

**THE ENRICHMENT CENTER
OF WESTERN PA**

MAY 1ST / 6PM - 8PM

SCIENCE FAIR

STUDENT HANDBOOK

**ECWPA
2816 BRODHEAD ROAD
ALIQIPPA, PA 15001**

**GRADES
K-12**

ECWPA Science & Engineering Fair 2026

Science Fair Handbook

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1. HANDBOOK OVERVIEW

ECWPA Science & Engineering Fair 2026

Welcome!

The Enrichment Center of Western PA is proud to host our annual Science & Engineering Fair! This event is a celebration of curiosity, critical thinking, and the incredible hard work of our students. Whether your student is a budding scientist or a master builder, we are excited to see what they discover.

Important Dates

Sign-up Deadline: April 17, 2026 (Lobby Sign-up Sheet)

Fair Date: May 1, 2026

Check-in & Setup: 5:30 PM

Fair Starts: 6:00 PM

Awards Ceremony: 7:30PM

Participation Tracks

Students must choose their track at registration:

Competitive: The project will be interviewed and scored by judges for awards.

Participant Only: The student will display and share their work with the community without being scored.

Grade Level Categories

Lower Elementary: K – 2nd Grade

Upper Elementary/Middle: 3rd – 6th Grade

High School: 6th – 12th Grade

2. OFFICIAL RULES AND SAFTY

ECWPA Science & Engineering Fair 2026

General Rules

1. **Student Work:** Projects must be student-led. While parents are encouraged to mentor and supervise, the actual testing, data collection, and display should reflect the student's own effort.
2. **Sibling & Group Projects:** Siblings or co-op peers may work together. For the competitive track, projects will be judged at the grade level of the oldest student in the group.
3. **Interview Requirement:** Competitive students must be present at their boards from 6:00 PM – 7:00 PM for judge interviews.

Display Rules

1. **Size:** Standard tri-fold boards (36" tall x 48" wide) are recommended.
2. **Stability:** Projects must be able to stand on their own on a standard folding table.
3. **Electricity:** If you require a power outlet, you must indicate this on the sign-up sheet by April 17th.

Safety Rules

1. **Living Vertebrates:** Small animals (hamsters, lizards, fish) are permitted if they are in a secure, small cage/aquarium and supervised at all times. No animals may be removed from their enclosures.
2. **Prohibited Items:** No open flames, hazardous chemicals, explosives, or unsealed food/liquids.
3. **No Mess Policy:** No "messy" experiments (like erupting volcanoes) may be performed live indoors. Please use photographs or a video on a tablet to show the "messy" parts of your process!

3. GRADE-LEVEL GUIDELINES

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Lower Elementary (K–2nd Grade)

Focus: Observation and Wonder.

Expectation: Students may present a collection (e.g., types of rocks), a demonstration of a scientific principle (e.g., how magnets work), or a simple "What happens if...?" experiment.

Display: A poster board with a title, pictures, and a brief explanation of what they learned.

Upper Elementary & Middle (3rd–6th Grade)

Focus: The Scientific Method or Engineering Design Process.

Expectation: Students should identify a testable hypothesis or a specific problem to solve. They must document their process, collect data, and draw a conclusion.

Display: Standard tri-fold board including: Question/Problem, Hypothesis/Goal, Procedure, Data (charts/graphs), and Conclusion.

High School (6th–12th Grade)

Focus: Formal Inquiry and Rigor.

Expectation: Projects must show deep research and controlled variables (Science) or iterative testing and optimization (Engineering). A formal lab report or project logbook is highly recommended.

Display: Professional tri-fold board and a physical prototype or demonstration (if safe).

4. SCIENCE FAIR QUESTIONS

ECWPA Science & Engineering Fair 2026

1. What is a Science Fair Project?

A science fair project is a controlled investigation or an engineering design. It is an opportunity for a student to investigate a topic they are curious about, conduct a hands-on test or build, and then present their findings on a display board.

2. What is the Scientific Method?

The Scientific Method is a logical way to solve a problem or answer a question. Most projects follow these steps:

The Question: What do you want to find out? (e.g., "Does salt make water boil faster?")

The Hypothesis: What do you think will happen? (Your best guess).

The Experiment: The actual test! You must have variables (things you change) and constants (things that stay the same).

Data/Results: Writing down what actually happened (using charts, photos, or notes).

Conclusion: Was your guess right or wrong? What did you learn?

3. What a Science Fair Project is NOT:

To ensure a high-quality fair, it is important to know that a project is not just a report or a simple model.

It is NOT just a report: Simply reading a book about sharks and making a poster is a report, not a science project. A science project requires a test. (e.g., "Which shark tooth shape is best for cutting?")

