Hello Parents and Guardians,   November 3, 2020

     This year, our Gulf Trace Science Fair will be different. No backboards or notebooks are required. Students will be required to be researchers! They will choose from six different categories to research, investigate, and design a solution. Students will explain their solution in a **1-2 minute video**. The videos should be very simple. They can be filmed with a phone or laptop at home or at school. The video and a written explanation (abstract) will be the only things to turn in for their grade.

     Attached you will find the six categories with guiding questions and the grading rubric. The intent is that **students will explain the answer to one of the guiding questions in one of the categories**. This will be their focus. As a class, we are going through this entire process to model the project.

     Our GTES Science Fair will be December 10th.
Please let me know what questions or concerns you may have.

Thank you for your support,

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Elementary STEM Showcase Challenge Judging Criteria
Overall Comments:

Project Title:	Project #:	0	1	2	3
Problem	Description of the problem and how it affects the student, family, community or global population.				
Background Research	Describes why this project was selected and how research was conducted to better understand the problem. Used a variety of sources.				
Prototype/ Design Idea	Clearly explains how prototype/design will solve a problem				
Scientific Knowledge	Details the science behind the problem				
	Explains the science, technology, engineering and/or mathematics behind their innovation				
	Using academic and scientific vocabulary within their explanation				
Creativity/ Ingenuity	An explanation of how the student came up with their original idea				
	An explanation of how the innovation could have broader reach or impact beyond the student, family, or community.				
Persuasiveness/ Effective Communication	Clear explanations and a demonstration of how well the problem and solution are understood by the student. Can explain why the project is important				
	Thoughtfulness and planning evident in the presentation of information within the video				
Abstract	Written summary of the entire investigation.				
Overall Presentation	The Entry Video must be the original work of the student. Only the student can appear in the Entry Video, no other individuals should be filmed. Students must work independently on the development of their video concept and must record their video with minimal help or direction from others.				

Recommended Place: 1ˢᵗ   2ⁿᵈ   3ʳᵈ   **Total:**

Elementary STEM Showcase Challenge:

Explore, Transform, Innovate

The 2020 Pasco Science and Engineering Showcase will look a bit different this year for the Elementary Division. We recognize the need to empower our students to think critically and seek solutions. At a time when they may feel uneasy about the changes we are experiencing, helping them to find a voice and see the impact they can make is critical. The curiosity and ingenuity that drive our youngest scientists to see the world in novel ways can be harnessed for positive change. Through this year's Elementary Showcase Challenge, 3rd through 5th grade students will have the opportunity to become researchers, asking better questions and seeking bolder solutions. Our Elementary Challenge is modeled after the 3M National Young Scientists Challenge.

For the 2020 Challenge, students will think about how they can improve lives for the future by selecting a problem to research, investigate and design a solution. Students will create a 1-2 minute video to show us why they were inspired to solve their chosen problem, and how they developed a concept that uses science to improve the lives of future generations. The videos should be simple, one take clips that can be filmed with a phone, school iPad or web camera on a laptop.

The solution presented must be a new innovation or idea, and cannot simply be a new use for an existing product. The information below is designed to help students brainstorm and select a problem to focus on. The list below is simply to spark thinking, it is not intended to be a list of all possible ideas. Students are encouraged to think about problems they see that they want to tackle. The proposed innovation should fall under at least one of these categories:

Categories

Choose one category and one question under that category.

1. Recycle/Reuse/Reduce

Our planet holds precious resources, and it is our responsibility to properly manage them so future generations can enjoy the same quality of life that we do. Through science, we can reduce our environmental footprint and enhance how we use natural resources in the most efficient ways.

What kind of innovation would…

- Reduce your carbon footprint?
- Create new ways to use recycled materials?
- Build more products with less material?
- Make it easier for people to recycle?

2. Food & Clean Water, Air

To sustain the world's growing population, access to food and clean water and air are critical. We must find ways to improve the availability of food for all communities. Clean air and water are part of being good citizens to our planet. Through responsible management and science, we can protect our fellow citizens and our valuable resources.

What kind of innovation would…

- Make drinking water cleaner for people across the world?
- Ensure clean breathing air for people in all communities?
- Clean up our oceans and forests for their animal inhabitants?
- Improve filtration systems for air, water and other natural resources?

For inspiration, take a look at these Young Scientist alumni:

- 2017 winner Gitanjali Rao created a sensor-based device to detect lead in water faster than other current techniques.
- 2018 finalist Anna Du created an underwater robot that detects microplastics in the ocean
- 2017 finalist Anika Bhagavatula created natural sorbents to soak up oil spills.

