



Ecolab Teacher Grants Narrative Form - Team Application

Applications are peer reviewed – do not include details that identify staff or schools/programs

Project Title: Science from Scientists STEAM Program- [REDACTED]

Part One: Project Details

1. Describe your project. (1000 Characters max)

We are requesting funding for Science from Scientists (SFS), a 3M partnership, for 4th and 5th grades. It would serve our diverse population students by providing hands-on STEAM (Science Technology Engineering Arts Math) activities that align with the Minnesota Science Standards. SFS's real scientist instructors visit 18 times during the school year. Topics covered are anatomy/physiology, life science, chemistry, physics, earth science, and the scientific method. This experience is particularly valuable because all students are able to participate and engage in the explorations. Students are able to develop science vocabulary within a context that lets them also be engaged in meaningful discussions. The most valuable part is that SFS increases positive growth mindset, proficiency in science concepts, and the ability to see their future selves in careers in science.

2. Describe what the money will purchase. (500 Characters max)

The money will help pay for the cost of the program for 1 year. While SfS raises outside funding for the majority of the program cost, this grant will help guarantee our participation next year. The program includes 2 scientists, 18 visits, and the materials needed for the activities for all students. Science From Scientists also provides lesson plans, experiments, and projects online for Distance Learning

3. How will you specifically use those services/supplies? (1000 Characters max)

Each 4th-5th grade classroom teacher receives the lesson plan ahead of time to frontload all concepts that will be explored. The teachers then administer a pre-test that the scientists use to identify what the students already know about the concepts. Each classroom receives an hour of inquiry-based instruction that involves experiments with the 2 scientists. As they explore in small groups of 4-5, they engage in meaningful conversations about the concepts. The scientists take moments within the exploration to pause and discuss in the whole group what is happening and why? Some of the experiments involve fantastic materials like dry ice, lasers, and prisms. For example, one of the inquiry-based lessons gave the students the opportunity to explore different types of energy from chemical reactions. After the exploration students take a posttest to assess the learning of the topic for that day. Science From Scientists also provides a website for families to engage in learning as well.

Part Two: Project Justification

1. Describe the need for this project. (500 Characters max)

Our population consists of 42.7% ELL, 20.3% SPED, and 73.4% Free reduced lunch. Our students come from a variety of backgrounds and cultures: Hispanic/Latino, American Indian/Alaskan, Asian, Native Hawaiian or Pacific Islander, Black/African America are among the most prevalent. Cultural responsiveness is an important factor to include within all instructional activities delivered to our diverse population. Science From Scientists is an important part of providing that instruction.

2. Describe why you chose the items/services listed above to fulfil this need. (500 Characters max)

Our School has a very specific vision that teachers and students are committed too, "Learning powered by Science, Technology, Engineering, Art, and Mathematics (STEAM)." Our third year with Science from Scientists (2018-2019), helped to increase our science MCA scores by 20%. The students enjoy and are engaged with all of the experiences that SFS provides. A student who is happily engaged in learning is more likely to remember what is being taught.

Part Three: Relationship to Student Learning and SPPS Achieves

1. What classroom unit of study/lesson plan/[MN academic standard](#) does your project align with (e.g. aligns with calculus curriculum in preparation for AP STEM test)? (250 Characters max)

SFS curriculum encompasses the Minnesota State Science Standards and the Next Generation Science Standards.

2. How does your project support the classroom curriculum listed above? (600 Characters max)

Teachers teach the standards by introducing the vocabulary, reading about the concepts and by watching videos, but the hands-on experiences provided by SFS make the concepts clearer to the students.. Some of these concepts include: 4th grade: Mystery Tubes, Engineering Redesign, Spread of Infectious Diseases, Cryptography, Experimenting with the Brain, Electromagnetism, Light Reflection, Topographic Maps. 5th Grade: DNA Extraction, Sustainability, Photosynthesis, Intro to Tectonics, Electrical Conductivity, Electromagnetism, Density, Circuits, Re-building a Bridge.

3. Which [SPPS strategic focus area](#) or [long-term student outcome](#) does the project align with? (300 Characters max)

(Obj. 6) Increase opportunities for students to envision their future, explore careers, and prepare for college. (Obj. 3) Increase capacity to meet the instructional needs of each learner. (Obj. 4) Eliminate barriers to learning among a racially, culturally, and linguistically diverse population.

4. How does your project support the focus area or long-term outcome listed above? (700 Characters max)

SfS supports the long term goals by providing hands-on experiences to all students and it helps students from diverse cultures, races, and languages build their concepts of science topics. Students of all groups need personal hands-on experiences and meaningful discussions with these topics. SFS provides these opportunities every time they visit. Interaction and communication with real scientists promotes positive discussion surrounding future education and careers in science. All SFS scientists are M.S, graduates or P.H.D candidates with a specific background (i.e. Geology, Physics, Earth Sciences) and they are always very excited to share their experiences and knowledge with the students.

Part Four: Measuring Project Success

1. What will success look like? (300 Characters max)

We will observe success in multiple ways. First, improved MCA Science scores. Second, the pre and post-tests during the SFS lessons will show an increase in knowledge and understanding of each concept. Third, teachers will observe increased interest and knowledge of science concepts among students.

2. How will you specifically measure that success after project implementation? What positive changes to you anticipate? (500 Characters max)

Success will be measured in multiple ways: improved MCA scores - our first year increased our MCA scores by 20%; lesson quizzes showing consistent improved understanding of STEM concepts; student and teacher surveys showing increased interest and knowledge of science concepts among students. We anticipate that students will bring this increased interest and knowledge with them into other content areas; not just science.

Part Five: Additional

1. What different roles will team members have? What will the team accomplish together? (600 Characters max)

Each 4th-5th grade teacher will front-load all Minnesota Science Standards and concepts that will be explored with the SFS scientists. Each teacher will administer pre-tests and post-tests before and after the SFS experience. All teachers will support the SFS scientists during the explorations with academic discussion, and behavior management. What we hope to accomplish is to help students to envision themselves in careers in science. We want to meet the instructional needs of each learner and eliminate barriers to learning among a racially, culturally, and linguistically diverse population.

2. Will any groups or community organizations (nonprofits, foundations, etc.) work with SPPS for this project? (500 Characters max)

Science From Scientists was started to address the “workforce gap.” Which explained, means the United States is not producing enough Science, Technology, Engineering, and Mathematics professionals to meet the number of positions predicted to be needed in the future. 3M is a supporter of Science From Scientists, and has a vested interest in the outcomes of programs like this.

3. Is there anything else you would like to share about your request/students/school? (Demographics, achievement scores, why this project can't be funded otherwise, etc.) (500 Characters max)

In 2019, our students were asked to report on their level of interest and confidence in STEM and on their interest in STEM careers. 65% of students liked learning science and engineering (compared to 45% of ACT-tested high school students in MN) and 34% intended to pursue STEM careers (compared to 17% of ACT-tested high school students). This grant will guarantee that SfS returns to our school next year to continue boosting the STEAM interest of our students.