Foundation For Allen Schools Grant Application

Scholarship Fund Amount: $0

Application #: AP193251

Applicant First Name: Sara

Applicant Last Name: Holloway

Applicant Email Address: sara.holloway@allenisd.org

Gender:

Cell Phone #:

High School:

Post Secondary School:

Application Status: Submitted

Application Questions and Answer

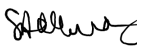
Question	Answer
Preferred name/name that you go by:	Sara
Best phone number to reach you at:	+14697679131
Campus	Allen High School
Grade(s)	11;12
I have co-applicants:	Yes
Please provide your work-related Facebook contact information.	
Please provide your work-related Twitter contact information.	
Name of Grant	Modern Lab Interfaces for Physics
Please select the MAIN curriculum area your grant addresses.	Science / STEAM

Does your grant have a technology component?	No
Will other campuses be involved/impacted?	No
Will other grades be involved/impacted?	Yes
How many students will be involved in this grant?	400
Are there any additional funds available for this grant?	No
What is the problem, need or opportunity that this grant will address? Describe the impact of this project on your students.	TEA has set an expectation that all science classes meet a minimum requirement that 40% of the class time in a lab or field investigation. Our goal is to incorporate a variety of hands-on and inquiry type investigations to provide students opportunities to go deeper in their understanding of these complex concepts. This grant will impact on-level and Pre-AP/IB physics students by providing tactile, kinesthetic, and real world learning opportunities. This will ensure that we meet the learning needs of each student in the classroom. The equipment purchased with the grant will replace current technology that is incompatible with Chromebooks. The new technology will provide invaluable learning opportunities by allowing students to visualize and collect precise data. When precise data is collected students are able to draw inferences and recognize trends. The LabQuest Mini interfaces requested will work seamlessly with Chromebooks, allowing more students to access the data and labs without the fuss of laptops. Students can also utilize the interfaces with laptops, but as the district is leaning towards more Chromebooks being purchased, it is necessary to modernize some of our equipment to create access opportunities for our students. These equipment pieces can be used to allow on-level and Pre-AP/IB physics to provide tactile, kinesthetic and real-world learning opportunities in multiple units, including one-dimensional motion, two-dimensional motion, forces, momentum and impulse, simple harmonic motion, energy and work, and various conservation theorems.
	The on-level and Pre-AP/IB Physics teams are

How will the project or program be implemented? Describe activities and tasks. Who is the target population and in what ways will they benefit?	piloting the new technology of the LabQuest Minis to help bring our lab equipment up-to-date with use of Chromebooks. Once the two pilot teachers have learned the new programs, we can begin to roll out the new LabQuest Minis to more teachers, with our grant writers as the teacher leaders on this project. Using the updated interfaces, students can explore a variety of physics concepts. The LabQuest Mini allows students to connect the sensors we already have but will connect to Chromebooks. We can use the interfaces to add additional access points for our students to be able to utilize our amazing Vernier equipment with Chromebooks. It will help students and teachers to be able to utilize real-time data collection no matter what technology they have access to. This would not be replacing labs from the physics curriculum, but would increase the rigor of our questioning, learning and data collection. The sensors we already have will allow students to get instantaneous data that will help mitigate misconceptions they may have about velocity, acceleration, momentum, impulse, conservation theorems, and forces.
Provide a brief summary for use on the Foundation's website and social media.	Students within on-level and Pre-AP/IB Physics will use the updated LabQuest Mini interfaces with current Vernier probes to collect and analyze real-time data gathered during labs. Through these real-life experiences students will have an opportunity to master physics while developing 21st century skills such as collaborating, communicating, and problem solving.
	The new LabQuest Mini interface will allow students to confidently communicate their experimental findings, as well as bringing our coursework into 21st century technology. Our students will be far better academically prepared for future problem solving and college courses--as indicated in our graduate profile. The new interface will be utilized in nearly all of our units' signature lab in which we use our Vernier probes to gather data. This includes many content TEKs for Physics (4A, 4B, 4C, 4D, 6C, 6D, 7B). In addition, students will develop the skills to use equipment to make measurements with accuracy and precision and record data using scientific