It is NOT just a demonstration: Making a "volcano" erupt with baking soda is a demonstration of a known reaction. To make it a science project, you must test a variable. (e.g., "Does the temperature of the vinegar change the height of the eruption?")

It is NOT a "Bought" Kit: While kits can provide materials, the student must still go through the steps of the Scientific Method themselves rather than just following a toy's assembly instructions.

4. How can I get started?

1. Find a "Wonder": Think about things that make you curious. Do you like sports? Cooking? Nature? Animals?
2. Turn it into a Question: Change "I like soccer" into "Does the air pressure in a soccer ball affect how far it can be kicked?"
3. Check the Rules: Ensure your idea doesn't use hazardous chemicals or open flames. (Small pets are okay in cages!)
4. Pick your Track: Decide if you want to be Competitive (Judged) or a Participant (Display Only).

5. Sign up by April 17th!

5. Project Categories

Students may choose topics including, but not limited to:

Life Science: Botany, Zoology, Human Biology.

Physical Science: Chemistry, Physics, Astronomy.

Earth Science: Geology, Weather, Environmental Science.

Technology & Math: Coding, Robotics, Pure Mathematics

5. EXPERIMENT VS. BUILD: What's the Difference?

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SCIENCE PROJECT vs. ENGINEERING PROJECT

| SCIENCE PROJECT | ENGINEERING PROJECT |
|---|---|
| THE GOAL: To answer a "Why?" or "What if?" question. | THE GOAL: To solve a problem or make something better. |
| YOU ARE A: Scientist exploring how the world works. | YOU ARE A: Builder or Inventor creating a new tool. |
| BEST FOR: Students who ask "why?" Or "What happens if?" | BEST FOR: Students who love to build, invent, and fix things. |
| THE STEPS: | THE STEPS: |
| 1. Ask a testable question. | 1. Define a specific problem. |
| 2. Hypothesize (Predict the answer). | 2. Brainstorm creative solutions. |
| 3. Experiment (Do the test!). | 3. Build a prototype (The first model). |
| 4. Analyze your data. | 4. Test & Redesign until it works. |
| 5. Conclude: Was your prediction right? | 5. Share your final working solution! |
| EXAMPLE: "Does music help plants grow faster?" | EXAMPLE: "Can I build a robotic arm to pick up trash?" |

Quick Tips for Success

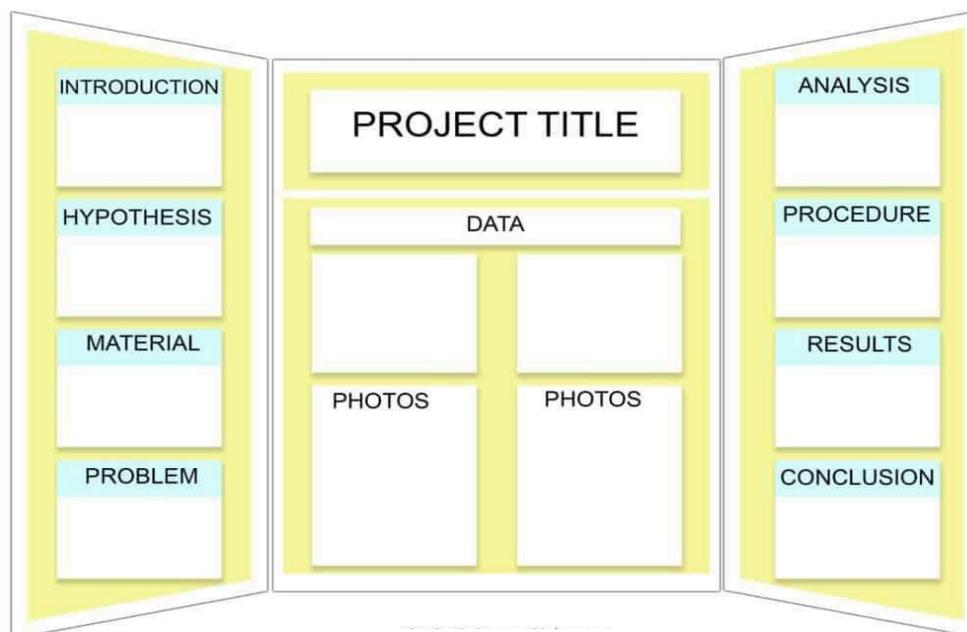
The Board: Use a standard 36" x 48" tri-fold board. Organize it from top-to-bottom and left-to-right.

Visuals: Use photos and graphs rather than just text to show your work.

Interview: Judges look for clarity, creativity, and how well you know your project.

6. PROJECT BOARD SET UP

For your science fair project, you will need to prepare a display board to communicate your work to others. You can purchase or request a standard, three-panel display board that unfolds to be 36" tall by 48" wide. Display boards can be found at Amazon and other retailers or check with Mrs. Eggers at the front desk for extra boards.



