

Presenter Name: _____

Location: 260

Subject (Circle All That Apply): **Science** **Technology** **Engineering** Arts Mathematics

Grade Level (Circle All That Apply): Middle School **High School** **Collegiate**

Topic Title: Engineering VR

Lesson Focus and Goals

SUBJECT OBJECTIVE:

1. Understand the concept of basic assembly and block coding.

JHSL OBJECTIVE:

1. Work with students to get them a hands on experience with Virtual Reality technology in the classroom.
2. Expose students to critical thinking skills in the STEM field.

Texas Essential Knowledge and Skills (TEKS)

Principles of Applied Engineering; c.7.A & c.7.B. **Principles of Technology**; c.6.A & c.6.B. **AC/DC Electronics**; c.12.A, c.12.B & c.12.C. **Robotics I**; c.3.A, c.3.B, c.6.A & c.6.D. **Robotics II**; c.5.E. **Engineering Design and Presentation II**; c.7.B & c.7.D. **Practicum in Science, Technology, Engineering, and Mathematics**; c.2.A, c.2.C & c.5.A. **Extended Practicum in Science, Technology, Engineering, and Mathematics**; c.3.A. **Computer Science I**; c.4.E, c.4.H, c.4.W

Structure/Activity

1. **Halliburton Introduction Talk** (*approx. 5 minutes, only if not have been completed before with students*)
Even though Halliburton is an oil and gas industry, Halliburton is also very invested in the next generation of STEM Workforce. The Javelina Halliburton STEM Labs provide the opportunities to enhance high level critical thinking and problem solving skills associated with sciences, technology, engineering, math and geosciences (STEM) to talented, first-generation, at-risk and underserved high school and undergraduate students. Halliburton provides meaningful engagement and resources for students that want to explore the engineering field.
2. **Project Introduction** (*approx. 5 minutes*)
Students will be introduced to the basic process of an assembly using a robot that they will then learn how to make move using simple block coding.
3. **Level 1** (*approx. 4 minutes*)
Students will be given the choice of robot they would like to create, which is limited to one as of right now. After, students will choose whether they would like a simple or more complex assembly of the robot.

4. **Level 2** (*approx. 2 minutes*)
After assembling the robot students will enter a tutorial on how to make the robot move via block coding. Only one method is introduced initially, so students will learn the method itself and the appropriate parameters they must enter.

5. **Level 3** (*approx. 20 minutes*)
Students will now be given another tutorial with the same movement method on how to move the robot from one point of a maze to another. After 2 simple exercises students will be expected to move and rotate the robot through longer and more difficult paths.

Learning Objective

Content Review

Students should know that...

- Any object is a culmination of other objects.
- Basic fundamentals that assemblies require programming.
- Coding should be a complicated process that takes trial and error.

Students have been asked...

1. Have you built a robot before?

2. Do they understand what block coding is?

3. What do the various arguments inserted inside a method do?

New Content

Students will know...

- How arguments input affects the program and the function of the robot.

Students will be able to...

- Understand the basic concepts of assemblies.
- Understand how block coding is structured.
- Understand how to enter parameters and how these arguments make the robot move.
- Have an idea of the trial and error programmers use in the real world.

Assessment

Students will be asked to complete a quick evaluation after the workshop so we can continue to improve our services.

Sources of Information: