SCIENCE WORLD BRITISH COLUMBIA

BC pals Program for the Awareness and Learning of Science

Science Fair Guide

presented by Science World British Columbia

Version 1.2

September 2007

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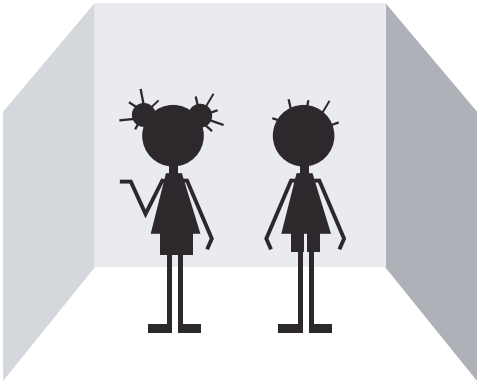
Science World British Columbia, a self-supporting non-profit organization, endeavours to stimulate positive attitudes towards science and technology, promoting the development of a knowledge-based society in British Columbia. In support of our mission, we have developed a province-wide science fair program to support those who wish to coordinate non-competitive science fairs for Kindergarten to Grade 7 students. Science fair projects allow students to apply a hands-on approach to science exploration, while integrating cross-curricular skills. Through questions and investigations, students explore topics ranging from art to information technology, sports to psychology. Students may create science projects as part of their regular coursework or as an extracurricular activity.

Students benefit by creating science projects and participating in fairs because they can:

- apply the processes of science (example: the scientific method);
- develop organizational and project management skills;
- develop skills in cooperation and communication;
- apply problem solving techniques;
- develop and apply skills in research;
- integrate knowledge and skills from other subject areas;
- participate in an inclusive event where all students will be recognized.



From a pedagogical standpoint, the nature of the elementary school classroom allows for cross-curricular connections; many learning outcomes from other subject areas such as Math, Language Arts, Information Technology and Art can be met through science projects. In addition, many prescribed learning outcomes for K–7 Science are met, including a 100% match for those listed in the K–7 Processes of Science curriculum organizer.

The non-competitive fair allows students to participate in a non-threatening event where they need not be concerned with winning or losing. From an early age, they can be free to engage in an activity where they get turned on to science, building more of a positive attitude toward science and technology. The benefits

include increased confidence, familiarity and understanding of science content and processes, and future continued participation in science-related courses and activities.

From a coordinator's perspective, such an event may be more appealing than a competitive program because it can be more inclusive and easier to organize than a competitive fair where the formalities of judging need to be included and guidelines and timelines are less flexible. The more people who coordinate non-competitive events, the more students can experience the life long benefits of scientific literacy.

Science World will provide resources, workshops, information, as well as build a 'science fair community' in order to encourage as many science experiences as possible to BC students. It is our hope that the following guide will be accessed freely throughout the province and beyond; shared, and modified in whatever way necessary to get more students doing science!

BC K–7 Science Prescribed Learning Outcomes

Science fair projects are a 100% match with K–7 Science Processes of Science prescribed learning outcomes—along with many other learning outcomes in Science, Math, and Language Arts

Kindergarten

- use the five senses to make observations
- share with others information obtained by observing

Grade 1

- communicate their observations, experiences, and thinking in a variety of ways (example: verbally, pictorially, and graphically)
- classify objects, events, and organisms

Grade 2

- use their senses to interpret observations
- infer the probable outcome of an event or behaviours based on observations

Grade 3

- ask questions that foster investigations and explorations relevant to the content
- measure objects and events

Grade 4

- make predictions, supported by reasons and relevant to the content
- use data from investigations to recognize patterns and relationships and reach conclusions

Grade 5

- identify variables that can be changed in an experiment
- evaluate the fairness of a given experiment
- describe the steps in designing an experiment

Grade 6

- manipulate and control a number of variables in an experiment
- apply solutions to a technical problem (example: malfunctioning electrical circuit)

Grade 7

- test a hypothesis by planning and conducting an experiment that controls for two or more variables
- create models that help to explain scientific concepts and hypotheses

Prescribed Learning Outcomes by Organizer. Science K to 7 Integrated Resource Package 2005. British Columbia: Minister of Education, 2004.

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Science World gratefully acknowledges the in-kind support and sharing of valuable information and resources from:

Bay Area Science and Engineering Fair (BASEF)

Richmond School District Science Jam Committee

Science Fair Foundation of BC

The Vancouver Science Celebration Committee

Western Manitoba Science Fair

Youth Science Foundation Canada

1.0 Planning the Fair

Timeline

see Appendix p.13

1.01 Timelines

All fairs start with a team and a timeline. Once you have your team in place, set a date for the Fair then work backwards. The advantage of coordinating a non-competitive fair is flexibility. You can:

- host it any time of year, regardless of having to time it with other competitive events;
- choose the number of participants: your own class, many classes, whole school, select schools in district, etc;
- adjust required project time to accommodate the teacher's schedule;
- plan it as an extracurricular event so class time is not required;
- host one every second year to accommodate similar events that highlight other subject areas such as art and social studies.

1.02 Name That Fair

What is better than a science fair? How about a science:

- carnival
- celebration
- exhibition
- exposition or expo
- extravaganza
- festival or fest
- jam
- gala
- o'rama
- symposium

1.0 Planning the Fair

1.03 Creating your Team

For a successful ongoing event, it is important to create a motivated team or committee and delegate responsibilities based on people's strengths, interests and what roles need to be filled. Integrate as many people as possible to ensure community involvement in the event, diversity of skills and contribution, and continuity of the program. An initial call for committee members can be published in the school or community newsletter. Interest may grow as the event approaches, even during the event! Be prepared to collect people's contact information year round.

