Rahway Community Science Fair

Open to Rahway Residents Only - Grades 5 & 6

2024 Theme: *Sustainability and Environmental Solutions*

Projects will focus on reducing our reliance on single-use plastics (plastic ware, beverage cups, balloons, etc.). Projects should provide information or an action plan that support ***NJ's ban on single use plastic bags***, ***Skip the Straw*** or ***Skip the Stuff*** campaigns.

This event is created in partnership with New Jersey Clean Communities

STEP-BY-STEP GUIDE

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PRE-REGISTRATION REQUIRED ONLINE AT cityofrahway.com/sciencefair

This document provides participants with requirements and expectations for producing and submitting their 2024 Rahway Community Science Fair project.

STEP-BY-STEP GUIDE

Step 1. Learn More About the 2024 Community Science Fair Theme

Research the Theme: *Sustainability and Environmental Solutions*

- How can we create projects that help protect the environment and make our world a better place for future generations?

What's the Problem?

- Projects should focus on reducing our reliance on single-use plastics (plastic ware, beverage cups, balloons, etc.)

New Jersey Has Laws?

- Projects should provide information or an action plan that support *NJ's ban on single use plastic bags*, *Skip the Straw* or *Skip the Stuff* campaigns.

Step 2: Choose a Topic

Select a Field of Interest:

- Think about what you find interesting – animals, plants, space, or something else?

Brainstorm Ideas:

- Write down a list of possible topics. Consider questions you have or things you'd like to learn more about.

Narrow Down Your Choices:

- Choose a specific topic within your broader interest that you can explore in detail.

Step 3: Ask a Question

Formulate a Question:

- Develop a clear and specific question that you want to answer through your project.

What are some examples of topics to explore for a project?

Does Plastic Change Dirt?
Dig in the dirt and put plastic in it. Then wait and see if the dirt changes because of the plastic.

Are Rules Helping To Stop Plastic Trash?
Check if the rules we have about using plastic are working. Do they help make less trash?

Step 4: Research

Background Research:

- Learn more about your chosen topic. Use books, articles, and reliable online sources.

Step 5: Develop a Hypothesis / Make a Prediction

Make an Educated Guess:

- Based on your research, predict the answer to your question.

Step 6: Design Your Project: (pick one) ☐ **Experiment** ☐ **Case Study** ☐ **Improvement Project**

Plan Your Project:

- Outline the steps you'll take to test your hypothesis.

Gather Materials:

- List all the materials you'll need for your experiment. Make sure they're easily accessible.

Step 7: Create the Project

Follow Your Plan:

- Carry out your experiment, case study or improvement project exactly as you outlined in your plan.

Collect Data:

- Record your observations and data carefully. Use tables, charts, or graphs.

Step 8: Analyze Data

Look for Patterns:

- Analyze your data to see if there are any trends or patterns.

Step 9: Draw Conclusions

What Did You Learn?

- Summarize your findings and determine if your hypothesis was correct or not.

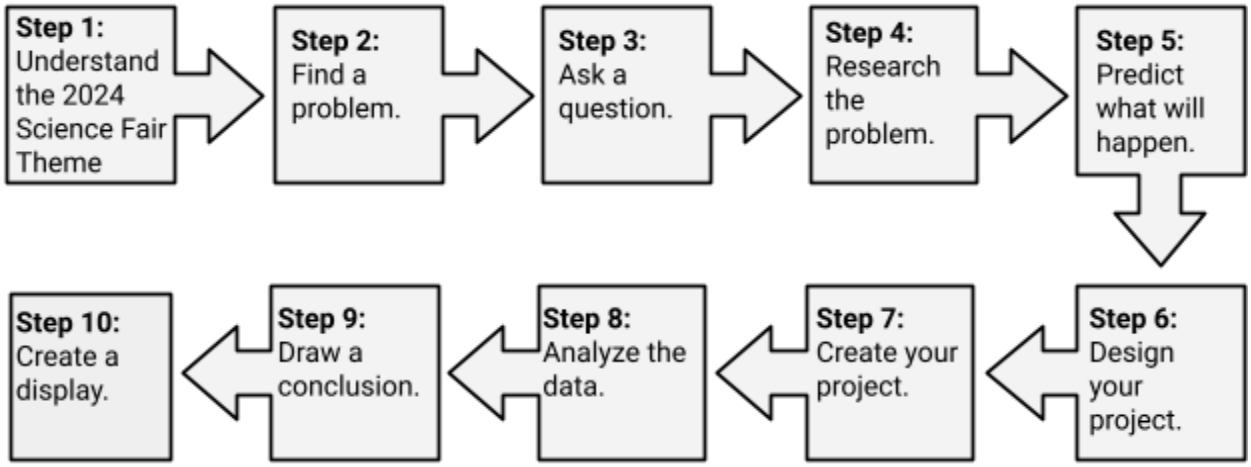
Step 10: Create a Display

Design Your Display Board:

