



Peel Region Science Fair

Teacher Resource Package

Guiding Grade 7-12 Science Fair Projects

General Science Fair • Peel Region Science Fair • Canada-Wide Science Fair

Purpose

Help teachers coach students without needing to become science fair experts first.

How to Use This Deck

Designed for busy Grade 7-12 teachers who need clear steps and ready-to-use guidance.

Read First

Use slides 1-5 as the 15-minute orientation. These answer the basic questions teachers usually ask first.

Teach With It

Use Part 1 to introduce science fair expectations, inquiry, project types, data, display, and judging.

Customize It

Update PRSF dates, fees, contacts, registration links, photos, and school-specific expectations each year.

Teacher Quick Start: The 15-Minute Version

1

Introduce inquiry

Help students develop a focused testable question, design problem, or research question and identify what evidence they will need.

2

Approve a proposal

Require a one-page plan before experiments or building begin.

3

Monitor checkpoints

Use short deadlines for research, plan, data, board, and presentation.

4

Practice judging

Have students explain their project to peers before the fair.

5

Register strong projects

Select polished, safe, and well-understood projects for PRSF.

The teacher role is coaching and monitoring. The project must remain student-designed, student-understood, and student-presented.

Package Roadmap

The deck follows the structure: general information, PRSF, then CWSF.

Part 1

Science Fair Fundamentals

What science fair is, why it matters, teacher/parent/student roles, project development, data, boards, judging, and timelines.

Part 2

Peel Region Science Fair

Eligibility, registration, project requirements, judging day, awards, teacher duties, parent communication, and school preparation.

Part 3

Canada-Wide Science Fair

How students qualify, Team Peel expectations, project refinement, national judging, CWSF schedule, awards, and roles.

What Teachers Need to Know

What exactly am I supposed to do?	Clarify the teacher role and boundaries.
How much help can I give?	Guide, question, monitor, and coach - do not do the work.
How do I know if a project is good?	Use project-quality checklists and judging criteria.
How do I fit this into my course?	Use mini-inquiries, checkpoints, and assessment for learning.
What happens after our school fair?	Explain PRSF and the pathway to CWSF.

01

Science Fair Fundamentals

Everything a teacher needs to help students move from curiosity to a strong, presentable project.

What is a science fair?

A science fair is more than a display board. It is a structured inquiry and communication process.

Student-designed

Students investigate a question, solve a problem, or study a scientific idea through their own work.

Evidence-based

Projects should include background research, a method, data or evidence, analysis, and a conclusion.

Communicated clearly

Students present their work through a display, logbook, interview, and sometimes a written report.

A good science fair project shows what the student did, what the student learned, and how the evidence supports the conclusion.

Why Science Fair Matters

Science fair develops academic skills and student confidence in one authentic project.

Inquiry

- 1** asking better questions

Research

- 2** using reliable sources

Design

- 3** Planning experiments and tests

Data

- 4** collecting and analyzing evidence

Communication

- 5** explaining ideas to judges

Originality

- 6** pursuing personal interests

Science fair is a strong fit for inquiry-based learning because students practice investigating questions scientifically, manipulating variables, and designing fair tests.

Who Should Participate?

Science fair can serve a wide range of Grade 7-12 learners when support is adjusted.

Grades 7-8

Focus on curiosity, fair tests, clear variables or design criteria, simple data tables, and confident explanations.

Grades 9-10

Expect stronger research, clearer method design, appropriate testing, sample size, or design criteria, better graphs, and deeper analysis.

Grades 11-12

Encourage original research, advanced methods, expert mentorship where appropriate, and mature scientific communication.



Science fair is not only for the strongest students. It is for students who are willing to ask questions, investigate carefully, revise their work, and explain their thinking.

Roles: Teacher, Student, Parent

Clear boundaries prevent confusion and preserve student ownership.

Teacher

- ✓ **Coach the process**
- ✓ **Ask guiding questions**
- ✓ **Monitor checkpoints**
- ✓ **Check safety and ethics**
- ✓ **Practice judging**

Student

- ✓ **Do the research and work**
- ✓ **Choose and understand the project**
- ✓ **Collect and analyze data**
- ✓ **Prepare display/logbook**
- ✓ **Present to judges**

Parent

- ✓ **Encourage and support**
- ✓ **Help obtain safe materials**
- ✓ **Respect student ownership**
- ✓ **Avoid writing/building for student**
- ✓ **Support deadlines**

Teacher Support: Guide, Do Not Replace

Teachers SHOULD

- ✓ help students clarify questions
- ✓ teach variables and fair tests, or design criteria and iteration, as appropriate.
- ✓ require progress checkpoints
- ✓ provide feedback on communication
- ✓ ensure rules, safety, and ethics

Teachers SHOULD NOT

- ✗ choose the project for the student
- ✗ collect data for the student
- ✗ write the report or script
- ✗ build the display board
- ✗ ignore safety or ethics concerns

Safety and Ethics First – Check First before you begin!