The size of your committee will vary according to interest, experience, number of participants in the fair, and so on. There are typical responsibilities common to fairs which may be shared depending on the size of your committee or requirements for your particular event. Too often, one person takes on all the tasks – it is easy to see the benefits of creating a team!

Roles & Responsibilities

Chair/Coordinator: Attends and chairs all meetings; sets and distributes meeting agenda; delegates tasks; liaises with administration, teachers, and media; has signing authority on cheques (if necessary).

Secretary: Prepares and distributes minutes for each meeting (especially action items).

Treasurer: Creates, updates and tracks budget; has signing authority on cheques (if necessary); disperses payments.

Public Relations: Customizes sponsor letter and levels of sponsorship; liaises with sponsors; with the help of a district or volunteer graphic artist, prepares all advertisements, posters, banners with appropriate logos, etc.; writes and submits announcements in newsletters, etc.; contacts local media.

Registration and Check In: Designs registration form and procedures; liaises with teachers/project sponsors; monitors number of registrants; assigns numbers/position to projects; checks students into fair; assists those who wish to enter a competitive fair.

1.0 Planning the Fair

Safety Inspector: Ensures the correct safety information has been distributed to adults supervising the projects and fields questions from them; inspects all projects prior to the start of the fair.

VIP Liaison: Recruits volunteers to interview students; creates suggested interview questions; hosts VIPs as they arrive at fair; sends thank-you notes after the fair.

Awards: Collects the names of school or names of participants; prints out certificates of participation or distributes participation ribbons, etc. depending on the funds available; organizes and hosts the award ceremony, if any.

Venue: Liaises with representative from the venue (high school, mall or community centre, etc.); ensures all requirements, if any, are met; coordinates tables & decorations for project set-up and inspects area after takedown.

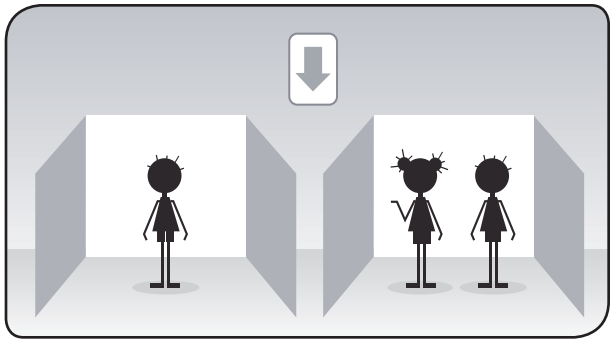
1.04 Rules & Regulations

Because this is a non-competitive event, the rules and regulations are minimal. The committee may propose guidelines for:

- Maximum number of participants
- Maximum number of schools
- Grades participating
- Type of project (experiment, innovation, study, etc.)
- Deadline for submissions
- Date of fair
- Safety requirements
- Preparing for competition. If students will be participating in a competitive fair, whether it be district-wide or regional, ensure their project also meets that fair's regulations. This is especially important concerning grade level, project display dimensions, format, and written reports.

1.0 Planning the Fair

1.05 Participants



- Individuals or pairs
- A class
- Many classes in a school
- The entire school
- Select students from a classroom or school
- Schools in a district
- The school's science club

1.06 Grade Categories, Project Types & Divisions

Students may be grouped K–3 and 4–7, or any other suitable variation. At the fair, students may be grouped by age, by school or by division. Project types may include experiment, innovation or study. Project Divisions may include: life science, physical science, earth and space science, computer science, engineering, sustainability issues and so on.

1.07 Publicity

Model Release and Consent Form

see Appendix p.16

Promote your fair through electronic mail, school newsletters, community newsletters and newspapers. Some community newspapers run a regular school feature. Invite journalists & photographers to attend the event. Ensure you leave enough time so that newspaper deadlines can be met—but not so much that people forget about the event.

Consider having a poster contest where students design science fair promotional posters and the winning poster is used to promote the fair.

Remember to have all the student participants sign a model release and consent form so that any photographs of them during the event can be used for future promotional materials.

1.0 Planning the Fair

1.08 Call for VIPs

Although there are no judges, you may consider inviting VIPs to walk around and interview the students. VIPs may include:

- High school students
- Parents
- Teachers
- School Administrators
- College and University professors
- Science World's Scientists & Innovators in the Schools volunteers (www.scienceworld.ca/sis).
- Science community members such as:
  - » Association of Professional Biologists
  - » Association of Professional Engineers and Geoscientists of BC (APEG)
  - » BC Ministry of Competition, Science, and Enterprise
  - » BC Society of Laboratory Scientists
  - » Division for the Advancement of Women in Engineering and Geosicence (DAWEG)
  - » Federation of British Columbia Naturalists
  - » Genome BC
  - » Heart and Stroke Foundation of BC and Yukon
  - » Science Council of British Columbia
  - » Society for Canadian Women in Science and Technology (SCWIST)
  - » Worker's Compensation Board of Bristish Columbia

1.0 Planning the Fair

1.09 Working with Teachers

If you are not a teacher, begin by approaching the school principal. Once you have permission, try to gain the support of as many teachers as possible. Adjust science fair activity to fit within their courses or start an after school club. If you are a teacher, announce the event and recruit volunteers such as other teachers, parents, and members of the community as soon as possible.

1.10 Newsletter Announcement & Call for VIPs

Included is an example of an announcement for a school based science fair where the elementary school participation is voluntary and all the Grade 7–10 students participate as part of their science requirement, with an option to enter the district/regional competitive science fair. Please note that some district/regional fairs allow Grades 4 and up to participate — check for specific information in your area.

Newsletter Announcement & Call for VIPs

see Appendix p.17

Parental Involvement

see Appendix p.19

1.11 Parental Involvement

Parents can support science fairs in a variety of ways. Please refer to the parental involvement document. If you find that parents have moved beyond the role as a guide, consider doing school-based projects (done in the classroom) so that the teacher/coordinator can establish clear guidelines for assessment and ongoing feedback of the students' progress.

