***USU Extension Grant***

*Project Leader:* Cathy Hashimoto

*Project Title:* 4-H Robotics and Science for South Kearns and Magna Elementary Schools Afterschool Programs

*Beginning Date and End Date:* June 1, 2015 to May 30, 2016

*Total Requested:* $9,828.09

*Project Objectives:* Expose two elementary afterschool programs to science through hands-on science lessons and activities, robotics, youth teamwork teaching, then assessing the impact of such exposure with their ability to program a robot, showcase the science activities and a demonstration of the robotic teams at an open house for family and community.

*Project Results:*

**Impacts**

Promoting STEM education in schools is becoming increasingly important as society progresses. The aim of this program was to introduce students to STEM by providing fun and educational outlets for them to combine creativity and STEM related skills and experiences. As more companies express interest in having not only students with knowledge, but the ability to use tools as well, we focused on providing different outlets for students to build, work, and think.

At our two target schools (Kearns and Magna elementary) we initiated two programs to introduce students to thinking like scientists; by providing a Lego robotics program and a rocketry program that not only got students building and creating, but also introducing them to key scientific concepts and areas of interest in engineering, chemistry, physics and math, while also emphasizing their ability to combine creative concepts like art and writing. Not only did we provide this opportunity to 4-6th graders, we gave these students opportunities to teach their younger peers within the Afterschool program some of the concepts they had learned themselves.

Our impacts focus on the 4-6th grade students who were a part of the program for the entire year. We broke down what was taught into several subject ranges and asked students individually on their knowledge of material towards the end of the program. No pre-program data was collected, but the aim of the program was to encourage STEM education as fun and exciting as well as to test retention of key concepts in STEM.

Concepts taught were as follows:

* Scientific Method and experimental design
* Engineering Design Process
* Chemistry basics (periodic table and basics of materials)
* Electricity & Magnetism
* Physics concepts (Newton’s laws)
* Aerodynamics & Rocketry concepts
* Robotics

Within each concept we aimed to get across specific points and ideas, and solidified and built off them the entire year we had with the students. The results were recorded by asking each student individually what they could remember within each concept, and if enough of the critical information was found to be known, we gave them a pass, which is indicated by an X on the following chart.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Magna** | **Student Name** | **Grade** | **Scientific Method & Experimental Design** | **Engineering Design Process** | **Chemistry** | **Electricity & Magnetism** | **Physics** | | **Aerodynamics & Rocketry** | | | **Robotics** |
|  | Chris | 6 | x | x | x | x | | x | | x | x | |
|  | Alex | 5 | x | x | x |  | |  | | x | x | |
|  | Ethan | 5 | x | x | x | x | | x | | x | x | |
|  | Lara | 4 | x |  | x | x | |  | | x |  | |
|  | Ember | 4 | x | x | x | x | | x | | x | x | |
|  | Ashley | 4 | x |  | x | x | | x | | x | x | |
|  | Alex | 4 | x | x | x |  | |  | | x | x | |
|  | Bailey | 5 | x | x | x | x | | x | | x | x | |
|  | Samantha | 4 | x | x | x | x | |  | | x | x | |
|  | Holly | 5 | x | x | x | x | | x | | x |  | |
|  | Aiden | 5 | x | x | x |  | | x | | x | x | |
|  | Hugo | 5 | x | x | x | x | |  | | x |  | |
| Kearns |  |  |  |  |  |  | |  | |  |  | |
|  | Destiny | 6 | x | x | x | x | | x | | x | x | |
|  | Alex | 6 | x |  | x | x | | x | | x |  | |
|  | Chris | 4 | x | x | x |  | | x | | x | x | |
|  | Sergio | 5 | x |  | x | x | | x | | x | x | |
|  | Audiel | 6 | x | x | x | x | | x | | x | x | |
|  | Maria | 5 | x | x | x | x | | x | | x | x | |
|  | April | 4 | x | x | x | x | | x | | x | x | |
|  | Chad | 4 | x |  | x |  | |  | | x |  | |
|  | Jaredy | 4 | x |  | x |  | |  | | x | x | |
|  | Alicia | 5 | x | x | x | x | |  | | x |  | |
|  | Collette | 6 | x |  | x | x | |  | | x | x | |