QUINTE REGIONAL SCIENCE AND TECHNOLOGY FAIR STUDENT PROJECT PLANNING GUIDE

From Curiosity to Discovery
A Complete Guide for Science Fair Success
2026–2027 Edition

WELCOME

Welcome to the Quinte Regional Science and Technology Fair (QRSTF).

Whether this is your first science fair project or you are an experienced competitor, this guide will help you plan, conduct, and present a successful project.

Science fairs provide opportunities to:

- Explore your interests
- Investigate real-world problems
- Learn scientific and engineering skills
- Improve communication and presentation abilities
- Qualify for special awards and scholarships
- Potentially advance to the Canada-Wide Science Fair

The most successful projects begin with curiosity and develop through careful planning, persistence, and creativity.

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CHAPTER 1
WHAT IS A SCIENCE FAIR PROJECT?

Science fair projects allow students to investigate questions, solve problems, and communicate discoveries.
Projects generally fall into four categories:
• Experiment
• Engineering Design
• Innovation
• Research Project
Students follow a process similar to professional scientists and engineers.
Question → Research → Plan → Test → Analyze → Conclude → Present

Participating in a science fair project is a great way to explore your interests and learn more about the world around you. It allows you to dive deep into a topic that fascinates you, whether it's biology, chemistry, or physics. By conducting experiments and gathering data, you develop critical thinking and problem-solving skills. Plus, presenting your findings helps improve your communication abilities and boosts your confidence. Overall, a science fair project is not just an assignment; it's an opportunity to discover new things and share your passion for science with others.

CHAPTER 2
BENEFITS OF PARTICIPATING

Science fair participation helps students develop:

Research Skills
Problem Solving
Critical Thinking
Public Speaking
Time Management
Creativity
Scientific Literacy
Leadership
Many former science fair participants pursue careers in:
Medicine

Engineering
Computer Science
Environmental Science
Research
Education
Business Innovation

Participating in a science fair offers numerous advantages that can enhance a student's educational experience. It allows students to explore their interests in science, develop critical thinking skills, and gain hands-on experience with experiments and research. Additionally, presenting their projects helps build confidence and improve public speaking abilities. Engaging with peers and judges also fosters teamwork and communication skills, while the opportunity to win awards can motivate students to strive for excellence. Overall, science fairs are a fun and rewarding way to deepen understanding of scientific concepts and showcase creativity.

CHAPTER 3

TYPES OF PROJECTS

Science fairs feature a variety of project types that allow students to explore different scientific concepts. These projects can be categorized into several main areas, including experiments, demonstrations, and models. Experimental projects involve testing a hypothesis through hands-on activities, while demonstration projects showcase scientific principles in action without the need for extensive testing. Additionally, model projects often involve creating physical representations of scientific ideas, such as ecosystems or the solar system. Each type of project encourages creativity and critical thinking, making science fairs an exciting opportunity for students to engage with science.

EXPERIMENTAL PROJECTS

Experimental projects are hands-on activities that allow students to explore scientific concepts through practical application. These projects encourage creativity and critical thinking as students design experiments, collect data, and analyze results. By engaging in experimental work, students can better understand the scientific method and develop skills that are essential for future learning. Overall, these projects make science fun and interactive, helping students to grasp complex ideas in a more relatable way.

Purpose:
Test a hypothesis.
Example:
How does temperature affect battery performance?
Requirements:
Independent variable
Dependent variable
Control
Repeated trials
Data analysis

ENGINEERING DESIGN PROJECTS

Engineering design projects involve creating solutions to problems by applying engineering principles. These projects require students to think critically and creatively, as they must identify a challenge, brainstorm ideas, and develop a plan to address it. Throughout the process, students learn to work collaboratively, test their designs, and make improvements based on feedback. This hands-on experience not only enhances their understanding of engineering concepts but also helps them develop important skills like teamwork and problem-solving.

Purpose:
Design a solution to a problem.
Example:
Design a low-cost water filtration system.
Engineering Process:
Identify Problem
Research
Design
Prototype
Test
Improve
Retest

INNOVATION PROJECTS

Innovation projects for a science fair can be exciting and educational. Students can explore various topics, from renewable energy sources to robotics, and create unique experiments or models. These projects not only allow for creativity but also help develop critical thinking and problem-solving skills. By working on an innovation project, students can learn how to conduct research, gather data, and present their findings effectively, making the science fair a great opportunity to showcase their hard work and ideas.