1.12 Venue Selection

Classroom: for peer presentations

Gymnasium: for school wide fairs

High school gymnasium or central meeting area: for a multi-school fairs

Community hall or mall: for an 'out-of-school' setting

1.0 Planning the Fair

1.13 Inviting Community Groups to the Event

There are many locally developed organizations you may wish to invite to your fair. Some are free and some have fees. Their participation greatly enhances the event by creating a diverse science experience for the students.

In the Lower Mainland, organizations such as Science World, the HR Macmillan Space Centre, Richmond Nature Park Society, Young Naturalists Club, Mad Science and The Bug Lab may be able to set up booths and activities for the students. In other communities, try contacting science-based businesses and organizations to see how they might get involved.

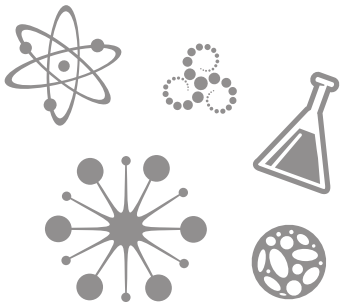
1.14 Community Partners & Sponsors

Sponsor Information

see Appendix p.21

Involving local groups and sponsors contributes greatly to the community participation in the event and can help offset some costs not covered by the students, the school or the district. Community partners provide services and support while sponsors provide cash or in kind donations. One local district began their fair from a recommendation by a local sponsor! Since then, that fair continues to be free for students and they receive a backboard and a t-shirt to commemorate their participation in the event, along with experiencing fun science related activities with community groups.

A sample letter is included along with sponsor information.



Science Fair Timeline

To be Done:	
For the Fair	*For the Students*

6 months
before the fair

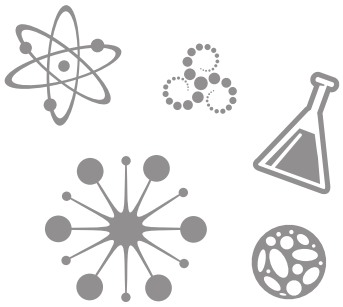
- ☐ Confirm the support of the school administration (superintendent, principal)
- ☐ Develop your committee
- ☐ Meet with team, delegate tasks
- ☐ Send memo to school staff
- ☐ Set the date of the Fair (may time with local district or regional competitive fair)
- ☐ Determine participation deadline (if any) for class, school, other schools in district
- ☐ Determine maximum student participation
- ☐ Book venue
- ☐ Contact potential sponsors

- ☐ Schedule class time for project development
- ☐ Prepare student handouts and/or handbook

4 months
before the fair

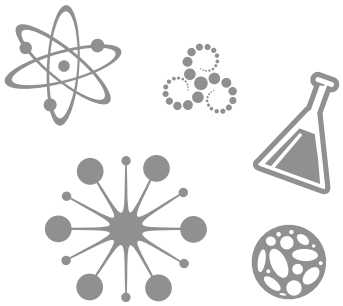
- ☐ Submit announcement in school newsletter including: date of fair, call for volunteers, parental involvement
- ☐ Arrange time with school/ community library and computer lab for research
- ☐ Confirm sponsors
- ☐ Set a budget
- ☐ Book community groups to attend

- ☐ Review expectations with students
- ☐ Review student handbook with students
- ☐ Begin with choice of topic and research



Science Fair Timeline

	To be Done:	
	For the Fair	*For the Students*
3 months before the fair	☐ Establish deadline for project submissions in fair (total number of projects and students) ☐ Submit 'press release' to newsletter, local papers ☐ Arrange for tables and chairs	☐ Confirm topic choice and planning ☐ Confirm students' project type: experiment/innovation/study ☐ Review safety regulations ☐ Students develop projects in class or at home ☐ Students begin written report
1 month before the fair	☐ Design a floor plan for the tables & projects that is customized for the venue and accommodates electrical outlets ☐ Invite educators, community members, parents, etc. to attend the fair ☐ Confirm dates with your committee members and other VIPs (whether adults or other students) to ensure their attendance	☐ Monitor students' progress on projects and written reports ☐ Design layout of display
1 week before the fair	☐ Discuss any timetable changes with staff ☐ Finalize set-up schedule ☐ Finalize itinerary for set-up, viewing, sharing, awards, clean up, etc. ☐ Assign students their table location	☐ Students present their project to classmates ☐ Students hand in their written report ☐ Students add finishing touches to their display ☐ Do final safety check before fair ☐ Evaluate students' presentation and written report



Science Fair Timeline

	To be Done:	
	For the Fair	*For the Students*
1 day before the fair	☐ Set up the display area (tables, chairs, etc.)	☐ Review fair schedule with students
Day of the Fair	☐ Set up registration (contact information, attendance and location of students & projects) ☐ Assist students with project set up ☐ Oversee parent/public viewing time of projects ☐ Hand out awards/certificates to all students; per class; or per school ☐ Recommend projects for competitions (district or regional) if applicable ☐ Supervise project take down and clean up of display area	☐ Students set up their projects ☐ Students present their projects to VIPs, public, parents, and peers ☐ Students view others' projects ☐ Students participate in other fair activities (if planned) ☐ Students take down projects and clean up
Follow Up	☐ Write thank-you card to sponsors, VIPs, committee members and other volunteers ☐ Evaluate the process with your team and note any changes for the following year ☐ Submit an article to the newsletter and local papers	☐ Students write thank-you cards to sponsors, VIPs and other volunteers ☐ Students self-evaluate their presentation and team work contributions ☐ Students participating in competitive fairs will continue to refine and modify projects according to feedback they have received

Science Fair
Model Release and Consent

For value received (the receipt of which is hereby acknowledged), I hereby grant to

School Name and to anyone whom it may appoint or assign, the right to make any use of the photographs taken of me on:

at: by:

I waive the right to inspect the finished photograph. I also release

School Name from all claims of any kind with respect to the use of the photograph that I, or my heirs, may or shall have.