- Organize your project onto a display board. Include sections for each step of the scientific method.

Visuals and Images:

- Use pictures, graphs, and charts to make your display visually appealing.
- Consider using 3D objects to demonstrate your process and findings.



Step 10: Practice Your Presentation

Prepare Your Speech:

- Practice explaining your project clearly and confidently. Keep it simple and interesting.

Answer Potential Questions:

- Anticipate questions judges might ask and have well-thought-out answers.

Step 11: Submit your Project to the Science Fair

Complete the Science Fair Project Submission Form:

- Submit all necessary forms and information by the deadlines.

Step 12: Participate and Share

Set Up Your Display:

- Arrive early on the science fair day to set up your display.

Engage with Judges and Visitors:

- Be enthusiastic and ready to explain your project to judges and attendees.

Share Your Knowledge:

- Enjoy the experience and share your newfound knowledge with others.

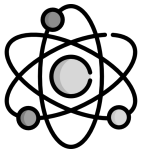
Remember, the most important thing is to HAVE FUN and enjoy the process of exploring and learning!

WORKSHEET

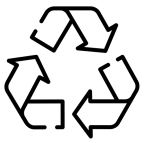
Need Help Coming Up With A Good Scientific Question

that addresses a problem with single-use plastics?

Here are three possible ways to ask your scientific question. Practice by filling in the blanks with the list of words included or come up with your own to fill in the blanks.

THE what is the EFFECT of QUESTION
What is the effect of _____ on _____? sunlight — the growth of plants eye color — pupil dilation 

THE how does this AFFECT that QUESTION
How does the _____ affect _____? color of light — the growth of plants humidity — the growth of fungi 

THE WHICH/WHAT and VERB problem QUESTION
Which/What _____ (verb) _____? detergent — makes — the most bubbles paper towel — is — most absorbent 

USE THE SPACE BELOW TO WRITE YOUR SCIENTIFIC QUESTION:

WORKSHEET

Not sure which kind of project you want to do? Use this page to brainstorm ideas.

EXPERIMENT: is a fun and curious test or trial where you try something out to see what happens.
Example: if you want to see which plant grows the tallest with different types of water, you might give one plant tap water and another plant bottled water to see if they grow differently.

CASE STUDY: is a special story or investigation about something interesting.
Example: if you want to learn about how people in a certain city recycle, you might visit that city, talk to people, and take notes to learn more about how they recycle.

