

1) Description of Project Need: As devastating as Hurricane Katrina was to our 6th through 8th grade students, it opened the door to math and science topics that affected all our lives. From wind force damage to organisms in waters that surrounded our communities, students demanded to know many “whys” behind the hurricane. Using TI-84 calculators, Calculator-Based Laboratories (CBLs) and school computers, students will connect math, science, writing and technology throughout the school year to the world that surrounds them.

2) Project Description: Students have always questioned why we study specific objectives in math and science and how the knowledge will affect them. Students are also intrigued by television shows like “CSI” and “NUMB3RS” because of the way forensics is used. Students assume that they would never be capable of qualifying for scientific careers because of the high level of mathematics involved. Texas Instruments, however, has technology and resources that would allow all students to discover how accessible those careers are to everyone, regardless of gender, race, or background. After the hurricane, I borrowed one TI-84 calculator and one CBR from Texas Instruments that included forensic resources. Just being in the presence of the technology and witnessing its capabilities made connections and created math and science discussions I never dreamed possible.

Using the calculator and CBLs, we will be testing water samples, measuring light refraction and intensity, testing batteries, discovering energy conservation laws, measuring force related to Newton’s laws, analyzing temperature effects to organisms and objects, and many other scientific activities. I have acquired many wonderful resource books to integrate math and science, but have always lacked the technology to implement the activities. The activities fall in line with math objectives taught throughout the year such as: evaluating numerical expressions, using formulas, solve real-life problems using operations of rational numbers (decimals,

fractions, mixed numbers), solve problems using fraction, decimals, and percents, explore equivalent ratios, solve problems involving proportions, calculate and apply unit rate to real-life situations, determine percent of increase and decrease, apply integers to real-life situations, write and solve equations that represent real-world problems, convert and solve word problems using English and metric systems of measurement, construct graphs from real-world data, interpret data and make predictions from statistical graphs, calculate measures of central tendencies and determine how outliers affect those measures, and predict patterns or generalized trends based on given data.

Science objectives to be addressed with the activities are: use weather maps for analyzing and predicting weather, determine physical and chemical properties through experiments (density, conductivity, reactions with acids and bases), apply Newton's Three Laws of Motions, measure transfer of heat between two objects, analyze mechanical waves, determine how cells react to their environment, investigate and research environmental concerns (land, water and air), explore how the position of the earth in relation to the sun has an effect on seasonal weather changes and investigate the interactive forces that produce weather.

3) Benefits to students: Students will increase retention of mathematical skills because they will be applying the mathematics to the science activities on a weekly basis. Students will be writing journal entries and lab reports that will be edited in their language arts courses so they will get real-world experiences in technical writing. Students will also be required to use Microsoft Excel and PowerPoint to present the data collected in their experiments. State math, science and writing scores would improve because the activities span the disciplines to help students make connections.

To measure what students learned, pre-tests will be given on the technology, math and

science skills to set a baseline. Formative assessments will be given as well as a summative post-test. Because the activities will span several disciplines, teachers involved will partner to write an evaluation at the end of the year describing the effectiveness of the technology. Teachers and students will document how this grant changes the ways students learn, comparing connections made with and without the program. Students will create presentations (using PowerPoint) that will describe the connections made across the disciplines using the technology.

4) Use of Funds: I recently received a \$1,000 grant from a local foundation to be applied to technology in the classroom. I will be pairing that grant to the \$2,500 grant from the Jordan Fundamentals Grant Program to purchase the following:

ITEMS	COST
Ten TI-84 Plus Silver Edition Calculators (\$125 each)	\$1250
Ten Calculator Based Laboratory 2 Systems (\$155 each)	\$1550
TI-SmartView Emulator Software (\$275 each)	\$275
Conductivity Probe for CBL2 (\$100 each)	\$100
Dual Range Force Sensor for CBL2 (\$110 each)	\$110
TI Forensics Activity Book (\$25 each)	\$25
Ten individual 10-meter measuring tape	\$80
Graduated Cylinder Set	\$25
Bacteria Experiment Kit	\$30
Protozoa Discovery Kit	\$35
TOTAL	\$ 3480

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Jordan Fundamentals Grant Program
Scholarship America
One Scholarship Way, P.O. Box 297
St. Peter, MN 56082

Dear Program Director(s):

As a long-time admirer of the outstanding contributions the Jordan Fundamentals Grant Program has made in the area of education, I am extremely appreciative of your donations for schools affected by Hurricane Katrina. Our schools and communities were devastated during the weeks following the hurricane as we were forced to live without power and water. Oak Grove Middle School suffered structural damage to buildings and classroom resources (textbooks, computers, technology, etc.) were ruined. Students were without educational services for approximately three weeks.

Upon their return to school, several students were emotionally damaged by the humbling experiences from the hurricane. Enrollment attrition was initially high due to students being relocated after homes were destroyed. Once enrollment normalized, students had a deep desire to understand what they had experienced with Hurricane Katrina. They wanted to know how wind force could devastate massive trees, what alternatives could have been used for water, why hurricanes could cause such wreckage within such large area, etc.

My plan for this grant isn't an individual lesson or thematic unit per se. The Jordan Fundamentals Grant will allow me to use the tragedy of Hurricane Katrina to connect all academic and technology disciplines within our school for years to come. Using graphing calculators, data collection devices, school computers, and emulator software, students will integrate objectives in mathematics, science, technology and writing year round. Instead of seeing these as separate courses, we will use their experiences with the hurricane to foster discovery through data collection. Students will see applications of what they learn and, through the use of technology, begin the process of becoming life-long learners. Appreciation and understanding math and science should not be reserved for specific groups of people – all students deserve the opportunity to discover the wonder of the world around them.

Thank you for the opportunity to help turn student distress into success.

Sincerely,

Shauna Hedgepeth
7th Grade Math Teacher/MathCounts Coach