Use a font size of at least 16 points for the text on your display board, so that it is easy to read from a few feet away. It's OK to use slightly smaller fonts for captions on picture and tables.

The title should be big and easily read from across the room. Choose one that accurately describes your work, but also grabs peoples' attention.

A picture speaks a thousand words! Use photos or draw diagrams to present non-numerical data, to propose models that explain your results, or just to show your experimental setup. But, don't put text on top of photographs or images. It can be very difficult to read.

Please Include with your display:

- Your name on the display board

- Pictures of your project or experiment

- Acknowledgements of people who helped you

- Your laboratory notebook or notes if you took them

Equipment such as your laboratory apparatus or your invention

Materials and Construction Techniques

Use a Tri-fold self-standing display board. Look for display boards that are black or white-colored "foam core" (a sandwich made up of two pieces of smooth surface paper with a polystyrene (plastic) middle) or corrugated cardboard.

Print out or write your information on white paper that you will attach to your display board. Be sure to proofread each sheet before you attach it.

1. Instead of regular paper, use cover stock (67#) or card stock (110#). These heavier papers will wrinkle less when you attach it to your display board.
2. Matte paper is preferable to glossy because it won't show as much glare-glare makes your display board difficult to read.

Glue sticks (use plenty) or rubber cement work well for attaching sheets of paper to your display board. Use double-sided tape for items like photographs that may not stick to glue.

Add simple visual accents to your board. Do not make the board too busy or it becomes difficult to read. Try these simple techniques instead:

1. Use color construction paper to add accents to your display board. A common technique is to put sheets of construction paper behind the white paper containing your text.
2. Use borders to draw the audience's attention.

7. RUBRICS (Project Expectations for Judging)

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Section 1: Science Project Rubrics (Scientific Method)

Use these for projects testing a hypothesis.

Lower Elementary (K–2nd)

| Category | 0 | 1 | 2 | 3 |
|--------------|-------------------|--------------------------|-----------------------------|-----------------------------|
| Question | No clear question | Simple "yes/no" question | Clear "I wonder" topic. | Creative question. |
| Experiment | No action shown. | One simple test. | Clear steps shown. | Multiple trials/neatly done |
| Data/Results | No results. | Minimal notes. | Good photos/drawings. | Excellent visual evidence. |
| Display | Messy/Incomplete | Some parts missing. | Organized and neat. | Outstanding/Very colorful |
| Interview | Little to say. | Needed prompting. | Spoke clearly about project | Enthusiastic and detailed. |

Upper Elementary/Middle (3rd–6th)

| Category | 0 | 1 | 2 | 3 |
|---------------|---------------|-------------------------|---------------------------|------------------------------|
| Hypothesis | Missing. | Present but vague. | Testable and logical. | Based on prior research. |
| Procedure | Not listed. | Missing key steps. | Clear and repeatable. | Rigorous/Well-controlled. |
| Data Analysis | No data. | Simple list of numbers. | Charts/Graphs included. | Clear trends/patterns shown. |
| Display | Disorganized. | Standard layout. | Logical and professional. | High visual impact/Creative. |
| Interview | Unclear. | Basic understanding. | Confident explanation. | Deep insight into the "Why." |

High School (6th–12th)

| Category | 0 | 1 | 2 | 3 |
|------------------|----------------|---------------------|------------------------------|--------------------------------|
| Scientific Logic | Flawed logic. | Basic research. | Strong hypothesis/variables. | Sophisticated/Formal study. |
| Methodology | Unclear steps. | Standard procedure. | Detailed and precise. | Advanced/Innovative design. |
| Conclusion | Missing. | Doesn't match data. | Supported by data. | Analyzes errors/limitations. |
| The Display | Poorly made. | Functional. | Professional/Academic style. | Exceptional technical quality. |

| | | | | |
|---------------|--------------|----------------------|------------------------------|----------------------------|
| The Interview | Brief/Vague. | Solid understanding. | Handles difficult questions. | Masterful/Peer-level talk. |
|---------------|--------------|----------------------|------------------------------|----------------------------|

Section 2: Engineering Project Rubrics (Design Process)

Use these for projects building a solution to a problem.