Purpose:
Create a new product, technology, or process.
Example:
A mobile app that helps students organize homework.

RESEARCH PROJECTS

For a science fair, you can explore a variety of research projects that spark your curiosity. Consider investigating topics like the effects of different fertilizers on plant growth, or how temperature changes can impact the rate of chemical reactions. You might also look into renewable energy sources, such as building a simple solar oven or wind turbine. Another interesting idea could be studying the behavior of local wildlife or testing the pH levels of different water sources. Whatever you choose, make sure to ask a question, conduct experiments, and present your findings clearly to engage your audience.

Purpose:
Investigate and analyze information.
Example:
The future impact of artificial intelligence on healthcare.

CHAPTER 4

FINDING A PROJECT IDEA

Finding a science fair project idea can be exciting yet challenging. Start by thinking about your interests and what topics you enjoy learning about. Consider exploring areas like biology, chemistry, physics, or environmental science. You can also look for inspiration in everyday life, such as problems you want to solve or experiments you've always wanted to try. Additionally, browsing online resources, books, or even talking to teachers and friends can spark new ideas. Remember, the best projects often come from curiosity and creativity, so don't be afraid to think outside the box!

Good projects begin with questions.
Ask yourself:

What interests me?
What problems do I notice?
How could something be improved?
What do I enjoy learning about?

PROJECT IDEA SOURCES

Nature
Technology
Sports
Health
Agriculture
Environment
Transportation
Energy
Space
Artificial Intelligence
Community Issues

PROJECT IDEA WORKSHEET

Things I Enjoy:

1. _____
2. _____
3. _____

Questions I Have:

1. _____
2. _____
3. _____

Problems I Notice:

1. _____
2. _____
3. _____

Possible Project Ideas:

_____

_____

_____

_____

CHAPTER 5

RESEARCH SKILLS

To develop strong research skills for a science fair project, it's important to start with a clear idea of what you want to investigate. Begin by asking questions about your topic and looking for reliable sources of information, such as books, articles, and websites. Take notes on what you find, focusing on key facts and ideas that relate to your project. Organizing your research will help you understand the material better and make it easier to present your findings. Finally, don't forget to cite your sources properly to give credit to the authors and avoid plagiarism.

Reliable Sources Include:

Government publications
University websites
Scientific journals
Libraries
Museums

Educational organizations
Avoid:
Unverified social media sources
Opinion websites
Unsourced claims
Research Notes Template
Topic:
Source:
Key Information:
Questions Generated:
Citation Information:

CHAPTER 6

DEVELOPING A RESEARCH QUESTION

When creating a research question for a science fair project, it's important to start with a topic that interests you. Think about what you enjoy or what puzzles you, and then narrow it down to a specific aspect you want to explore. A good research question should be clear, focused, and researchable, meaning you can find information and conduct experiments to answer it. For example, instead of asking a broad question like "How do plants grow?" you might ask, "What effect does different soil types have on the growth of bean plants?" This way, you have a clear direction for your project and can gather data to support your findings.

Strong questions are:

Specific
Measurable
Researchable
Relevant
Examples
Weak Question:
Are batteries good?
Strong Question:
How does temperature affect the discharge rate of AA batteries?

CHAPTER 7

When creating a hypothesis for a science fair project, it's important to start with a clear question that you want to explore. A hypothesis is basically an educated guess about what you think will happen in your experiment. To write a good hypothesis, you should consider the variables involved and how they might affect each other. Make sure your hypothesis is specific and testable, meaning you can conduct an experiment to see if it's true or false. This will help guide your research and give you a solid foundation for your project.

WRITING A HYPOTHESIS

Formula:
If _____ then _____ because _____.
Example:
If plants receive more sunlight, then they will grow taller because photosynthesis increases growth.

