



2012-13 Educational Grant Application
Deadline: Wednesday, March 7, 2012, by 4pm

Name of Grant: Foundation For Allen Schools Educational Grant / Ereckson Middle School Rocket Club

Name of person(s) submitted by: Doug Wilhelm

Campus/Department: Ereckson Middle School

Grade Level(s): 7th Grade / 8th Grade

Total Dollar Amount Requested: \$1000.00

Number of students who would be involved/impacted by grant: 20-30 Students

Name of principal or immediate supervisor who will approve submission: Phyllis Spain

Project Summary/Purpose: Be specific. What is the **student need** which the project will address? The purpose should describe **what students will know and be able to do** as a result of this project. Please explain how a problem will be addressed or a situation improved because of the grant. **(200 words or less)**

This past year Rocket Club was introduced to students at Ereckson Middle School. The purpose of this club is to create interest and excitement in the scientific fields of engineering, physics, and rocketry. Throughout the year, club members have designed, constructed, and launched a variety of rockets. Through this trial and error process, we discuss the engineering and physics associated with rocketry and apply that knowledge to the design and construction of our rockets. The program utilizes specific lesson plans to teach concepts through hands-on, application based learning activities. As a result of the program students have gained knowledge and understanding of scientific content and process skills. Furthermore, students have acquired a knowledge and understanding of the intricacies that are associated with rocket flight. In order to further continue our research and commitment to this scientific field of study, funds are required to purchase construction supplies, computer programs that assist in the development of rocket design, electronic altimeters to measure rocket flight altitude, and on-board cameras to measure the efficiency of mechanical systems. These materials will enable the expansion of the experimental data base, allowing for greater analysis of variables and providing engineering design assistance, simulation, and analysis.

Project Description: How will the project or program be implemented? Describe activities and tasks. Who is the target population and in what ways will they benefit? **(200 words or less)**

Through the rocket club program, students from each grade level meet weekly to engage in lessons designed to build knowledge and understanding through collaboration and hands-on activities. As students engage in the design and construction of their rockets, students will utilize computer programs as well as other literature and resources to maximize the efficiency of their design. Periodically, students test their designs through a process of trial and error as rockets are launched using specified propellant volumes and air pressures. Using such tools as computer assisted design programs, electronic altimeter and on-board video cameras, students will be able to measure and analyze the efficiency of their rocket's design and be able to create changes and adjustments to increase that efficiency. This complete scientific process not only addresses specific science content standards, but also teaches and reinforces experimental design process skills as well as the scientific method. Furthermore, various competitions such as the Rocket Club's Payload Challenge are embedded within the program to enhance excitement and motivation.

Foundation For Allen Schools: 2012-13 Educational Grant Application

Allen ISD Goals/TEKS: Which Allen ISD goals/TEKS does this project support? Limit to top two or three examples. **(50 words or less)**

Force, Motion, and Energy – The student knows that there is a relationship between force, motion, and energy.

(8.6A) Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.

(8.6B) Differentiate between speed, velocity, and acceleration.

(8.6C) Investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as vehicle restraints, sports activities, amusement park rides, Earth's tectonic plate activities, and **rocket launches**.

Measurements: What specific measurements will be used to evaluate the effectiveness of the project? **(100 words or less)**

Success is ultimately measured by participation, motivation, and success of each rocket design. Through a system of performance based assessments, students will display and illustrate knowledge from lessons and activities. Furthermore, students complete a formal written pre-assessment at the beginning of the year which is followed by multiple learning checks and quizzes throughout the course of the year. A final written post-assessment is completed at the end of the year. These assessment are results analyzed to determine content knowledge along with program strengths and weaknesses.

Teaching Methods: What teaching methods will be used to implement this project? **(100 words or less)**

A variety of teaching methods will be utilized throughout the course of the year. Lessons are student-centered and hands-on. Students engage in collaborative conversations as well as gain knowledge and experiences through discovery learning. Basic scientific content is delivered through teacher-centered presentations. However, the vast majority of the time is reserved for application of knowledge through student discovery activities and hands on learning activities.

Timeline for project: Funds will be available after September 1, 2012. **(50 words or less)**

Rocket Club is a school program that is currently serving academic needs of students and will continue throughout the course of this year and next. As soon as funds become available, supplies will be purchased and implemented into the program. Rocket Club will continue indefinitely, and therefore, the benefits of the grant funds will be ongoing.

Curriculum/System Support: Explain how this idea or project enhances/supports Allen ISD curriculum or existing systems. **(100 words or less)**

The content, lessons, and activities that are covered within the Rocket Club program support both 7th and 8th grade science curriculums. Specifically, the Rocket Club curriculum supports the 8th grade science unit of study which covers forces, motion, and energy (8.6A, 8.6B, 8.6C). Additionally, the program supports the 7th grade science unit of study which covers the effects of space and earth's atmosphere on organisms (7.9B).

Additional Comments: Include any additional comments or information. **(100 words or less)**

This past year was the first year to implement the Rocket Club program. It was rewarding to witness the engagement and excitement students had with the program. Tremendous effort was required to establish and implement the program, however, it was well worth it! Personal development occurred within the students and the sponsorship. Continuation and advancement of the program would be greatly assisted by the funds provided through the Foundation For Allen Schools. For further information about the Rocket Club program, I would encourage the exploration of the Ereckson Middle School Rocket Club website <http://allenisd.org/domain/1217>

