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Curriculum Units by Fellows of the National Initiative
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How Gravity Impacts Life

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Without gravity, the Universe as we know it, would not exist; there would be no Sun, no Earth, no life… period! Because gravity determines the curvature of space-time, according to one physicist, the Universe would be a "completely flat and featureless" wasteland.[1] This interdisciplinary unit (ten lessons) is designed to teach students about the micro and macro impacts of gravity, from space exploration to cell development to the possibility of alien life.

Students will focus on three essential questions: 1) What is gravity? 2) How does gravity affect life and space travel? 3) Does gravity play a role in evolution? The crosscutting science concepts will guide students to articulate the cause and effect of gravity on human health, build a scaled Solar System model as an example of a gravitational system, look for patterns of life, and support arguments explaining the advantages and disadvantages of living on a more massive (heavier) or less massive (lighter) Earth-like exoplanet.

This unit will incorporate 5th to 8th grade Next Generation Science Standards (MS-ESS1-2, MS-PS2-1, MS-PS2-2, MS-PS2-4, and MS-PS2-5) with the Math Standard on the conversions of measurement units (5.MD.A.1), and the ELA Standards on writing opinion pieces (W.5.1).

Keywords: gravity, microgravity, weightlessness, evolution, astrobiology, exoplanets, Kepler's laws, Newton's laws, Einstein's law of relativity.

(Developed for Science, Math, ELA, and Writing; recommended for grades 5-8)