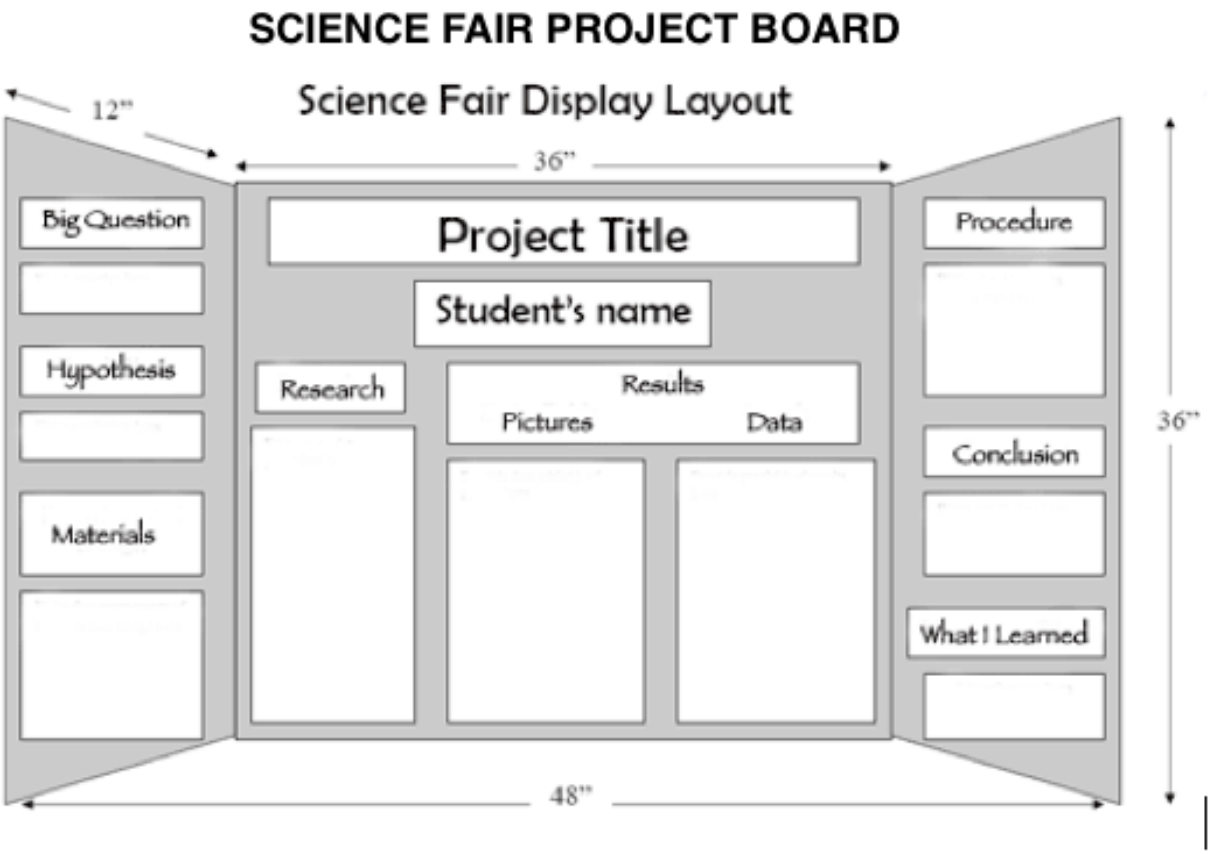
IMPROVEMENT PROJECT: is a cool challenge where you try to make something better or fix a problem.
Example, if you notice that your school's playground has broken swings, you might come up with ideas to fix them or make the playground even more fun for everyone. Then, you can work on your ideas to make the playground better.

What did you decide? Is your project an:

- ☐ **EXPERIMENT**
- ☐ **CASE STUDY**
- ☐ **IMPROVEMENT PROJECT**

DISPLAY & PRESENTATION

By following these guidelines, participants can effectively exhibit their science fair projects and communicate their research findings to judges and visitors.



Display Board:

- Each project should be presented on a sturdy display board, commonly measuring 36 inches in width and 48 inches in height.
- The display board should be able to stand on its own without support.

Title and Participant Information:

- A clear and concise title should be prominently displayed at the top of the display board.
- Include the participant's name and grade level.

Sections:

- The display board should be divided into clear sections, each addressing a specific aspect of the project.
- Common sections include Introduction, Hypothesis, Materials and Methods, Data and Results, Analysis and Conclusion.

Content:

- Information should be presented in a clear, organized, and visually appealing manner.
- Participants are encouraged to use bullet points, diagrams, charts, and images to convey information effectively.
- Include captions for visuals and illustrations, explaining their relevance to the project.

Visuals:

- Consider including photographs, diagrams, graphs, and other visuals to enhance understanding and engagement.
- Consider using colors to make key points or trends stand out.

Interactive Elements:

- Interactive elements are allowed to engage viewers and encourage participation.
- Examples include hands-on demonstrations, interactive models, or multimedia presentations.

Presentation:

- Be prepared to talk a little bit about your project to the judges and people who come to see it.
- Presentation should be clear, confident, and well-rehearsed.
- Encourage questions and be prepared to answer them.

Attire and Behavior:

- Dress to celebrate your project.
- Be respectful and courteous to judges, visitors, and fellow participants.

JUDGES SCORING RUBRIC

This judging rubric represents the project criteria and provides clear and straightforward guidelines for evaluating each science fair project.