Human participants

surveys, testing,
interviews, health data

Animals

vertebrates, pets,
behaviour studies

Biological materials

microbes, tissues, bodily
fluids

Chemicals and equipment

hazardous substances,
heat, electricity

Privacy and data

photos, names, personal
information

Field work

outdoor risks, water, traffic,
weather



- When in doubt, check safety and ethics before the student starts, not after the project is finished – <https://www.peelsciencefair.ca/>
- Any data collected (including anonymous surveys) from human participants must be accompanied by a completed consent form.



Types of Science Fair Projects

Not every project needs to look like a traditional lab experiment.

Experiment

Tests how one variable affects another using controlled conditions and repeated trials.

Innovation / Engineering

Designs, builds, tests, and improves a device, process, model, or solution.

Study / Investigation

Analyzes existing data, observations, field evidence, or patterns to answer a question.

Digital / AI / Math

Uses coding, models, simulations, algorithms, statistics, or mathematical reasoning responsibly.



Classify the project early. Experiments need variables and fair tests; engineering projects need design criteria and iteration; studies need strong data sources and careful analysis.

Suggested Project Fields – CWSF Challenge Areas

Here are some suggested project areas to help guide your ideas.

 **Agriculture, Fisheries & Food**
Food production, farming, fisheries and food security

 **Curiosity & Ingenuity**
STEM discoveries or innovations that don't fit another category

 **Digital Technology**
AI, computing, robotics, electronics and digital systems

 **Disease & Illness**
Understanding, diagnosing, treating or managing illness

 **Energy**
Renewable energy, energy efficiency and reducing energy use

 **Environment & Climate Change**
Water, air, soil, biodiversity and climate solutions

 **Health & Wellness**
Preventing disease and improving human well-being

 **Natural Resources**
Sustainable use, conservation, reuse and recycling of resources



Project Type ≠ Challenge Area

Project type describes how the student conducts the project.

Challenge Area describes the field, problem, or impact the project addresses.



Aerospace

Space, aviation, atmosphere and aerospace technology

Choosing a Good Topic

- Start from student interests, everyday problems, local issues, or curriculum connections.
- Look for questions that can be investigated with available time, tools, and supervision.
- Encourage originality: improve, extend, compare, or apply an idea in a new way.
- Reject topics that are unsafe, purely opinion-based, or impossible to investigate, test, or evaluate..

Topic filter

- ✓ Interesting to the student?
- ✓ Can it produce evidence?
- ✓ Can the project produce meaningful evidence?
- ✓ Safe and ethical?
- ✓ Possible in the timeline?

Use mySTEMspace.ca to Begin

mySTEMspace helps students to turn an idea into a project and access a workspace.

1. Create an account

Go to mySTEMspace.ca. Use an email you can access. Confirm that you are a student at a Canadian school.

2. Start a project

Choose “I want to spark an idea,” “I have an idea,” or “I have a project.”

3. Use the workspace

Record your title, summary, plan, safety notes, data, references, and updates.

4. Share later

When the project is ready, follow fair instructions to share or register your project.

01

Initiate & Plan

Start with your interests and skills.

02

Perform & Record

Try your idea and document what happens.

03

Analyze & Interpret

Think about what happened and why.

04

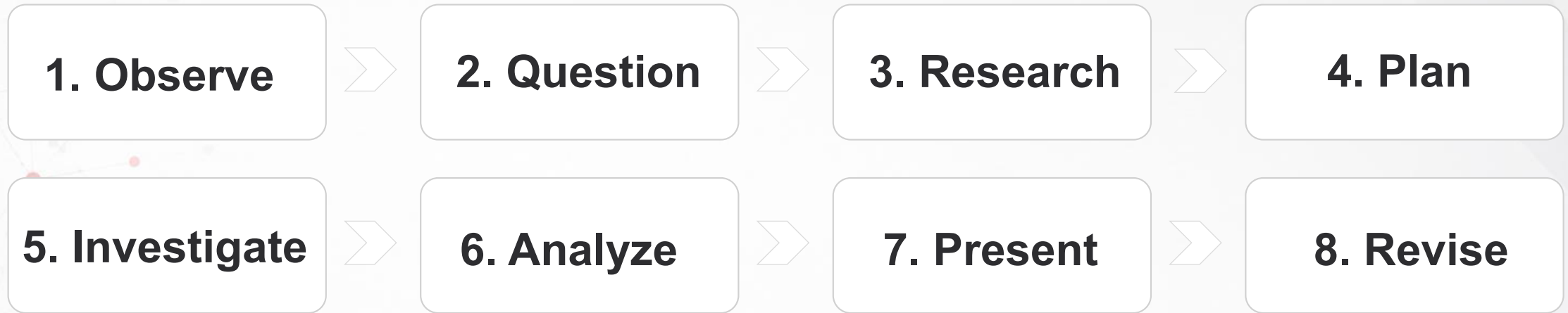
Exhibit & Experience

Share your STEM project story.



