



Torrance Unified School District

STEAM Fair

Torrance Unified School District (TUSD) is and emphasizing STEAM, where students will be applying and practicing their Science, Technology, Engineering and Math skills, but approaching their projects with a creative, or Artistic, perspective (the "A" in STEAM). This perspective is based on the new Next Generation Science Standards (NGSS) where students are encouraged to focus not just on results, but on their process, one that includes trial and error, divergent thinking, dynamic problem solving and plenty of perseverance.

Projects are due: March 19, 2020 by 9:00am, in the cafeteria

Edison Elementary School STEAM Fair: March 19, 2020

6:00pm - 7:30pm

1st place winners go on to display their projects at the

TUSD STEAM Fair @ Torrance High School: April 2, 2020

For more detailed information, please check your school's website or contact your school's STEAM Fair Teachers: Hortensia Marquez (marquezhortensia@tusd.org) and Stephanie Willis (willis.stephanie@tusd.org)

Overview:

All elementary students in the Torrance Unified School District are invited and encouraged to submit a project for this year's STEAM Fair. Grade levels are suggested as age-appropriate levels for projects, however, if a student would like to do a project that would be categorized as a higher grade-level than their own, they may do so. Students that submit a project from a category that is lower than their grade-level will not be judged.

Theme: "What do you wonder about?"

Purpose: To have students think critically about the world around them and be problem solvers

K/1st Grade - Collections (Focus: Science & Math)

Wonderings: What do I want to collect? What is the best way to organize my collection? Why is that the best way?

Sub questions-"How many different kinds of ...(ex. leaves, Legos, rocks, candy, etc)?"

*Organize & Analyze (similarities, differences, more, less, etc)

2nd/3rd Grade -Inventions (Focus: Science & Engineering)

Wonderings: What can I design/invent on my own? How can I make a model of my invention? How does this design work? What problem did it solve? Why is it important?

4th/5th Grade -Scientific Thinking/ Experimental Design

(Focus: Science, Technology, Engineering, Art, Math)

Wondering: What have I always wondered about? What experiment can I create to learn more?

For all projects:

Safety First

- Never use or mix any chemicals or hazardous materials
- Always wear goggles with activities that could harm your eyes
- Do not use live animals
- Avoid using sharp objects
- Do not use an open flame to conduct experiments
- Avoid using AC current electricity
- IF electricity or heat is needed, adult approval and supervision is required
- Do not display items that require tasting, touching or inhaling
- Project display should be free of objects easily broken
- Always use common sense-Safety First



Topics that are allowed and not allowed:

- Animals (decide on which animals might be allowed for investigations)
 - ◆ Usually insects and lower species are not of too much concern, vertebrates are usually off limits
 - ◆ Behavioral experiments can be allowed as long as no harm (physical or psychological) comes to the animal
 - ◆ There is a difference between experimenting with animals and observing their behaviors in their natural environment. The latter is usually considered to be o.k. for steam fairs.
- Chemicals
 - ◆ Non-toxic should be a general rule.
 - ◆ Non-explosive; an exception may be model rockets under adult supervision. Obviously, no explosives of any kind can be at the fair presentation.
 - ◆ Slightly corrosive chemicals (cleaners, mild acids and bases) can be used, but must be completely contained if brought in to show at the presentation.
- Energy
 - ◆ Heat is necessary in many investigations or engineering solutions (inventions). Once the temperature is going to get above 50o C (or 120* F) adult supervision should be brought in. Most children don't realize that even low temperature devices can build up heat energy over time and cause harm.
 - ◆ Open flames should be avoided. They can only be used under adult supervision with proper safety gear, and cannot be used in the presentation, *ever*.
 - ◆ Electricity can be battery generated for the most part, but again, today's batteries can generate a lot of charge that can be released instantly (consider the flash in a camera). Experimenting or inventing with household currents (100v or higher) is usually not allowed unless under the supervision of a qualified electrician.
- Propriety
 - ◆ You know your community best, so knowing what will be o.k. is a judgment call. Backward engineering a toilet to find out how it works and improve its efficiency is usually considered a good engineering topic, but there are limits.

- ◆ Make it clear that the final approval on a topic is up to the teacher..

Scope:

- Enthusiastic students can take on more than they can do. Most are not familiar with time frames involved in doing investigations or the availability of materials.
- Help them by stating that they must have the plan, the timeframe, and their materials list approved by the teacher or other adult who will conduct a reality check.

Student work:

- All work presented must be the student's work.
- Parents/guardians can be guides. Adults may supervise the investigation, but please do not take part except in cases of safety.
- Parents should not participate in the preparation or presentation, except to help with materials and act as an audience for practice.
- Students must cite research, using the guidelines provided by your teacher.