Please check one of the following:

☐ I am 19 years of age or older. ☐ I am under 19 years of age.

Model Release and Consent

Name of model (please print):

Signature:

Address:

Parent Or Guardian Release and Consent (If model is under 19 years of age)

Name of parent or guardian of model (please print):

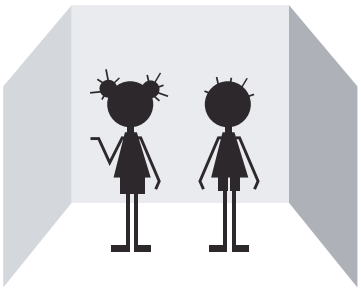
Signature:

Relationship to model:

Address:

Subject of photo (for office use only):

Science Fair
Newsletter Announcement & Call for VIPs



The first annual [School Name] Science Fair will be held on [Fair Date], [Year] from [Start Time] to [End Time].

This is a non-competitive fair with the option for Grade 7–10 students to subsequently participate in the district competitive fair.

Project set-up will take place from [Start Time] to [End Time]. VIPs will be viewing projects from [Start Time] to [End Time] and the awards ceremony will take place from [Start Time] to [End Time]. Project take-down will take place immediately after the awards ceremony.

Elementary Participants (Grades 1 – 6)

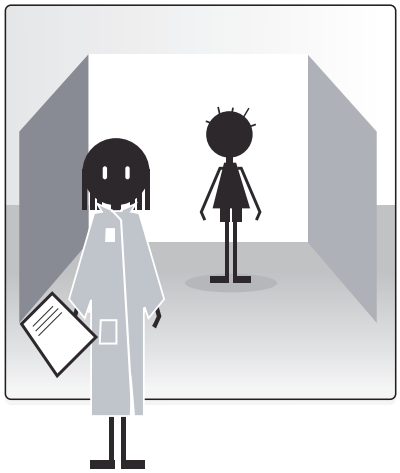
[Teacher] will be coordinating the elementary divisions. Primary teachers or parents can submit registration information for students participating in the fair. Students will work as individuals or in pairs. Forms are available at the front office and should be handed in to [Teacher] no later than [Due Date]. All participants will receive a Certification of Participation during the awards ceremony.

Intermediate and Senior Participants (Grades 7 – 10)

[Teacher] will be coordinating the intermediate and senior divisions. All students are required to participate in the science fair as part of their science course requirement. Students will work as individuals or in pairs. Please contact [Teacher] if you would like your project to be considered for the district fair.

Parents

We value parents' support for this non-competitive event. We anticipate that additional time will be required outside of the classroom. Please encourage your child during the course of this project. We suggest your role would be as a guide instead of actually doing any work on the project. Please see the Parental Involvement information sheet. Each student's apparatus is enhanced by a backboard and therefore we would appreciate your help by buying or building one. Check the plywood sample in the Science Laboratory Room [#] or visit your local arts & crafts store.



VIP

This is the first call for volunteer VIPs. If you have a special interest in science and are available on during the fair, we would like to invite you to interview students at our science fair. Please fill out the information below and return it to:

Teacher by *Due Date* .

VIPs at the First Annual *School Name* Science Fair

Fair Date , *Year* from *Start Time* to *End Time* .

Name:

Related to which student(s): in Grade:

Area(s) of Interest: ☐ Biology
☐ Chemistry
☐ Physics
☐ Earth and Space Science
☐ Engineering
☐ Other

Please return to *Teacher* by *Due Date* , *Year* .

Science Fair
Parental Involvement

Dear Parent or Guardian:

Students of *School Name* will be participating in our first annual non-competitive Science Fair. Throughout this project, students will learn about the scientific method through a hands-on approach, developing skills in project management, research, problem solving, communication and cooperation, to name a few. Students will be encouraged to explore a topic they are interested in and will work individually or in pairs.

Students will spend class time choosing a topic and beginning their research. We anticipate that additional time will be required outside of the classroom. Please encourage your child during the course of this project. We suggest your role would be as a guide instead of actually doing any work on the project. Please see the Parental Involvement information sheet.

There are a variety of areas in which you can contribute to the Fair; we would like to ask for your support in the following areas:

- volunteer to be part of the organizing committee;
- mentor/coach students;
- purchase or build backboards for the students;
- assist during the Fair;
- be a VIP at the Fair;
- take photographs at the Fair.

We are very excited about hosting this non-competitive fair and look forward to tapping into the energy and skills of the parents and community. Please contact *Teacher* directly if you would like to volunteer in any of the above areas or have any questions.

Name of Parent/Guardian: _____

Phone number: _____

☐ I would like to be involved in the fair

The skills I can offer include: _____

☐ I am not able to assist at this time

Science Fair
Parental Involvement

Parents can support the Fair in a variety of ways. They can:

- volunteer to be part of the organizing committee;
- mentor/coach students;
- purchase or build backboards for the students;
- assist during the Fair;
- be a VIP at the Fair;
- take photographs at the Fair.

To support your child, you can:

- familiarize yourself with the Fair guidelines and deadlines;
- ensure your child is following all safety standards, especially regarding experiments on live animals, and those that use chemicals;
- understand that the teacher works with many students and may not have the time to give your child additional support if required;
- buy or help find materials for the science project, including the backboard;
- provide an area in the home where the science project can be safely worked on & stored;
- listen to your child's presentation;
- provide transportation to places of research such as public libraries, nature centres, as well as to the Fair itself;
- take photographs of the process;
- assume the role of guide.