Students should save their password and keep their project information organized from the beginning.

Common Science Fair Project Cycle



Students should not jump from topic to display board.
A strong project is built through checkpoints and revisions.

The detailed process depends on project type.
Experimental projects follow a scientific research process, while engineering projects follow an iterative engineering design process.

Scientific Research Process

Use this process when your project tests a question or discovery with evidence.



01
Observe

Notice a pattern or problem.

02
Question

Ask a focused testable question.

03
Research

Learn what is already known.

04
Hypothesize

Make a reasoned prediction.

05
Investigate

Run a fair test and collect data.

06
Analyze

Use graphs and reasoning.

07
Conclude

Answer the question using evidence.

08
Reflect

Discuss errors and limitations.

09
Revise

Suggest improvements and future work.

For Experimental Projects: From Topic to Testable Question

A good question identifies what changes, what is measured, and what stays the same.

Too broad

“Plastic pollution”
“Plants”
“AI in school”

Better question

How does UV exposure
affect the mass loss of PLA
vs. PET over four weeks?

Why it works

It includes the independent
variable, dependent variable,
comparison, and timeline.

How does [independent variable] affect [dependent variable] when [controlled variables] are kept the same?

Example: How does the [light intensity] affect the growth of a plant [height] when [temperature, humidity and the duration of light exposure] are kept the same?

For Experimental Projects: Variables and Fair Tests

Independent variable

What you change on purpose.

Dependent variable

What you measure or observe.

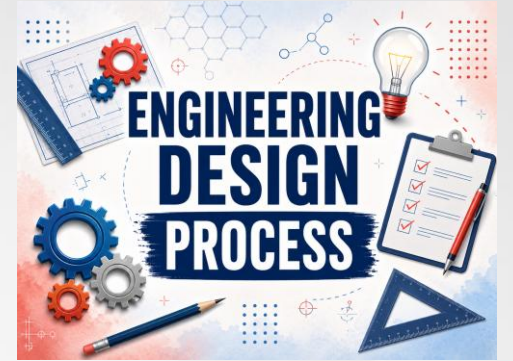
Controlled variables

What you keep the same.

- ✓ Change only one main variable at a time.
- ✓ Use a control or comparison group when possible.
- ✓ Repeat trials so one odd result does not decide your conclusion.
- ✓ Measure in clear units and record raw data in your logbook.

Engineering Design Process

Use this process when your project solves a problem or improves a solution.



01

Problem

What need or problem are you solving?



02

Criteria

How will you know it works?
Define success.



03

Research

What solutions already exist?



04

Prototype

Build a testable version.



05

Test

Collect data using your criteria.



06

Improve

Revise and test again.



Do not hide failures. Failed prototypes and redesigns are evidence that you learned from testing.

For Engineering Design Projects: From Problem to Design Challenge

A strong engineering project starts with a specific problem and a solution that can be tested.

Too broad

“Build a better water filter”
“Make a robot”
“Improve recycling”

Better design challenge

How can I design a low-cost water filter that reduces water turbidity by at least 70% while filtering 500 mL in under 3 minutes?

Why it works

- Identifies the problem or need
- Defines what the solution must do
- Includes measurable criteria
- Includes realistic constraints

How can I design or build **[solution]** that **[performs a function]** while meeting **[criteria]** within **[constraints]**?

Example: How can I design or build **a pressure-sensing wheelchair cushion** that **helps reduce prolonged pressure on the skin** while **remaining comfortable, durable, and inexpensive** within **size and material constraints**?



For Engineering Design Projects: Criteria, Constraints, and Fair Testing

Criteria

What must your design achieve?

Examples: strength, efficiency, safety

Constraints

What limits must you work within?

Examples: cost, material property, temperature?

Testing & Iteration

How will you prove that your design works?

- ✓ Use the same testing conditions each time.
- ✓ Collect quantitative data whenever possible.
- ✓ Repeat tests to check reliability.
- ✓ Compare results with your criteria.
- ✓ Modify the design and test again.



A successful prototype is not just one that works—it is one that can be tested against clear criteria and improved using evidence.

Project Quality Checklist

Use this to help teachers decide whether a topic is strong enough.

Question

clear, focused, investigable

Originality

student adds a new angle or improvement

Method - clear procedure, investigation plan, or design-testing process appropriate to the project type

Evidence

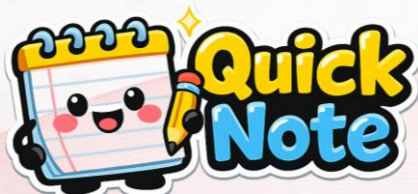
enough data, trials, observations, or analysis

Understanding

student can explain why results matter

Safety

risks reviewed before work begins



A project does not need to be complicated. It needs to be clear, honest, evidence-based, and well-understood by the student.