CHAPTER 8

PROJECT PLANNING SHEET

Student Name:_____

Project Title: _____

Question:

_____

_____

Hypothesis:

_____

_____

Materials Needed:_____

Estimated Cost:_____

Timeline:_____

Potential
Risks:_____

_____

Mentor:_____

CHAPTER 9
PROJECT TIMELINE

Week 1
Select Topic

Week 2
Research

Week 3
Develop Question

Week 4
Design Project

Week 5
Collect Data

Week 6
Continue Testing

Week 7
Analyze Data

Week 8
Prepare Display Board

Week 9
Practice Presentation

Week 10
Science Fair

CHAPTER 10

THE LOGBOOK

Creating a logbook for a science fair project is an essential step in documenting your research and findings. This logbook serves as a detailed record of your experiments, observations, and the progress you make throughout the project. It should include information such as your project idea, the hypothesis you are testing, the materials you use, and the methods you follow. Additionally, make sure to note any challenges you encounter and how you overcome them, as well as the results of your experiments. Keeping a well-organized logbook not only helps you stay on track but also provides valuable insights when you present your project at the f

A logbook documents your entire project.
Judges often consider logbooks among the most important project components.
Include:
Dates
Research Notes
Observations
Procedures
Measurements
Photographs
Sketches
Changes
Results
Reflections

SAMPLE LOGBOOK PAGE

Date: _____

Goal:

Activities Completed:

Observations:

Data Collected:

Problems Encountered:

Next Steps:

CHAPTER 11

COLLECTING DATA

When working on a science fair project, collecting data is a crucial step that helps support your hypothesis. Start by deciding what kind of information you need and how you will gather it. You can use surveys, experiments, or observations to collect your data. Make sure to keep your data organized, whether it's in charts, graphs, or written notes, so you can easily analyze it later. Remember, the more accurate and detailed your data is, the stronger your project will be.

Quantitative Data
Temperature
Length
Mass
Time
Volume
Qualitative Data
Colour
Appearance
Behaviour
Texture

DATA TABLE TEMPLATE
Trial | Result | Notes
1 | _____ | _____
2 | _____ | _____
3 | _____ | _____
4 | _____ | _____
5 | _____ | _____

CHAPTER 12

ANALYZING RESULTS

When analyzing the results of a science fair project, it's important to carefully examine the data you collected. Start by looking for patterns or trends that stand out, as these can help you understand what your experiment showed. Consider whether your results support your hypothesis or if they suggest something different. It's also useful to compare your findings with existing research to see how they fit into the bigger picture. Finally, think about any factors that might have influenced your results, such as errors in measurement or unexpected variables. This reflection will help you draw meaningful conclusions from your project.

Look for:

Patterns
Trends
Differences
Unexpected Results
Consider:
Sources of error
Limitations
Reliability
Future improvements

CHAPTER 13

ETHICS AND SAFETY

When working on a science fair project, it's important to consider ethics and safety. This means making sure that your project is fair and honest, and that it doesn't harm anyone or anything. For example, if you're doing an experiment with animals, you need to treat them kindly and follow any rules about their care. Additionally, you should be careful with any materials you use, making sure they are safe and won't cause accidents. By keeping these things in mind, you can create a project that is not only interesting but also responsible and safe for everyone involved.

All projects must follow ethical and safety guidelines and may have forms to complete. Please check with QRSTF

Human Participants
Consent required
Privacy protected
Animal Projects
Humane treatment
Appropriate supervision
Environmental Projects
Minimize environmental impact
Follow regulations

SAFETY REVIEW FORM

Project Title:
Materials Used:
Potential Hazards:
Safety Procedures:
Student Signature:
Parent Signature:
Teacher Signature:

CHAPTER 14

DISPLAY BOARD DESIGN

Creating an eye-catching display board for a science fair project is essential to attract attention and effectively communicate your ideas. Start by choosing a clear and bold title that reflects your project's theme. Use colorful visuals, such as graphs, charts, and images, to illustrate your findings and make the information easier to understand. Organize the content logically, with sections for the introduction, methods, results, and conclusion, ensuring that each part flows smoothly into the next. Finally, remember to keep the text concise and use bullet points or short sentences to make it easy for viewers to read and grasp the key points quickly.

