

FROM THE EARTH TO THE SKY: USING REAL-WORLD EXPERIENCES TO TEACH MATH AND SCIENCE

WALKER VALLEY HIGH SCHOOL, CLEVELAND, TN
MATH AND SCIENCE CROSS-CURRICULUM

Using a \$5,000 *Student Achievement Grant* received from the NEA Foundation, Luajean Bryan, working with her Walker Valley High School colleagues Eric Swafford and Jenny Borden, created a cross curricular lesson titled “From the Earth to the Sky.” The lesson was conceived as a means to



In the “Sky” portion of the lesson, students flew in untethered hot air balloons.

increase student interest in math and science courses.

Additionally, “From the Earth to the Sky” was envisioned as a program that might appeal to minority students and those of lower socio-economic status.

The funds received from the NEA Foundation allowed “From the Earth to the Sky” to come to life, as students conducted research in real world settings that allowed them to apply knowledge from lessons learned in the classroom. In April 2007, 22 physics and calculus students took part in the “Sky” portion of the lesson as they flew in untethered hot air balloons. After the flights, students used classroom concepts to determine the logistics of their personal experiences: the pressure needed in the balloon for flight, the height at which they flew, the distance covered, and the science of balloon descent.

The “Earth” segment of the lesson took place during October 2007, with 34 biology and pre-calculus students participating in an overnight, underground expedition at Cumberland Caverns. Like their “Sky” peers, the “Earth” group conducted field research which enabled them to use the tools they had gathered in class to explore and understand a complex network of caves.

Ms. Bryan and her collaborators noticed a number of encouraging results directly linked to this lesson. When “From the Earth to the Sky” was announced to students, immediate jumps were seen in both calculus and pre-calculus enrollment. Calculus enrollment leaped by nearly 67% for the 2007-2008 school year, while student enrollment in pre-calculus doubled. Representation by minority students and those of lower socio-economic status also increased. Perhaps most importantly, Ms. Bryan states that the lesson has brought positive attention to high-level math and science.

The students involved in “From the Earth to the Sky” came away from the project with several valuable lessons in the real world application of math and science. Aside from conducting their planned research, students were forced to contend with unforeseen issues ranging from a lack of water to study in the caves (due to a summer drought) to malfunctioning equipment. In these instances, circumstances demanded creative improvisation by both teachers and students, and new, equally valuable tests and experiments were created.

Ms. Bryan and her colleagues report that the overall curriculum has been affected by inspiring teachers to discuss in greater detail science and math expectations.



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NEA Foundation Grants

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