Avoid doing the project for the student. This includes doing the research, typing, re-wording their written explanation, setting up the experiment, calculating the statistics, etc. Ensure that the project is primarily the work of the child.

Remember, the most important outcome of participating in this activity is that the child builds a positive attitude doing hands-on science, as well as the pride in having accomplished this through his or her own initiative and personal effort.

Science Fair
Sponsor Information

Dear Friend,

This year, our elementary students will be participating in a district wide non-competitive Science Fair on *Fair Date* , *Year* . Science fairs allow students to experience a hands-on approach to science while integrating skills in other subject areas including organization and community. Because many schools will be participating, we would like to invite members of the community to be a part of the Fair.

We would like you to consider becoming involved in this event. We would welcome your involvement in any of the following areas:

- volunteer on the Fair committee;
- volunteer as a VIP to interview students;
- share your specific skills;
- provide equipment, space, or other kinds of support for the students;
- donate prizes for the Fair;
- donate money to the Fair (to help offset the cost of t-shirts, rentals, etc.)

Please see attached sponsorship levels.

We look forward to working with members of the community. I will follow up next week with a telephone call to address any questions you may have about participating in our First Annual School Science Fair.

Kind regards,

Science Fair
Sponsor Information

By making a donation to the Science Fair, you have the opportunity to support science education for our youth and to create a positive and significant impact within our community. An investment in our young scientists is an investment in our future!

Your company can participate at various levels from cash to in-kind donations or a combination of both.

Gold Sponsor $2500 +

Benefits include:

- Title sponsor recognition in all event promotions, publications, posters and advertisements
- Company logo printed in primary position on event t-shirts
- Company recognition during the event by Science Fair Coordinator
- Company name listed on the acknowledgement advertisements after the event

Silver Sponsor $1000–$2499

Benefits include:

- Sponsor recognition in all event publications, posters and advertisements
- Company logo printed in secondary position on event t-shirts
- Company name listed on the acknowledgement advertisements after the event

Bronze Sponsor $500–$999

Benefits include:

- Sponsor recognition in all event publications, posters and advertisements
- Company name listed on the acknowledgement advertisements after the event

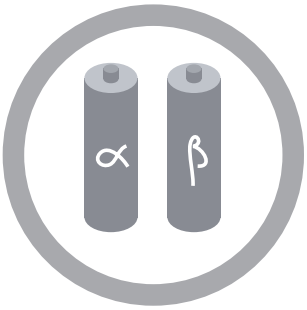
In-kind donations include:

- Special items for all student participants (coupons, toys, etc.)
- Draw prizes for students, teachers and volunteers
- Attending the event as a science educator or promoter of science learning in the form of a display, booth, activity or presentation

2.0 Organizing the Students

2.01 Warm Up Activities

Prior to holding a science fair, consider doing a whole class demonstration or project. During this activity, the teacher/coordinator can emphasize different aspects of the processes and skills of science and integrate grade-appropriate vocabulary. The entire process can be written up as a report. For younger grades, consider focusing on a whole class 'study', demonstration, or a simple experiment. In later grades, add the option of innovation and more complex experiments with variables, as they become more comfortable with the processes of science.



What's the difference?
Model: Build a two or three dimensional model showing the different parts of a battery: carbon rod, metal cap, chemicals (zinc, magnesium, etc.). Label and or explain each of the parts and how they function.

Demonstration: Show how a battery can light a bulb; show what size of battery is best for powering certain items. Build a battery using a lemon or different kinds of fruits/vegetables.

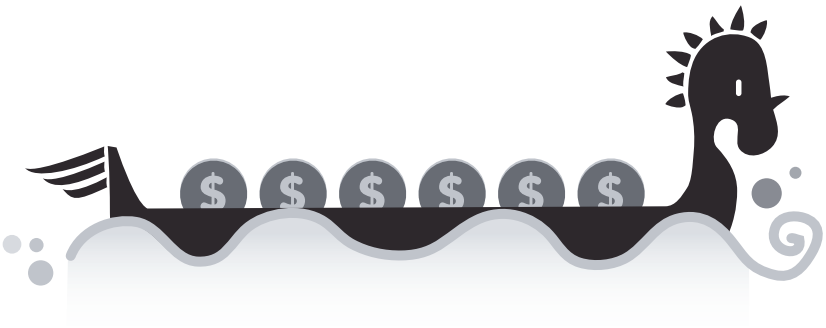
Study: Include a model (as above), an explanation of the history of batteries, the different kinds of batteries we use and why (AAA to D cells to rechargeable), and how to dispose of batteries.

Innovation: Build a battery using a lemon or different kinds of fruits/vegetables.

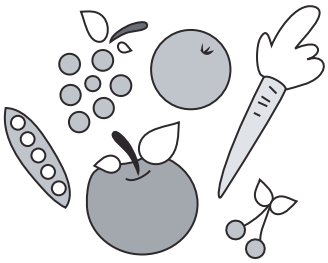
Experiment: Compare three different brands of batteries to determine which one lasts the longest. For a more sophisticated experiment, develop a hypothesis such as: zinc oxide batteries last longer than nickel cadmium batteries because of the duration of the chemical reactions.

Below are some examples of activities you can adapt to your age group. Visit **www.scienceworld.ca/sciencefairs** to find more ideas for demonstrations.

Experiment: Which is the best battery?
Test different brands of batteries to determine which one lasts the longest. Have the students bring in battery-operated toys. Design data sheets, use timing devices, set up your experiment, make predictions and collect the data! Integrate appropriate vocabulary and discuss the results including what you might do differently next time.



Innovation: Design a 100 penny boat
Using aluminum foil, students design a boat that can hold the most pennies before sinking. Hand out the materials, design the boat, build it, compare models and predict which one is the best. Launch the boats in a container of water and drop pennies in one by one with the whole class counting. Determine the best design and discuss why.