Stage 2: Background Research

Purpose

Students learn what is already known so their project is informed rather than random.

Teacher role

Guide students to reliable print and web sources. Encourage notes, citations, and source comparison.

Student product

Research summary, key vocabulary, prior work, and a short list of sources cited properly.



Students should be able to explain the scientific or technical background behind their question or design problem before beginning the investigation or testing.

Discovery and Experimental Design Quick Check

- ✓ Is there only one main variable being changed?
- ✓ Are there enough trials or samples to see a pattern?
- ✓ Is the procedure safe and ethical?
- ✓ Are control conditions or comparison groups included?
- ✓ Are measurements clear and repeatable?
- ✓ Can the student explain possible sources of error?

Teacher prompt: "What would convince a judge that your result was caused by your variable and not by something else?"

Study / Research Projects

Strong study projects include:

- ✓ a focused research question
- ✓ reliable data or observations
- ✓ clear selection criteria
- ✓ organized analysis
- ✓ limitations and bias discussion

Common risk

A study project can become a book report if the student only summarizes information. It must analyze evidence and answer a question.

AI and Digital Tools: Appropriate Use

Appropriate support

Brainstorming questions, explaining background concepts, improving grammar, generating practice judge questions, or helping learn coding concepts.

Not appropriate

Inventing data, generating a report or presentation script that the student submits as their own work, hiding sources, producing analysis the student cannot explain, or replacing student reasoning.



- Student should be transparent about tools used and be able to explain every part of the project independently.
- Students may use AI in their projects, but they must understand and explain the AI model or machine-learning algorithm used and justify why it was selected.

Logbook: Evidence of the Student Journey

Science Fair Logbook

Date | What I did | Observations |
Questions | Next steps

- Record work as it happens, not at the end.
- Include sketches, raw data, failed attempts, photos, and decisions.
- Judges value honest process, surprises, and revisions.
- The logbook helps prove student ownership.
- Digital logbook can also be used, but the documents must be properly dated and labelled.

Data Collection and Graphs

Data table expectations

- ✓ **clear labels and units**
- ✓ **repeated trials when possible**
- ✓ **raw data kept in logbook**
- ✓ **averages or summaries calculated carefully**
- ✓ **graphs matched to the data type**

Graph coaching prompts

- What trend do you see?
- How strong is the pattern?
- What data point surprised you?
- What might explain error or variation?



A graph is not decoration. It should make the result easier to understand.

Conclusion and Future Work

Claim

What answer did the evidence support?

Evidence

Which data or observations support the claim?

Reasoning

Why does the evidence make scientific sense?

Limitations

What could have affected the result?

Next step

What would the student improve or investigate next?



Display Board Layout

The board should tell the story of the project quickly and clearly.

Question	Title	Analysis	
	Method		
	Background		
	Hypothesis	Results / Graphs	Conclusion
	Variables		Future Work
Materials	Photos / Diagrams	References	

- Free-standing and within fair size rules.
- Use large headings, clear graphs, and concise text.
- Show highlights on the board; keep full data in logbook.
- Avoid clutter and unrelated decorations.



Board = story, not scrapbook

Oral Presentation Structure

Hook

Why this problem matters?

Question

What the student investigated?

Method

How the work was done

Results

What the evidence showed

Conclusion

What it means and what comes next

Practice goal:

students should explain the project naturally, not memorize a script they cannot adapt.

- Prepare approximately a 10-minute project summary followed by about 5 minutes of judge questions. The full judging interaction may last up to approximately 20 minutes
- Be clear with what was the problem/question, what the student did, what the evidence showed, and what was discovered, resolved, or improved.
- Practice answering follow-up questions.
- Practice pointing to board sections and logbook evidence.

Judging Interview Practice Questions

Why did you choose this topic?

What did you change, measure, and control – For an experiment

What criteria and constraints guided your design – For engineering design

How do you know your conclusion is supported?

What is your main question or problem?

What result surprised you?

What did you learn from mistakes or failed attempts?

What would you improve if you had more time?

How is your work original or useful?

Common Mistakes Teachers Can Prevent

Too broad

"Climate change" instead of one focused measurable question.

No meaningful evidence

Information report or model with no investigation or testing.

Weak method or testing

Multiple changes at once, poor controls, unclear measurements, or undefined criteria/constraints.

Late start

Project begins when board is due; little time for revision.

Parent takeover

Student cannot explain work independently.

