22/15 Grade: 7th

Standard:

**Maryland State STEM Standards of Practice**

**1. Learn and Apply Rigorous Science, Technology, Engineering, and Mathematics Content**

A. Demonstrate an understanding of science, technology, engineering, and mathematics content.

B. Apply science, technology, engineering, or mathematics content to answer complex questions, to investigate global issues, and to develop solutions for challenges and real world problems.

**2. Integrate Science, Technology, Engineering, and Mathematics Content**

A. Analyze interdisciplinary connections that exist within science, technology, engineering, and mathematics disciplines and other disciplines.

B. Apply integrated science, technology, engineering, mathematics content, and other content as appropriate to answer complex questions, to investigate global issues, and to develop solutions for challenges and real world problems.

**5. Engage in Logical Reasoning**

A. Engage in critical thinking.

B. Evaluate, select, and apply appropriate systematic approaches (scientific and engineering practices, engineering design process, and/or mathematical practices).

C. Apply science, technology, engineering, and mathematics content to construct creative and innovative ideas.

D. Analyze the impact of global issues and real world problems at the local, state, national, and international levels.

Objective: Students will engage in critical thinking, logic, persistence, and creativity to assist them in problem solving through computer programming.

Vocabulary:

Vocabulary Quiz on 5/8/15:

Computer Programming, Algorithm, Program, Loop, Debugging, Conditionals, Binary, Event, and Digital Footprint

Materials: Mozilla Firefox, Graph Paper, Graph Paper Programming 4x4 Activity Sheet, ad Graph Paper Programming Assessment Worksheet

Essential Questions: Why is coding important and useful?

Warm Up (10-12 minutes): TypingWeb (20 mini lessons)

Lesson Plan:

1. Introduction/Engagement: Discussion of lesson objectives, introduce new vocabulary, and show a short video
2. Modeling/Exploration: Teacher demonstration and/or walk through a demonstration of computer programming
   1. <http://studio.code.org/sections/OAOEFV>
3. Guided Practice/Explanation: Teacher leads class in graph paper programming activity.
4. Independent Practice/Elaboration: Teacher isolates small groups or individuals in order to practice programming.
5. Closure/Evaluation: Teacher hands out Graph Paper Programming Assessment Worksheet

Homework: None