2 = Needs Improvement 3 = Fair 4 = Good 5 = Excellent

Project Content and Creativity:				
Does the project demonstrate complexity, quality, and depth of understanding?	2	3	4	5
Originality and creativity are evident in the project design, methods, or presentation.	2	3	4	5

Scientific Method and Process:				
Does the project have a clear and simple research question?	2	3	4	5
Does the project follow the scientific method clearly, including project design (experiment, case study, or improvement project), the formulation of a hypothesis, data collection, and conclusion drawing based on evidence?	2	3	4	5

Understanding of Concepts:				
The participant demonstrates a solid understanding of key concepts related to the project topic.	2	3	4	5
Concepts are explained clearly, showing depth of understanding and ability to apply knowledge in a scientific context.	2	3	4	5

Data Collection and Analysis:				
Data is collected accurately and organized, using appropriate methods and tools.	2	3	4	5
Is the data analysis thorough and supported by evidence?	2	3	4	5

Conclusion and Relevance:				
Conclusions drawn from the data are logical and relevant to the project's hypothesis or research question.	2	3	4	5
Conclusions demonstrate critical thinking and are supported by the evidence presented in the project.	2	3	4	5

Display, Presentation and Engagement:				
The project is well-organized, proofread, and easy to understand with clear sections and logical flow.	2	3	4	5
Information is presented in a way that is easy to follow, with visuals and illustrations used effectively to enhance understanding.	2	3	4	5
Was the oral presentation given in an articulate and concise manner?	2	3	4	5
Was the student able to knowledgeably answer questions related to their project?	2	3	4	5

RULES & SAFETY

These rules provide a framework for participating in a safe and enjoyable science fair experience.

Eligibility:

- The science fair is open to Rahway residents in grades 5 & 6.
- Each participant may submit only one project for consideration.

Project Guidelines:

- Projects must be original and conducted by the participant submitting the project.

Display Requirements:

- Each project must be displayed on a standard-sized display board, no larger than 36 inches in width and 48 inches in height.
- Display boards should be able to stand on their own without support.

Presentation Guidelines:

- Participants should be prepared to give a brief oral presentation of their project to judges and visitors and be able to answer questions about their project.
- Presentations should be clear, organized, and rehearsed, focusing on key aspects of the project, including the problem/question, hypothesis, methods, results, and conclusions.

Fair Play and Academic Integrity:

- Projects must be the original work of the participant submitting the project.
- Plagiarism or the use of others' work without proper attribution will result in disqualification.
- Assistance from teachers, parents, or other individuals is allowed, and MUST be acknowledged in the project presentation.

Behavior and Conduct:

- Participants should conduct themselves in a respectful and polite manner at all times.
- Any disruptive or inappropriate behavior will not be tolerated and may result in disqualification from the science fair.

Judging and Awards:

- Projects will be judged based on predefined criteria, including scientific method, creativity, presentation, and understanding of concepts.
- Awards may be given for categories such as Best in Show, Most Creative, Most Innovative, People’s Choice Award, Community Impact, Research Excellence Award, and Honorable Mentions.
- Judges' decisions are final and not subject to appeal.

SAFETY FIRST

WARNING! CAUTION! DANGER!

Number one rule… think safety first before you start.
Safety is of utmost importance in all science fair projects.

1. Participants should follow all safety guidelines and protocols provided in this document.
2. Hazardous materials or procedures are not permitted in any aspect of a participant's project.
3. Make sure you have recruited an adult to help you where needed.
4. Never eat or drink during an experiment and always keep your work area clean.
5. Wear protective goggles when doing any experiment that could lead to eye injury.
6. Do not touch, taste or inhale chemicals or chemical solutions.
7. Respect all life forms. Do not perform an experiment that will harm an animal or human.
8. All experiments should be supervised by an adult!
9. Always wash your hands after doing the experiment, especially if you have been handling chemicals or animals.
10. Dispose of waste properly.
11. Any project that involves drugs, firearms, or explosives are not permitted.
12. Any project that breaks local, state or federal laws is not permitted.
13. Use safety on the internet! Never write to anyone without an adult knowing about it. Be sure to let an adult know about what websites you will be visiting, or have them help you search.
14. If there are dangerous aspects of your experiment, like using sharp tools or experimenting with electricity, please have an adult help you or have them do the dangerous parts. That's what adults are for, so use them correctly.