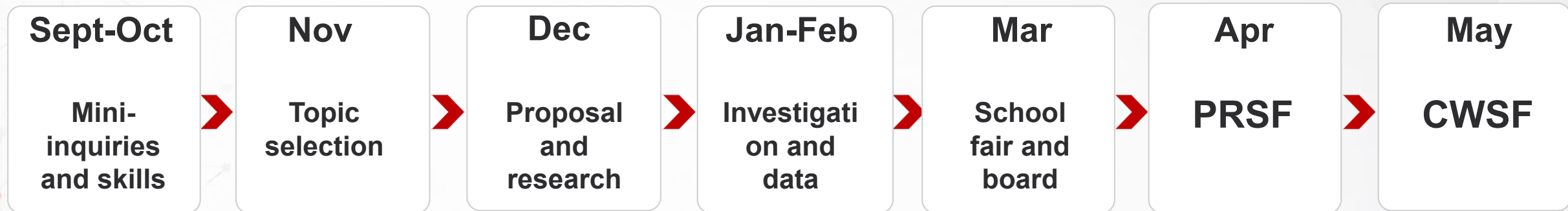
Cluttered board

Too much text, weak graphs, no clear story.

The simplest prevention strategy is scheduled checkpoints. Teachers should evaluate stages of the project, not only the finished product.

Year-at-a-Glance Timeline

Adjust dates annually based on your school calendar and PRSF deadlines.



Recommended teacher practice: set five checkpoints - proposal, research summary, method/data plan, results/graphs, board/presentation.

Multi-Year Projects

Students are encouraged to develop projects over multiple years. However, they must clearly identify the new research, experimentation, and improvements completed during the current year.

Teacher Monitoring Plan

Checkpoint 1	Topic and project type	Is it safe, focused, and possible?
Checkpoint 2	Research and question	Can the student explain background and purpose?
Checkpoint 3	Method / Design Plan	Are the variables and controls—or criteria, constraints, and testing approach—appropriate?
Checkpoint 4	Data and analysis	Are results organized and interpreted?
Checkpoint 5	Board and interview	Can the student communicate clearly?

Mini-Inquiry Activities Before Full Projects

Flying straws

Students change one design feature, test flight distance or accuracy, and discuss variables.

Paper airplanes

Students compare one design change, repeat trials, graph results, and identify sources of error.

Paper helicopters

Students investigate wing length, mass, drop height, or spin time while controlling conditions.



These are not the final science fair projects. They are low-risk practice for fair tests, variables, measurement, graphing, and explanation.

Assessment Ideas for Teachers

Assess the process

- ✓ **topic proposal**
- ✓ **research notes**
- ✓ **method / design plan**
- ✓ **logbook progress**
- ✓ **evidence/data and analysis or visualization**
- ✓ **reflection and revision**

Avoid only assessing

- the final board
- the attractiveness of materials
- parent-made displays
- memorized speeches only
- complexity without understanding

02

Peel Region Science Fair

How teachers can prepare students and schools for the regional fair pathway.

About the Peel Region Science Fair

PRSF is the regional science fair for eligible Grades 7–12 students in Peel Region, providing opportunities to present STEM research and innovation and a pathway to CWSF

Purpose

Provide Grade 7-12 students in Peel with an opportunity to present STEM inquiry, innovation, and research beyond the classroom.

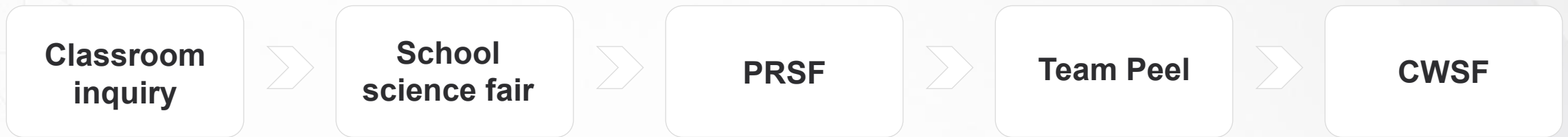
Pathway

School or classroom project selection leads to PRSF. Strong regional projects may advance to CWSF as Team Peel finalists.

Audience

Students, teachers, parents, judges, sponsors, community partners, and local STEM supporters.

Pathway: School to PRSF to CWSF



- Teachers help students prepare for school-level selection.
- Schools should select projects that are safe, complete, well-understood, and ready for external judging.
- PRSF identifies outstanding projects and students who may represent Peel nationally.

PRSF Eligibility and Divisions

Who can participate?

- Grade 7-12 students
- Students from Peel Region schools
- Individual or team projects depending on current rules
- Projects that meet safety, ethics, display, and registration requirements

Typical divisions

- Junior: Grades 7-8
- Intermediate: Grades 9-10
- Senior: Grades 11-12

Confirm exact division rules annually

PRSF Registration Checklist – Registration link will be active around January

- ✓ Student name(s), grade(s), school, and contact information
- ✓ Abstract or short project summary
- ✓ Teacher/school approval
- ✓ Payment or fee confirmation if applicable
- ✓ Project title, division, project type, and Challenge Area/category as required.
- ✓ Safety and ethics forms if required
- ✓ Parent/guardian permission and media consent if required
- ✓ Final display and judging-day instructions shared with students



Collect information with a school Google Form before entering projects into the official PRSF registration system.

