STEAM Fair GUIDELINES

2018-2019

OAKHURST STEAM ACADEMY STEAM FAIR
Important Dates & Requirements

Activity Description	Due Date
STEAM Fair Guidelines Sent Home	Thursday, September 13
Parent Information Session	Thursday, September 27 at 5:30pm
STEAM Fair Proposals (Yellow sheet)	Thursday, October 4
STEAM Fair Research and Resources (Blue Sheet)	Thursday, October 18
Reports/Research due to teacher for grading	Thursday, November 29
Project Boards due to homeroom teacher	Wednesday, December 5
Class Project Presentations	December 6 and 7
STEAM Fair Projects set-up -- Classroom winners (during school day)	Thursday, December 13 2- 4 p.m. (Judging)
STEAM Fair Projects Presented and Judged (Oakhurst STEAM Fair) 5:30 – 6:30 p.m.	Thursday, December 13
UNCC Region 6 Science and Engineering Fair (for students who qualify at Oakhurst's STEAM Fair)	Saturday, February 2, 2019 (students who qualify will need to register by 1/15/19)

STEAM Fair Requirements:

- **All students grades 3rd, 4th, and 5th are required to complete a STEAM Fair Project. Students who do not complete a project will receive a grade of zero (0).**
- Students must follow the requirements and due dates.
- Project proposals must be completed in-full.
- Students can opt to complete a traditional science fair project or a STEAM project (options for both are included in this packet on the next page).
- Students and parents should understand that a limited amount of time in school will be provided for these projects. The majority of the project should be completed at home.
- Students can request materials/supplies for their projects. If supplies or materials are available at the school, students will be provided access to them.
- Grading and scoring rubrics for the board and project can be found on the pink paper in this packet.
- Students cannot do projects involving growing microorganisms (bacteria, mold, fungus, etc.)

For STEAM Fair Resources, go to: http://oakhurst5.weebly.com/steam-fair.html

Project Guidelines

All students in grades 3rd, 4th, and 5th will participate in the STEAM Fair. There are two types of projects that can be submitted for the STEAM Fair. Students can complete a traditional science fair project or a STEAM-based project. Students are encouraged to select a topic of interest and to be as creative as possible while following the project guidelines. **All students in grades 3-5 will receive a grade in science, so participation is REQUIRED!!!**

★ Traditional Science Fair Projects

Traditional science fair projects should include a problem/question that can be answered through an experiment. Students must have a hypothesis/prediction for their experiment/project. Some examples of possible problems/questions for the traditional science fair project are:

- How does increasing the salt content of water affect the density of the water solution?
  - Example hypothesis: If I add more salt to the solution, then density will increase more than the solution without any salt.
- What effect do nutrients have on seed germination?
  - Example hypothesis: If I plant a tomato seed in manure, then that seed will germinate faster than the seed in topsoil.
- How does the acidity of water affect plant growth?
  - Example hypothesis: If I water my flower with leftover coffee, then the flower will not grow as well as the flower being watered with tap water.

★ STEAM Fair Projects

STEAM Fair projects should also include a problem/question as well as a solution to the problem/question. The project should indicate what elements of STEAM were incorporated into the experiment as well as the project presentation. Some **examples** of STEAM-based projects are:

- You have formally surveyed students across your grade-level about whether or not bullying is a problem at your school. 85 percent of the students agree or strongly agree that bullying is a problem. You decide to create a public service announcement through a Scratch project to help students cope with bullying and to help prevent bullying. After showing the public service announcement to students on your grade-level you survey them again to determine if they believe the public service announcement will be effective in preventing bullying at your school.
  - Example hypothesis: I think that bullying is a problem at my school and by being proactive, we can reduce the amount of bullying that occurs.

Project Format

Below is the suggested format for STEAM and Science Fair Projects. This information needs to be included in a **report-type format AND display board**. We encourage students to include examples and artifacts from their experiment/project as a part of the display. We also encourage the use of technology.

Title: Think of an interesting and catchy title for your project

Purpose: Statement about something in the world you are curious about or why you wanted to learn about this or were curious about this topic.

Testable Question: Must be something that can be tested or evaluated. Pick something that has **one** manipulated variable that **can be tested.**

Hypothesis/Prediction: What is your educated guess about the outcome of your project?

- Restate the question entirely with a guess (ie: will or will not/is or is not).
- Do not include reasoning because anything put into a hypothesis must be tested before the reason can be included.

4 Steps to a great hypothesis:

1. State your hypothesis as an If/then statement. (**If** I do this, **then** this will happen.)
2. Include all manipulated variables in your hypothesis ex: (adding salt, acid, etc).
3. Use the future tense when writing out your hypothesis (ie: will or will not)
4. Restate the question entirely. Do not change the meaning of the problem/question.

Example: Problem/Question: Will a plant fed water grow more than a plant fed acid or oil?
*Hypothesis: **If** a plant is fed with **water, then it will grow** more than a plant fed **acid** or **oil**.*

Prediction

Manipulated variables

Materials: A detailed list of materials that would be needed to conduct the investigation. Include quantities, amounts, types, (be specific).

Controlled Variables: Things that are kept the same to make the test fair. If they were not the same, it would be impossible to determine which variable affected the investigation. For STEAM projects, this could be time, space, etc.

Manipulated Variable: What was changed on purpose to find an answer or make a comparison?

Procedures: List the steps in the investigation in sequential order. These are directions for someone else to follow and complete the investigation.

Pictures/Drawings: Include pictures of your materials set up, throughout the experiment, and your results. You cannot include faces of people in your pictures.

Data/Results: Collect the data. Prepare the charts, journals, diagrams, photographs, or tables that you may need. Students can represent the data as percentages, averages, graphs, etc. You must include at least **3 trials** in your data.

Conclusion: Explain what happened using your data. What was discovered? There are 4 steps to a successful conclusion:

1. Explain if the hypothesis was proved or disproved. "My hypothesis was proved/disproved because..."
2. Discovery – What did you find out?
3. Proof – Data accumulated must be presented from smallest values to largest values.
4. Ending – What conclusion can you make from the data?

Note: A conclusion is not making observations about the data or speculations about the results. Instead, save that for the discussion with the judges. A conclusion is answering the question and using the data to prove what you are stating.

Discussion with the Judges: (Use what you discovered to answer the questions. What did you learn?)

1. Analyze what you learned about your results and data.
2. Discuss why or why not your hypothesis was proved or disproved.
3. Discuss experimental design flaws or changes that could have been made.
4. Can you make a prediction about real-world situations from what you learned?

Presentation: (Think about the following questions to plan your presentation)

1. Why did you choose to do the project?
2. What did you think would happen?
3. What were your results?
4. Did anything surprise you?
5. If you could do it again, what would you do differently?

Project display examples: Boards can be purchased from a number of stores for between $4 – 15. A limited number of boards will be provided by the school on a first come, first served basis.