Lower Elementary (K–2nd)

| Category | 0 | 1 | 2 | 3 |
|-----------|-------------------|-----------------------|-------------------------|------------------------------|
| Problem | No problem stated | Hard to understand. | Simple "helper" idea. | Very clear/relatable need. |
| Model | No build. | Basic/Fragile. | Sturdy and functional. | Creative use of materials. |
| Testing | No test shown. | Tried it once. | Showed it in action. | Multiple tests/Demonstrated. |
| Display | Incomplete. | A bit cluttered. | Neat and organized. | Eye-catching/Shows process. |
| Interview | Quiet. | Explained what it is. | Explained how it works. | Proudly shared the "Build." |

Upper Elementary/Middle (3rd–6th)

| Category | 0 | 1 | 2 | 3 |
|-------------|----------------|------------------------|----------------------------|-----------------------------|
| Design Goal | No goal. | Goal is too broad. | Specific/Achievable goal. | Well-defined constraints. |
| Prototype | Non-functional | Partially works. | Works as intended. | Optimized/Clever design. |
| Records | No records. | Lists a few successes. | Records failures & fixes. | Systematic data collection. |
| Display | Disorganized. | Basic flow. | Clear "Step-by-Step" look. | Professional/Instructional |
| Interview | Unprepared. | Basic walkthrough. | Good troubleshooting talk. | Justifies design choices. |

High School (6th–12th)

| Category | 0 | 1 | 2 | 3 |
|-----------------|-------------------|---------------------|--------------------------|-------------------------------|
| Design Analysis | Surface level. | Simple problem. | Real-world application. | Advanced technical need. |
| Prototype | One version only. | Slight change made. | Multiple versions/fixes. | Optimized prototype. |
| Data | No measurements. | Simple "Pass/Fail." | Measures performance. | Statistical/Rigorous testing. |
| Display | Unpolished. | Clear but basic. | Tech-heavy/Detailed. | Industry-standard quality. |
| Interview | Limited. | Competent. | Can discuss trade-offs. | Expert-level defense of work. |

Scoring (0–3 Scale)

3 (Proficient): Exceeds expectations for the grade level; clear and thorough.

2 (Developing): Solid work; follows the method; understands the topic.

1 (Beginning): Attempted the project; needs more detail or clarity.

0 (Missing): Category is not present on the board or in the interview.

8. THE PARENT'S ROLE

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A Guide for ECWP Families

The goal of our Science & Engineering Fair is for students to learn through discovery. While your support is essential, the project should reflect the student's own work and grade level.

✓ DO: Be a "Project Manager"

Brainstorm: Help them turn a big, messy idea into a specific, testable question.

Schedule: Help them break the project into small tasks so they aren't rushing the night before May 1st.

Safety: Supervise any use of tools, electricity, or handling of small animals.

Scribe (for younger kids): For K–2nd graders, it is perfectly okay to type or write what the student dictates for their board.

Transportation: Get them to the store for a tri-fold board and to the Fair by 5:30 PM for setup!

✗ DON'T: Be the "Lead Scientist"

Don't Choose the Topic: If they aren't interested in the question, they won't enjoy the process.

Don't Do the Experiment: You can hold the stopwatch or the measuring tape, but the student should be the one performing the actions and observing the results.

Don't Build the Display: A board that looks "too perfect" often tells judges that the parent did the work. A student-made board (even with a few smudges!) is always more impressive.

Don't Script the Interview: Encourage them to speak from the heart about what they learned, rather than memorizing a speech you wrote.

The "Rule of Thumb" for Assistance

K–2nd Grade: High involvement. You are a co-pilot. Help with gluing, typing, and staying on task.

3rd–6th Grade: Medium involvement. You are a consultant. Offer advice when they get stuck, but let them handle the data and the "build."

- 6th–12th Grade: Low involvement. You are a sponsor. Provide the budget and the ride to the fair, but the research and execution should be entirely theirs.

9. GUIDELINES AT A GLANCE

ECWPA Science & Engineering Fair 2026

Important Dates:

Sign-up Deadline: April 17, 2026 (Lobby Sign-up Sheet)

Fair Date: May 1, 2026

Check-in & Setup: 5:30 PM

Fair Starts: 6:00 PM

Awards Ceremony: 7:30PM

Project Types:

Science: Testing a hypothesis.

Engineering: Building a solution or tool.

Track Options:

Competitive: Project will be scored by judges for awards.

Participant Only: Display only; no formal judging.

Reminders:

Siblings: May work together! (Projects are judged at the oldest student's grade level).

Living Things: Small pets are welcome but must be in a secure cage/aquarium and supervised.

Safety: No open flames, hazardous chemicals, or messy eruptions indoors.

Rubric Basics:

Science Projects (0–3 Scale)

Logic: Is there a clear, testable hypothesis?

Method: Are the steps repeatable and controlled?

Results: Is there clear data (graphs/photos)?

Display: Is the board organized and neat?

Interview: Can the student explain the "Why" behind their results?

Engineering Projects (0–3 Scale)

Problem: Is the specific need or goal clearly defined?

Model: Did they build a functional prototype?

Testing: Did they record failures and make improvements?

Display: Does the board show the step-by-step build?

Interview: Can the student justify their design choices?