PRSF Project Requirements to Review

Display rules

size, free-standing setup,
prohibited items

Safety

chemicals, electrical, biological
materials, equipment

Ethics

human participants,
surveys, animals, privacy

Documentation

logbook, forms, citations,
raw data

Student ownership

student-designed and
student-explained

Presentation

display, interview/presentation,
abstract, and any required
documentation.



- Check <https://www.peelsciencefair.ca> for current requirements before students begin and again before registration.
- Don't wait until the last day to register!

PRSF schedule

PRSF is a two-day experience

Day 1:

- Project Setup
- Opening Ceremony
- Project judging

Day 2:

- Public viewing
- Student programming
- Award ceremony



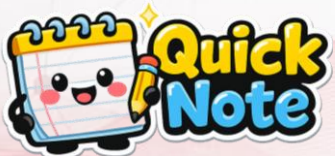
What Happens on PRSF Judging Day?

- | | | |
|----------|--------------------------|--|
| 1 | Arrival and setup | Students know where to go and can set up independently. |
| 2 | Briefing | Students listen carefully for instructions and schedule changes. |
| 3 | Judging | Students explain their project naturally and use their board/logbook as evidence |
| 4 | Between Judging | Students remain with their project when required and reset materials neatly. |
| 5 | After Judging | Encourage students to reflect on feedback and questions they received. |

Our judges – What Teachers Should Know

You will be matched with at least three judges during the fair.

- PRSF judges come from diverse STEM backgrounds, including science teachers, graduate students, professors, researchers, and experienced industry professionals.
- Judges are trained before the fair so they understand PRSF expectations and the evaluation process.
- Judges are also briefed on providing respectful, professional, constructive, and encouraging interactions with students.
- PRSF tries to match judges with projects related to their expertise whenever possible.
- A perfect match cannot always be guaranteed because of the wide range of project topics, limited judge availability, and the information provided in project descriptions.
- Students should therefore be able to explain their project clearly to a scientifically educated person who may not be an expert in their exact field.



Have students practise explaining their project to someone who understands science but is unfamiliar with the specific topic.

The goal is not to prepare students for one specific judge—it is to prepare them to communicate their science clearly to any judge.

What Judges Are Looking For

Judges reward understanding, evidence, originality, and clear communication.

Scientific Thought and Knowledge

Clear objective, motivated introduction, effective approach, valid analysis, supported conclusions, reflection, future work, and understanding of science principles.

Originality and Creativity

Originality appropriate to grade level, evidence of student contribution, and impact or human benefit.

Presentation and Display

Clear exhibit, meaningful charts and graphs, workmanship, communication, judge questions, and independent work.



Think like a judge: Can I understand the purpose, method, evidence, conclusion, and student contribution quickly?



How the Evaluation Form Works

The evaluation form gives more weight to the science than to appearance alone.

65% Scientific Thought and Knowledge

Purpose, approach, analysis, conclusions, discussion, future work, and scientific principles.

15% Originality and Creativity

Original idea, student contribution, and impact or human benefit.

20% Presentation and Display

Clear display, graphs, workmanship, communication, questions, and independent work.



A beautiful board cannot make up for weak evidence or a project you cannot explain.

Scientific Thought and Knowledge (Value 65 %)	1 = Poor, 5 = Average, 10 = Excellent										Total:
Abstract: Is there a well-defined objective/purpose and project summary?	1	2	3	4	5	6	7	8	9	10	
Introduction: Is the objective well motivated/explained?	1	2	3	4	5	6	7	8	9	10	
Approach: Does the design of the investigation effectively address the problem identified?	1	2	3	4	5	6	7	8	9	10	
Analysis: Was the analysis scientifically valid?	1	2	3	4	5	6	7	8	9	10	
Conclusions: Are the conclusions valid based on the analysis?	1	2	3	4	5	6	7	8	9	10	
Discussion: Does the student accurately comment/reflect on the conclusions suggested by their data?	1	2	3	4	5	6	7	8	9	10	
Does the student have clear ideas for future work?	1	2	3	4	5	6	7	8	9	10	
Does the student understand the scientific principles related to the project at an appropriate level?	1	2	3	4	5	6	7	8	9	10	

Originality and Creativity (Value 15 %)	1 = Poor, 5 = Average, 10 = Excellent										Total:
Does the project show originality appropriate to the student's grade level?	1	2	3	4	5	6	7	8	9	10	
Evidence of student contribution to the design and execution?	1	2	3	4	5	6	7	8	9	10	
Is there an impactful application or human benefit?	1	2	3	4	5	6	7	8	9	10	