Study: What is a balanced diet?
Brainstorm 'balanced diet' with the class and organize the main ideas. Assign each group an idea to research, create a written document and/or a model and present to the class.

2.0 Organizing the Students

2.02 Keeping a Journal

This may be a science specific journal or part of a regular learning journal. Any time students think about or do any work related to their science project, have them start a new entry, write the date and write it down. Include pictures, brainstorms, graphic organizers, research keywords, research logs, results, photograph, amount of time spent, and so on. If you have the technology to support it, consider doing an electronic journal including photos and video. A journal can also be evaluation as a part of the process.

2.03 Choosing a Topic

Topics could relate to themes that are studied in class or to topics that interest the students. For theme-related topics, simply refer to the prescribed learning outcomes that are set out by the Ministry of Education (www.bced.gov.bc.ca/irp/irp_sci.htm). To assist students in exploring their own interests:

- Refer to newspapers and magazines for current topics;
- Investigate a topic related to your region (example: pollution, transportation, forestry, etc.);
- Build on previous experiences or topics;
- Create a 'topic chart' at the beginning of the year and record students' questions/ideas on a regular basis;
- Browse the internet. Visit the links from www.scienceworld/sciencefairs;
- Use a graphic organizer to get students brainstorming their ideas. Take the next step and have students customize their ideas to a project type. Once they have decided whether or not to do an experiment, innovation or study, they can further brainstorm ideas using these planning sheets:

  Brainstorming your Ideas

  What Type of Project?

  Science Fair Planning

Brainstorming your Ideas

see Appendix p.34

What Type of Project?

see Appendix p.36

Science Fair Planning

see Appendix p.37

2.0 Organizing the Students

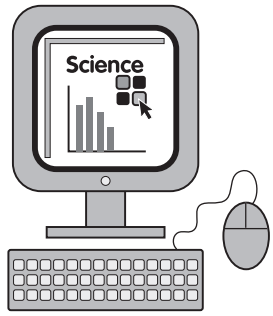
Research Journal

see Appendix p.40

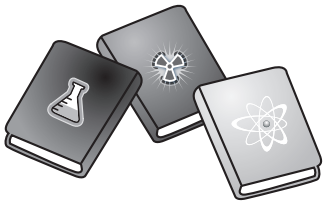
How to Reference Material using the MLA Style

see Appendix p.41

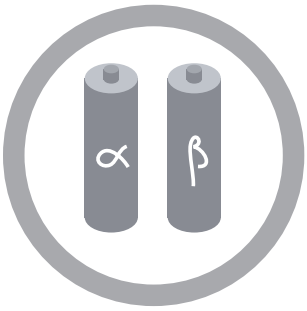
2.04 Research



Students can find resources from a variety of places—the internet and library are just a start. From the beginning of the project, they can track their resources using the research journal or by creating a similar table in their journal. If they are preparing a written document, they may reference to the document, How to Reference Material for examples of Modern Language Association (MLA) style.



2.05 The Scientific Method



The Scientific Method is a systematic process for observing and understanding the world. We all use the scientific method to solve everyday problems. For example, if the TV won't go on, you might guess what the problem might be (the remote's batteries are dead), then experiment to find out if you're right (change the batteries, does it work now?).

Scientists use a variety of techniques and methods. The step-by-step process outlined here is a good model to follow that will give students more accurate data and results, and help them record your procedure in a way that anyone in the world can follow. Students may try several different methods before deciding on one they will use for their project. Remind students to capture any initial ideas in their journal.

The italicized text supports the explanations and is part of a project called: *A Comparison of Two Batteries*.

Observation: Think of something you observed, that you are curious about. Find out as much as possible about that topic. *I observed that some batteries seem to last longer than others*.

Question: Create a question from your initial observation and preliminary research. *Do Alpha batteries last longer than Beta batteries?*

Purpose: Begins with a 'To' statement. *To determine if Alpha batteries last longer than Beta batteries*.

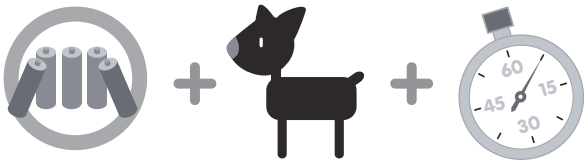
Hypothesis: This is a more sophisticated concept that may be introduced in Grade 7. It is a possible explanation for something that is observed, telling us why something happened thus allowing us to make predictions in other similar

situations. Because the emphasis of non-competitive science fairs is about the process and experience (as opposed to outcome), including a hypothesis can be optional. That's right, throw the hypothesis out if it means avoiding getting hung up on semantics! The concept of "prediction" is much easier for students to grasp and challenges them to think ahead. In this example, a hypothesis may be, "Different batteries last varying amounts of time because of the amount of chemicals found inside." A prediction may be, "Alpha batteries last longer than Beta batteries." Either way, it is accepted or rejected based on the results of the experiment. As long as the experimental design is sound, either result is valid.

Experiment: Use your creativity and sense of 'fair' testing for your experimental design – there is more than one way to test your hypothesis! Whatever your design, write it in a way that anyone, anywhere can follow the directions and do exactly the same experiment.

Materials:

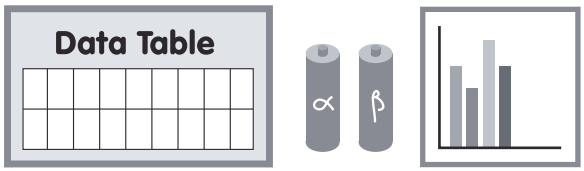
- 5 new Alpha batteries, type AA; 5 new Beta batteries, type AA
- One new tail-wagging doggie toy
- One timer



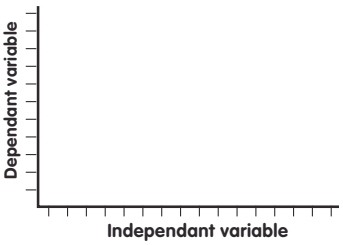
Procedure:

1. Place one Alpha battery into the toy.
2. Start the timer and the toy at the same time.
3. Record the amount time elapsed before the battery dies (example: the toy stops working).
4. Record data in table.
5. Repeat steps 1–4 for the remaining batteries.

