

Presenter Name: \_\_\_\_\_

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

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

Topic Title: \_\_\_Oika\_\_\_

### Lesson Focus and Goals

**SUBJECT OBJECTIVE:**

1. To explain the origin of universe and thereby the development of life
2. To explain the different sections in the electromagnetic spectrum of light and their significance

**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.

**Engineering Design and Presentation II: c.8.C. Engineering Design and Problem Solving: c.4.E. Scientific Research and Design: c.4.D & c.4.E.**

### 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 immersed into 2 different levels; one explains the origin of the universe from singularity and the next level explains the electromagnetic spectrum of light and their significance.
3. **Level 1: The living cosmos** (*approx. 20 mins*)  
This level starts by explaining the origin of the whole universe from the singularity through big bang theory, formation of cosmos from the fundamental forces like gravity, nuclear and electromagnetic force. This level goes ahead and also explains the formation of the early life forms, followed by Mesozoic Era, when dinosaurs lived. Eventually, this level ends with the industrialization by the modern human.

4. **Level 2: In the light of the forest** (approx. 20 mins)

This level starts in the forest where the electromagnetic spectrum of light is explained. The electromagnetic spectrum has gamma rays, x-rays, ultraviolet rays, visible light, infrared, microwave and radio rays. Visible light is the only section of the light which can be seen through naked human eye. The students will be able to experience how the forest looks through all the different rays.

## Learning Objective

### *Content Review*

*Students should know that...*

- Big bang theory is the widely known theory of the origin of universe
- Hydrogen ion is also called as proton
- Light is represented in waveforms
- There are different rays like gamma, x-ray, ultraviolet, infrared, microwave and radio waves
- Each rays have different frequencies in the spectrum

*Students have been asked...*

1. What is a Supernova?
2. What is singularity?
3. What are some fundamental forces of physics?
4. What is a cosmos?
5. What is an electromagnetic spectrum?

### *New Content*

*Students will know...*

- That electromagnetic spectrum is used to describe the entire range of light using frequencies
- Formation of earth surface from the big bang theory
- How the life forms started as primitive ones in the sea and later developed into big animals including dinosaurs

*Students will be able to...*

- Understand the formation of universe from singularity
- Explain the different rays present in the electromagnetic spectrum
- Explain how life forms started in the earth
- Explain the different laws of physics involved in the formation of the cosmos

## Assessment

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

**Sources of Information:**

1. Oika application in Oculus

**Note:** This application has some nudity.