Presentation and Display (Value 20 %)	1 = Poor, 5 = Average, 10 = Excellent										Total:
Does the exhibit convey details clearly and effectively and uses charts/graphs in a meaningful way?	1	2	3	4	5	6	7	8	9	10	
Does the exhibit demonstrate good workmanship?	1	2	3	4	5	6	7	8	9	10	
Does the student effectively communicate their understanding?	1	2	3	4	5	6	7	8	9	10	
Does the student handle judge's questions competently?	1	2	3	4	5	6	7	8	9	10	
Does the student demonstrate that they have completed the project independently (as could be expected given the grade level and safety)?	1	2	3	4	5	6	7	8	9	10	

Overall Evaluation					
The overall level of the project was:	Level:	1	2	3	4

Level 1 - Basic

- Project duplicates a known experiment with predictable results.
- Device replicating existing technology is constructed.
- Study has little focus and/or few published sources.

Level 2 - Noteworthy

- An existing device is improved/used in alternative ways to reach a goal.
- Study covers a specific issue, includes multiple sources and student insight.

Level 3 - Advanced

- Original experiment with control of some significant variables and quantitative analysis of observations.
- Construction of innovative device or development of innovative technique with potential practical application.
- Study focuses on specific issue, uses multiple sources, and includes significant analysis of data gathered.

Level 4 - Exceptional

- Original experimental research with most variables controlled and detailed quantitative analysis of data gathered to draw useful conclusion.
- Construction or design of an innovative device or technique with commercial application or of benefit to society.
- Study includes in-depth analysis of data gathered from multiple sources to provide original solution or significant insight into a current issue.

Project Levels: What They Mean

Level 1 – Basic

Known experiment with predictable results, replica device, or unfocused study with few sources.

Level 2 – Noteworthy

Improves or reuses an existing device, or studies a specific issue using multiple sources and student insight.

Level 3 – Advanced

Original experiment with some controlled variables and quantitative analysis, innovative device, or significant data analysis.

Level 4 – Exceptional

Detailed control of variables, strong quantitative analysis, practical or social benefit, original insight, or commercial potential.



Your goal: move from “I made something” to “I investigated, tested, analyzed, and can explain what the evidence means.”



How to Improve the Project Level

Move one level higher by improving the science story, not just the decorations.

From Level 1 → 2

Focused question/problem ·
clear method · meaningful
evidence · basic analysis

From Level 2 → 3

Better controls/testing · stronger
evidence · deeper analysis ·
greater student insight

From Level 3 → 4

Originality · rigorous analysis ·
strong scientific understanding ·
limitations · meaningful impact

To Strengthen Your Project

- Collect sufficient, reliable evidence
- Improve controls, testing, trials, or design criteria
- Go beyond describing results—explain what the evidence means
- Identify limitations and meaningful next steps.

Poster Quality $\neq$ Project Quality

A strong poster and effective presentation can enhance your project, but the quality of your project depends primarily on the strength of its scientific content, evidence, analysis, and understanding.

BEST / STRONG POSTER & PRESENTATION

How clearly can you communicate your science?

- Easy to follow
- Large, readable text
- Clear graphs and diagrams
- Good organization and visual hierarchy
- Concise—not overloaded with text
- Professional and attractive
- Evidence is easy to find
- Presentation is clear and confident

$\neq$

BEST / STRONG PROJECT

How strong is the science?

- Clear and meaningful question/problem
- Strong method or design process
- Reliable evidence and data
- Thoughtful analysis
- Originality and student contribution
- Evidence-based conclusion
- Deep understanding of the science
- Able to explain limitations and future work

Clear Communication



Strong Science



A Highly Competitive Project!

Awards & Recognitions

PRSF recognizes outstanding projects through several award categories.

Merit Awards

Gold, Silver, and Bronze Merit Awards are presented in each division, with corresponding cash awards.

Special Awards

Sponsor-supported Special Awards may include cash awards, scholarships, program opportunities, or other prizes.

PRSF Awards

Additional recognitions may celebrate creativity, artistic design, innovation, or especially imaginative ideas.



Teacher Checklist Before PRSF

- ✓ Confirm official PRSF rules and deadlines
- ✓ Check safety and ethics forms early
- ✓ Practice judge interviews
- ✓ Send parent communication and schedule
- ✓ Hold a school-level selection or review process
- ✓ Review student abstracts and project titles
- ✓ Review display board rules and prohibited items
- ✓ Prepare transportation or supervision plan if needed

Recommended school deadline: all project details finalized at least one week before the PRSF registration deadline.

Student Checklist Before PRSF

- ✓ I can explain my question/problem in one sentence.
- ✓ My data, graphs, and conclusion match each other.
- ✓ My display follows size and safety rules.
- ✓ I know what I would improve next.
- ✓ I can explain my method without reading from the board.
- ✓ My logbook is organized and honest.
- ✓ I have practised answering judge questions.
- ✓ I can explain what I learned from challenges.