Which Allen ISD goals/TEKS does this project support? Please provide 2 or 3 examples.	notation and International System units (TEKS 2F & 2G) TEK 2G: Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units; TEK 4A: generate and interpret graphs and charts describing different types of motion, including investigations using real-time technology such as motion detectors or photogates; TEK 6C: calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system; TEK 7B: investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wave speed, frequency, and wavelength;
What specific measurements will be used to evaluate the effectiveness of the project?	The effectiveness of this grant project will be measured in several ways.First, the students will be able to gather accurate experimental data using the Chromebooks to complete lab reports in experiments that utilize other equipment, such as low friction carts and tracks. These labs will help give the students a deeper understanding of Newton's laws of motion, forces, momentum, and impulse. Second, the LabQuest Minis will give the students valuable experience using technology within a laboratory setting that will give them skills that will carry over into life and college, such as how to manage files on a computer and interpreting and analyzing graphs. Lastly, the effectiveness of this grant will be demonstrated through student's critical writing in their lab write-ups. Students will have stronger evidence to communicate their learning with peers and teachers because the data collected will be more precise garnering stronger connections between the concepts.
What teaching methods will be used to implement this project?	Hands on lab experiences will be the main methodology for this project. These new interfaces will allow our students to see challenging concepts in an experimental setting, which we have not previously accomplished. Student engagement will increase as students get kinesthetic learning experiences for physics topics. Inquiry-based labs will also be used to introduce topics and allow students to explore concepts in physics with no prior knowledge. This will help students become investigative thinkers who problem

	solve and search for answers. Our Claim-Evidence-Reasoning writings will become more rigorous as students have more labs with detailed, accurate data sets. Student critical writing will increase as student misconceptions are cleared. The equipment will also help teachers set up more labs to encourage student engagement in lessons.
What is the project timeline and the date of implementation?	The interfaces can be used in many units in physics and require no consumable items. This equipment will be used as teacher demonstrations, student investigations and small group learning in the following units: Unit 1: Forces Unit 2: One-dimensional Kinematics Unit 6: Work & Energy Unit 7: Momentum & Impulse Unit 8: Sound Waves The first lab will occur in late August as students begin learning forces and Newton's Laws. With the new interfaces and our existing sensors, students will investigate the concepts of force, mass and acceleration. The LabQuest Mini interfaces can be utilized for several years to come and the use of the equipment will allow us to implement more technology since our current interfaces do not work with Chromebooks.
Explain how this idea or project enhances/supports Allen ISD curriculum or existing systems.	One of the goals for Allen ISD science curriculum is to better incorporate the process standards into the curriculum. This grant will allow on-level and Pre-AP/IB physics students the opportunity to participate in multiple investigatory lessons and do real science! Students will get the opportunity to ask questions, investigate solutions and use scientific equipment to collect data with precision and accuracy while utilizing our new Chromebook technology. Allen ISD has a challenging curriculum for students in on-level and Pre-AP/IB Physics. In order to best meet the needs of our students and continue at the academic rigor expected of Allen High School students, additional lab materials can help provide students the opportunity to learn through the use of new equipment to provide students a hands-on, kinesthetic and real-world experiences. We can utilize the interfaces with our existing Vernier sensors to link up to the new Chromebooks the school has provided.
Total Grant Budget Requested:	3110

Additional Co-Applicants Set Number 1

Question	Answer
First Name	Mackenzie
Last Name	Miller
Email	mackenzie.miller@allenisd.org
Campus	Allen High School
Grade:	11;12

Project Budget Set Number 1

Question	Answer
Item Type	Instructional Supplies or Resources
List item to be purchased under item category:	Vernier LabQuest Minis
Unit Cost	169
Quantity	16
Total cost of items in this category:	2704

Project Budget Set Number 2

Question	Answer
Item Type	Shipping
List item to be purchased under item category:	Shipping
Unit Cost	410
Quantity	1
Total cost of items in this category:	410