3. Safe Homes, Schools & Streets

As populations continue to move toward urban areas, science and innovation can help make these cities "smarter". Smart vehicles, road safety and public transit are a few of the transportation mechanisms that will become increasingly important as we figure out how to improve movement within and between the planet's most populated locations.

- Make transportation methods more durable or reliable?
- Make city infrastructure compatible with the technology we all have at our fingertips?
- Connect the traffic and safety functions of a city with vehicles on the roads and rails?

For inspiration, take a look at these Young Scientist alumni:

- 2019 finalist Caroline Crouchley developed a sustainable method of public transportation that eliminates the need for a diesel engine or electric motor in trains.
- 2018 finalist Laalitya Acharya created a solution to revolutionize energy in developing countries by using vehicular motion to generate and harness clean and affordable energy.

4. Protect Habitats and Homes

As we continue to grow and develop new areas, conserving habitats for plants and animals is vital. We share our planet with other living things and must be good citizens. Natural disasters like hurricanes, tornadoes and earthquakes are a part of life on Earth. As we build homes and cities, we must be cautious to do so safely.

- Make buildings methods more durable or reliable?
- Create a better system for finding a missing pet?
- Protect people during a natural disaster or emergency?
- Create affordable housing for city dwellers that is also safe and easily accessible?

2013 winner Peyton Robertson used sandbags to reduce slat water flood damage.

5. Healthy Communities

Science touches every part of our lives, even if it is not obvious at first. Think about the major challenges in your life or the lives of those important to you, and how you could solve them through scientific thinking.

What kind of innovation would…

- Help to reduce traffic accidents, jams or other transportation hazards?
- Make public transportation more accessible to people with disabilities, limitations or challenges?
- Improve mobility with devices or products in a unique way?

For inspiration, take a look at these Young Scientist alumni:

- 2016 finalist Amelia Day invented a device that aims to improve accuracy of kicking a soccer ball to help those who are injured, and visual and hearing impaired.
- 2013 finalist Brooke Martin created iCUpooch, an interactive care unit for dogs.

6. Conserve & Improve Energy

Energy is the key to keeping the world working, but it's a natural resource that is frequently used and abused. With the help of science, we can create and conserve energy in new and innovative ways that really keep the lights on.

What kind of innovation would…

- Provide electricity to underdeveloped countries?
- Create transportation that is less harmful to the environment?
- Reduce energy used in homes and office buildings?
- Produce energy in ways that is least harmful to the environment?
- Reuse energy in creative ways?

For inspiration, take a look at these Young Scientist alumni:

- 2016 winner [Maanasa Mendu](#) created a device that harvests energy from the wind and sun to create an eco-friendly and cost-efficient source of electricity.
- 2015 winner [Hannah Herbst](#) developed a device to provide a stable power source and freshwater to developing countries by using untapped energy from ocean currents.

THE Details:

Students should review the six entry topics presented above, then identify a solution to an everyday problem that aligns with one of the six entry topics and that directly impacts them, their families, their communities, and/or the global population. The idea must be a new innovation or solution based on the student's own original idea, and cannot simply be a behavioral change or a new use for an existing product. The student must create a one- to two- minute video that:

- aligns with one of the six categories;
- Uses research to better understand the problem and the science behind it
- explains the problem and how it impacts them, their families, their communities and/or the global population;
- describes a **new** innovation or solution that could impact or solve the problem;
- explains the science, technology, engineering and/or mathematics behind their innovation; and

- illustrates how their innovation could both address the everyday problem they've identified and have a broader impact locally or globally.

What the judges will be looking for:

- Description of the problem and how it affects the student, family, community or global population.
- Details about the science behind the problem **new** innovation or solution. Uses academic vocabulary within their explanation.
- Clear explanations and a demonstration of how well the problem and solution are understood by the student (remember the idea must be a new innovation or solution, and cannot simply be a behavioral change or a new use for an existing product).
- An explanation of how the innovation could have broader reach or impact beyond the student, family, or community.
- An explanation of how the student came up with their original idea.

The Video

- The Entry Video must be longer than 60 seconds, but not longer than 120 seconds. The Entry Video must be the original work of the student. Only the student can appear in the Entry Video, no other individuals should be filmed. Students must work independently on the development of their video concept and must record their video with minimal help or direction from others. Entries which include non-student work will be disqualified.