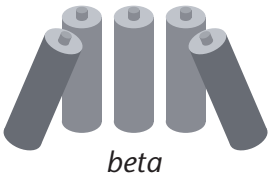
You may wish to include pictures or photographs of the experiment in your display.



2.0 Organizing the Students



alpha



beta

Terminology

Independent variable: This refers to what you can change in an experiment. In a graph, this information goes on the x-axis. *The kind of battery—Alpha and Beta.*

Dependant variable: This refers to what happened when you made that change. It is something you measure. In a graph, this information goes on the y-axis. *The length of time the battery supplied energy for the toy to work.*

Control: These are the conditions that did NOT change. *There is no clear control in this experiment as the same toy was used for each battery.*

Sample size: The number of subjects in your experiments. *There are ten subjects—five Alpha and five Beta batteries.*

Reliability: Getting the same results no matter how many times you do the experiment. *In all trials, the Alpha batteries lasted longer than the Beta batteries so this experiment has high reliability.*

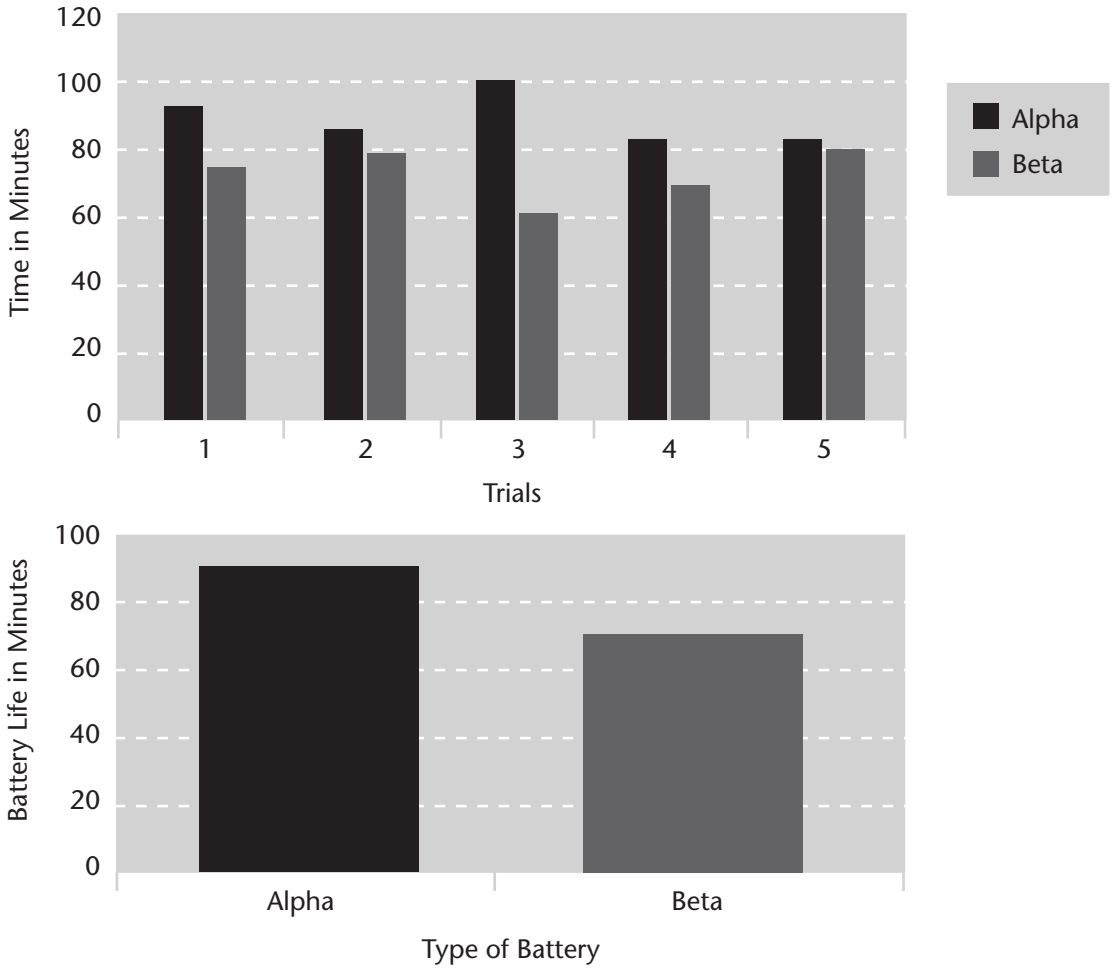
Validity: This refers to how accurate the results were in measuring what you intended to measure. *Did the toy affect the outcome? Perhaps we need to use other toys to increase the validity. Are the results valid? Perhaps we need to have more trials to increase the validity.*

Analysis

Data Table: Design a data table and fill it in using correct units.

Trial Number	Alpha	Beta
1.	95 minutes	78 minutes
2.	92 minutes	81 minutes
3.	99 minutes	62 minutes
4.	84 minutes	68 minutes
5.	87 minutes	82 minutes
Average	91.4 minutes	74.2 minutes

Graph: Comparison of Two Batteries



Show all calculations in your journal and choose one as a sample for your display.