THREE-PANEL LAYOUT

LEFT PANEL
Background
Research
Question
Hypothesis

CENTER PANEL
Title
Methods
Photos
Data
Graphs

RIGHT PANEL
Results
Conclusion
Future Work
Acknowledgements
References

DISPLAY BOARD CHECKLIST
□ Large title
□ Photos included
□ Graphs included

□ Text readable
□ References included
□ Neat appearance

CHAPTER 15

PRESENTING TO JUDGES

When presenting your science fair project to judges, it's important to be clear and confident. Start by introducing your project and explaining the main idea in a simple way. Use visuals like posters or models to help illustrate your points, as they can make your presentation more engaging. Be prepared to answer questions, and practice speaking in front of friends or family to build your confidence. Remember to make eye contact and speak loudly enough for everyone to hear. A good presentation can really make your project stand out!

Introduce yourself.
Explain:
Question
Research
Methods
Results
Conclusion
Applications
Speak clearly.
Maintain eye contact.
Answer questions honestly.
Show enthusiasm.

COMMON JUDGE QUESTIONS

Why did you choose this topic?
What did you learn?
What challenges did you face?
How did you analyze your data?
What would you do differently?

CHAPTER 16

Project Judging Rubric
Quinte Regional Science and Technology Fair

Use this rubric to assign a level (**1**,**2**,**3** or **4**) against the criteria for the project. Then choose a mark within the range provided for that level. This mark reflects the quality and strength of the project relative to other projects you have assigned the same level.

Part A: Scientific Thought Mark:_____/ 50	
Discovery: An experiment or study	**Innovation:** Develop devices, models or techniques
Level 1 Mark Range 26 to 30 (least impressive)	
Replicate a known experiment to confirm previous findings or collate data from a variety of sources without further analysis.	Build models (devices) to duplicate existing technology or to demonstrate a well known physical theory or social/behavioural intervention.
Level 2 Mark Range 31 to 35	
Extend a known experiment with modest improvements to procedures, data gathering or application; or synthesize data from a variety of sources to confirm existing conclusions. Attempts to address a specific issue.	Improve or demonstrate new applications for existing technological systems, social or behavioural interventions, existing physical theories or equipment, and justify them.
Level 3 Mark Range 36 to 41	
Devise and carry out an original experiment. Identify and control some of the significant variables or synthesize data from a variety of sources to strengthen or extend existing conclusions. Carry out an analysis using arithmetic, graphs or simple statistics.	Design and build innovative technology or provide adaptations to existing technology or to social or behavioural interventions; extend or create new physical theory. Human benefit, advancement of knowledge and/or economic applications should be evident.
Level 4 Mark Range 42 to 50. (most impressive)	
Devise and carry out original experimental research which attempts to control or investigate most significant variables. Data analysis is thorough and complete for the grade level. There is internal consistency – all parts of the report address the purpose. Results are related to real world significance. Further studies are suggested.	Integrate several technologies, inventions or designs and construct an innovative application that will have human and/or commercial benefit. Performance of the prototype or procedure is thoroughly evaluated. Suggestions for improvement are made. Relevance and significance of the work is explained.

Part B: Creativity and Originality Mark:_____/ 20			
Level 1 (9 to 11)	**Level 2 (12 to 14)**	**Level 3 (14 to 16)**	**Level 4 (17 to 20)**
Simple design with little student input. A textbook /internet type project.	Some creativity in a project of fair to good design. Topic is a common one.	Imaginative project, well thought out. Some creativity in design or use of materials.	Highly original approach, showing much resourcefulness and creativity in design, use of equipment, or analysis.

Part C: Communication Mark:_____/ 30 **The level is based on four elements: summary, interview, project display board and sample logbook pages.**			
Level 1 (15 to 17)	**Level 2 (18 to 20)**	**Level 3 (21 to 24)**	**Level 4 (25 to 30)**
Most or all of the four elements are simple or incomplete. There is little evidence of attention to effective communication. In a pair project, one member may have dominated the presentation.	Some of the four elements are simple, or incomplete, but there is evidence of student attention to communication. In a pair project, one member may have made a stronger contribution to the presentation.	All four elements are complete and demonstrate attention to detail. The communication components are each well thought out and executed. In a pair project, both members made an equitable contribution to the presentation.	All 4 elements are complete and exceed age/grade expectations. The visual displays are logical and well presented. The summary and logbook are informative and clearly written. The bibliography goes beyond web-based articles. The oral presentation is clear, logical, enthusiastic and contributed to equally in a pair project.