Parent Communication Template

Use this as a slide, email, or handout.

Dear Parents/Guardians,

Your child is preparing a science fair project. Please encourage them, help them manage time, and support safe access to materials. The project must remain student-owned: students should design the work, collect the data, prepare the display, and explain the project themselves. Teacher feedback and parent encouragement are welcome, but the final work must reflect the student's own understanding.

Important dates: [insert school fair date] • [insert PRSF registration deadline] • [insert PRSF date]

Thank you for helping students become confident young scientists.

03

Canada-Wide Science Fair

What teachers need to know when students advance beyond the regional level.

What Is the Canada Wide Science Fair?

National event

CWSF brings together top regional science fair students from across Canada.

Week-long experience

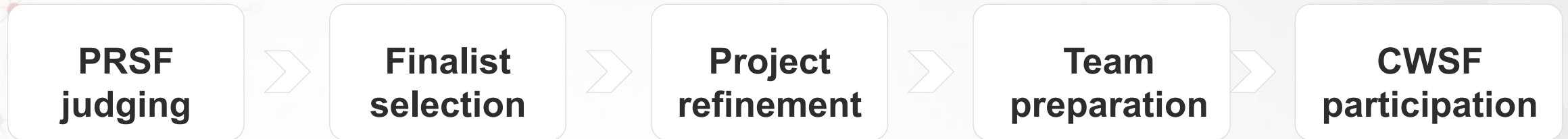
Finalists participate in judging, public viewing, STEM activities, tours, and celebrations.

Higher expectations

Projects are judged by experienced STEM professionals and must be communicated at a national level.

Teacher message to students: qualifying for CWSF is not the end of the project. It is the beginning of a higher-level refinement process.

From PRSF to Team Peel



- Students represent Peel Region, not only their own school.
- Finalists should expect extra preparation meetings and project revisions.
- Communication, professionalism, and safety compliance become especially important.

CWSF Finalist Expectations

Project mastery

Student can explain every decision and result.

Professional conduct

Student represents their school and region respectfully.

Preparation meetings

Student attends required practices and updates.

Family communication

Parents understand the delegate structure and student responsibilities.

Rule compliance

Project, display, safety, and travel expectations are followed.

Growth mindset

Student improves the project after PRSF feedback.

Teachers can help by celebrating the student, providing practice audiences, and helping with school communication.

Improving the Project After PRSF

- ✓ Revise the abstract and title for clarity
- ✓ Strengthen background research and citations
- ✓ Improve graphs, labels, units, and analysis
- ✓ Clarify limitations and future work
- ✓ Simplify board text and improve visual hierarchy
- ✓ Practise deeper judge questions and follow-up answers



A CWSF-ready project should be scientifically stronger and easier to understand than the PRSF version.

Typical Week at CWSF

Day 1
Travel

Day 2
Project Setup

Day 3
Project judging

Day 4
**Judging &
STEM Activities**

Day 5
Tour Day

Day 6
**Public Viewing
Awards Ceremony**

Day 7
Public Viewing

Day 8
Return Travel



- Share only confirmed CWSF schedule details with families once official finalist information is available.
- Schedule may vary every year and will be posted around April each year.

CWSF Judging and Awards

Judging

Students should expect multiple interviews and deeper questions about method, evidence, originality, and understanding.

Awards

Recognition may include excellence awards, challenge awards, special awards, scholarships, and grand awards.

Preparation

Preparation should focus on clarity, confidence, evidence, and honest discussion of limitations.



Do not over-focus on prizes. The strongest preparation is helping students explain their own work deeply and authentically.

Roles During CWSF

Finalists

- ✓ follow schedule
- ✓ present project
- ✓ represent Team Peel
- ✓ communicate respectfully

Delegates

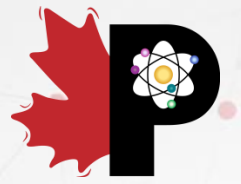
- ✓ supervise students
- ✓ coordinate logistics
- ✓ support preparation
- ✓ communicate with families

Teachers and Schools

- ✓ celebrate students
- ✓ help with practice
- ✓ support documentation
- ✓ share achievements

Some Resources

- Peel Region Science Fair: <https://www.peelsciencefair.ca>
Use this site to check for updates, fair rules and registrations
- Our Affiliation (Youth Science Canada): <https://youthscience.ca/>
Our documentation comes from this organization
- Starting Science Project: <https://www.mysystemspace.ca>
Use this site to help with starting science fair ideas
- How to Make a Science Fair Project: <https://www.sciencebuddies.org/>
Everything about the science fair – teachers and students



Peel Region Science Fair

Science Fair is not only a competition.

It is a structured opportunity for students to ask better questions, build evidence, solve problems, and communicate their thinking with confidence.

Thank you for supporting young scientists.

For updated information, please visit us at
<http://www.peelsciencefair.ca>