Teacher: Steve Sabaugh

Unit Plan: Introduction to the BBC micro:bit

Grade and Content: 9th-grade Engineering

Date: Day 2 of micro:bit

Lesson: Button Logic
Overall Goal/Objective of Lesson: Students will learn how to emulate electro-mechanical buttons like toggle and selector switches with software using if/else and if/else if (chained if) statements and the use of flag variables

Content Objectives (nouns) -Students will understand how analog functions in components can be emulated with software -Students will understand how chained if/else if statements can be used -Students will understand how flag variables can hold the state of a button press	**Assessments** Call on students for review of key concepts
Skill Objectives (verbs/Common Core Standards) - Students will be able to program buttons to create a gallery of images. - Students will be able to to initialize flag variables and change status based on events. - Students will be able to create a programs that emulate a toggle switch (on/off) and a selector switch using if/else and chained ifs with flag variables 9-12.CT.8 Develop a program that effectively uses control structures in order to create a computer program for practical intent, personal expression, or to address a societal issue.	**Assessments** Students will create a program in the micro:bit IDE that turns images on and off with a button or other input and displays a series of images going left (button A) or right (button B).

Key Content Vocabulary:
electro-mechanical switch
flag
chained if else

Materials
Chalk Board, Smartboard for projection, Chromebooks

'Assignments With Notes and Announcements' Google sheet
Students Glitch web page

Time Allotment	**Anticipatory Set**	**Plans for Differentiation/ Culturally Responsive Instruction**
3	1. **<u>Do Now:</u>** Students will log into the google classroom. Get there 'Assignments With Notes and Announcements' doc open.	
12 5	**Mini-Lesson/Direct Instruction (with Modeling)** 1. **<u>Mini-Lesson:</u>** Explain how computer buttons only send pulses of data to the processor. In order to know the state of a button being pressed, we need to have a flag variable. Demonstrate the electro-mechanical light switch in the room has to be "programmed" with software to do the same thing in computers. 2. **<u>Modeling:</u>** I will demo how to do each task. Students can code along or just watch	**Plans for Differentiation/ Culturally Responsive Instruction** -Modeling is done so students can see how to use this strategy -Problems are dissected and explained in detail as I model the strategy

20	**Independent Practice (with Teacher Monitoring)** 1. **<u>Independent Assessment:</u>** Students will work independently on program in micro:bit	**Plans for Differentiation/ Culturally Responsive Instruction** -myself and co-teacher are available for direct assistance
5 minutes	**Closure** 1. **<u>Share-Out:</u>** Teacher will ask students to review concepts they have learned in their own words and explain the assessment for tomorrow's lesson	**Plans for Differentiation/ Culturally Responsive Instruction**