Total Mark:_____/100 *March 2026*

Enter Marks in the Result Summary sheet. Determine ranks. Submit the sheet to the committee room.
These forms are not to be given to students. Provide the *Project Feedback* form to each student.

CHAPTER 17

WEEKLY PROGRESS TRACKER

Week:
Goal:
Completed Tasks:
Challenges:
Next Steps:
Parent Signature:
Teacher Signature:

CHAPTER 18

PARENT GUIDE

When helping your child with a science fair project, it's important to encourage creativity and curiosity. Start by brainstorming topics that interest them, whether it's about plants, animals, or even simple chemical reactions. Make sure to guide them in formulating a clear question or hypothesis that they want to explore. Once they have a topic, assist them in planning the steps needed to conduct their experiment, including gathering materials and setting up a timeline. Remind them to document their process and results, as this will be crucial for their presentation. Finally, help them practice explaining their project, so they feel confident sharing their findings with others at the fair.

Parents can:
Provide encouragement
Help manage schedules
Assist with transportation
Review presentations
Encourage independence
Parents should not complete the project for the student.

CHAPTER 19

TEACHER MENTOR GUIDE

As a teacher mentor for a science fair project, their role is to guide and support students in developing their ideas. They encourage them to explore their interests and think critically about scientific concepts. Together, they can brainstorm project topics, design experiments, and analyze results. The goal of mentor is to help students gain confidence in their abilities and foster a love for science that will inspire them in the future.

Teachers can:

Help refine questions
Guide research
Provide feedback
Review safety
Support presentation practice

CHAPTER 20

CANADA-WIDE SCIENCE FAIR PATHWAY

The Canada-Wide Science Fair is an exciting event where students from across the country showcase their scientific projects and discoveries. Participants get the chance to present their work to judges and compete for awards, scholarships, and other opportunities. It's a great way for young scientists to share their ideas, learn from each other, and inspire others with their passion for science. This event not only highlights the importance of scientific inquiry but also encourages teamwork and creativity among students.

Outstanding projects may be selected to represent the region at the annual Canada-Wide Science Fair.
Benefits include:
National recognition
Scholarships
University connections
Networking opportunities
STEM career exploration

CHAPTER 21

QRSTF RULES

Students must:

Register by deadlines
Follow ethics guidelines
Follow safety requirements
Submit required forms
Attend judging sessions
Follow display regulations
Refer to current QRSTF rules each year.

CHAPTER 22

AWARDS

The Quinte Regional Science and Technology Fair offers various awards to recognize the hard work and creativity of participants. These awards celebrate innovative projects and encourage students to explore their interests in science and technology. By participating, students not only gain valuable experience but also have the chance to earn recognition for their efforts and achievements.

Examples include:

Best in Grade Awards
Best in Fair Awards
Environmental Awards
Engineering Awards
Sponsor Awards
Scholarships
Special Recognition Awards

CHAPTER 23

REGISTRATION

Registration for the Quinte Regional Science and Technology Fair will be open soon. Make sure to sign up if you want to showcase your project and share your ideas with others.

This is a great opportunity to explore science and technology while competing with fellow students. Don't miss out on the chance to participate in this exciting event!

Students should:
Complete registration forms
Submit project information
Meet deadlines
Review fair policies
Check www.qrstf.ca for updates.

CHAPTER 24

FINAL CHECKLIST

□ Research complete
□ Logbook complete
□ Data analyzed
□ Display board complete
□ Presentation practiced
□ Registration complete
□ Materials packed
□ Ready for judging

APPENDIX A

100 PROJECT IDEAS
Life Science
Environmental Science
Physics
Chemistry
Engineering
Computer Science
Artificial Intelligence
Agriculture
Health Sciences
Mathematics

Earth Sciences
Technology
(Expand to a full multi-page idea bank.)

GOOD LUCK FROM THE QUINTE REGIONAL SCIENCE AND TECHNOLOGY FAIR
Every great discovery begins with a question.