Results: This is a written explanation of the numerical results. *Alpha batteries lasted on average 91.4 minutes; Beta batteries lasted on average 74.2 minutes.*

After the experiment, review the results and determine whether or not they support or refute your hypothesis. Perhaps you need to design a new procedure if you can't draw a confident conclusion based on your results. Do you need to modify the experimental design? What would you change? Did you do enough trials? What is the optimal sample size for this experiment?

2.0 Organizing the Students

Conclusion: Do the data support or refute your hypothesis? In this case, they support your hypothesis. Alpha batteries last longer than Beta batteries, by 17.2 minutes on average. Discuss possible sources of experimental error here. Perhaps the batteries were different 'ages' or had different amounts of chemicals. Could you measure their energy output prior to the experiment? Perhaps the toy had an influence on the outcome. What would you do differently next time?

Discussion: Investigate how your experiment and results relate to the real world. Keep notes in your journal. This could be part of your presentation.

References: Be sure to record books, websites, or other sources of information that you used during your research.

Communication: Scientists share their findings via research papers (written report) and presentations (science project).

Abstract Template

see Appendix p.43

2.06 The Abstract

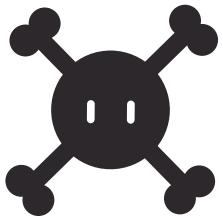
An abstract is required for participation in district and regional fairs. It is not necessary to have students prepare one for non-competitive science fairs. If they choose to participate in competitive fairs, follow the abstract template.

2.07 Safety

Safety guidelines are developed by the Youth Science Foundation Canada (www.ysf-fsj.ca/smarts/support/safetyethics.aspx). They have specific guidelines regarding the use of human subjects, live animals and hazardous chemicals.

In general, the following items are NOT allowed:

- Toxic, flammable or otherwise potentially dangerous chemicals
- Exposed electrical parts or operating lasers
- Plant or animal tissue, moulds, bacteria, soil, or material that might decompose
- Latex, peanuts or other allergens



As for the project itself, there is NO testing allowed on vertebrates, except by observation in natural settings. The project must cause no stress or danger to the animal.

If projects do involve human or animal subjects, ensure students get approval from the coordinator/chair prior to beginning their experiment. When in doubt, refer to the YSF safety guidelines which are updated regularly.

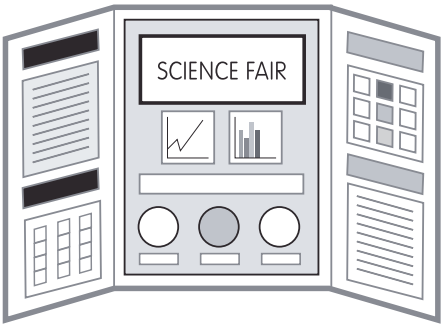
The person overlooking students' science projects should ensure they are following the safety guidelines. It is the decision of the coordinator/chair to remove any project that is contrary to the guidelines.

2.0 Organizing the Students

2.08 Display

First, have students design their backboard by folding a piece of paper into three and sketching in their ideas. When their design is satisfactory, transfer the ideas onto a life-size backboard. Local arts & craft stores supply basic cardboard project display boards. Students interested in competing at regional fairs should follow their specific guidelines. Use the Science Fair Foundation of BC display guidelines (www.sciencefairs.bc.ca/display.html). Remember to follow the safety guidelines: There should be no hazards to those who view your project.

2.09 Presentation



Students' presentations will begin by describing the purpose of the project, an explanation of the experiment/innovation/information found for their study, and the conclusion. They may also wish to include the reason they chose this topic, what they would change if they did it again, what the biggest surprise was, and what they would do if they had more time.

Suggest that they practice their presentation in front of the mirror—then to anyone who will listen! Remind them that body language also projects a message: stand tall, make eye contact, hands out-of-pockets, smile, project their voice, and speak clearly at a speed that is easy to understand.

2.0 Organizing the Students

2.10 Written Report

Students may submit a written report as an additional assignment to be included in their science course. Although much of the information contained on the display (backboard) will be the same, the format will be different. The following information may be used as guidelines for the students.

Title Page: Centre the project title on the page and put your name, address, school and grade at the bottom right. Include an appropriate diagram.

Introduction: Include the history of the topic, your hypothesis (if you are doing an experiment) and why you chose this topic.

Purpose: To ~

For an experiment and innovation

Materials and Methods: Describe in detail how you collect your data or make your observations. Include enough information for someone to repeat the experiment. Include detailed photographs or drawings.

Observations: Tables, Charts, Graphs.

Conclusion: A summary of your results.

Discussion: Thoroughly discuss exactly what you did in your project. Your results should be compared with commonly held beliefs and/or expected results. A discussion of possible errors should be included as well as how the data varied between repeated observations, how your results were affected by uncontrolled events, what you would do differently if you repeated the project, and what other experiments should be conducted.

For a study

Present the information by relevant topic. Include appropriate diagrams. If you are comparing different kinds of information, you may use tables, charts and graphs.

Acknowledgements: Credit individuals, businesses and educational or research institutions which assisted you.

References: List any documentation that is not your own (example: books, journals articles). Refer to How to Reference Material.

2.0 Organizing the Students

Science Fair Guides

see Appendix p.44

Registration Form

see Appendix p.49

Project Management Timetable

see Appendix p.50

2.11 Science Fair Project Handouts for Students

The following three documents are 'how-to' guides for students and their mentors: For grades K–3, 4–5 and 6–7. Teachers of younger grades may decide to lead the activity entirely, and write information on the chalkboard as needed. If the document is handed out to the students, ask them to keep in their science binder under 'science project' for easy reference throughout the duration of the project. These documents are formatted so you can easily make changes to suit your program.

Teachers, parents and mentors: Please refer to these handouts to guide the students.

Because science projects are more involved than regular classroom assignments, consider tracking students' progress by using a project management timetable.

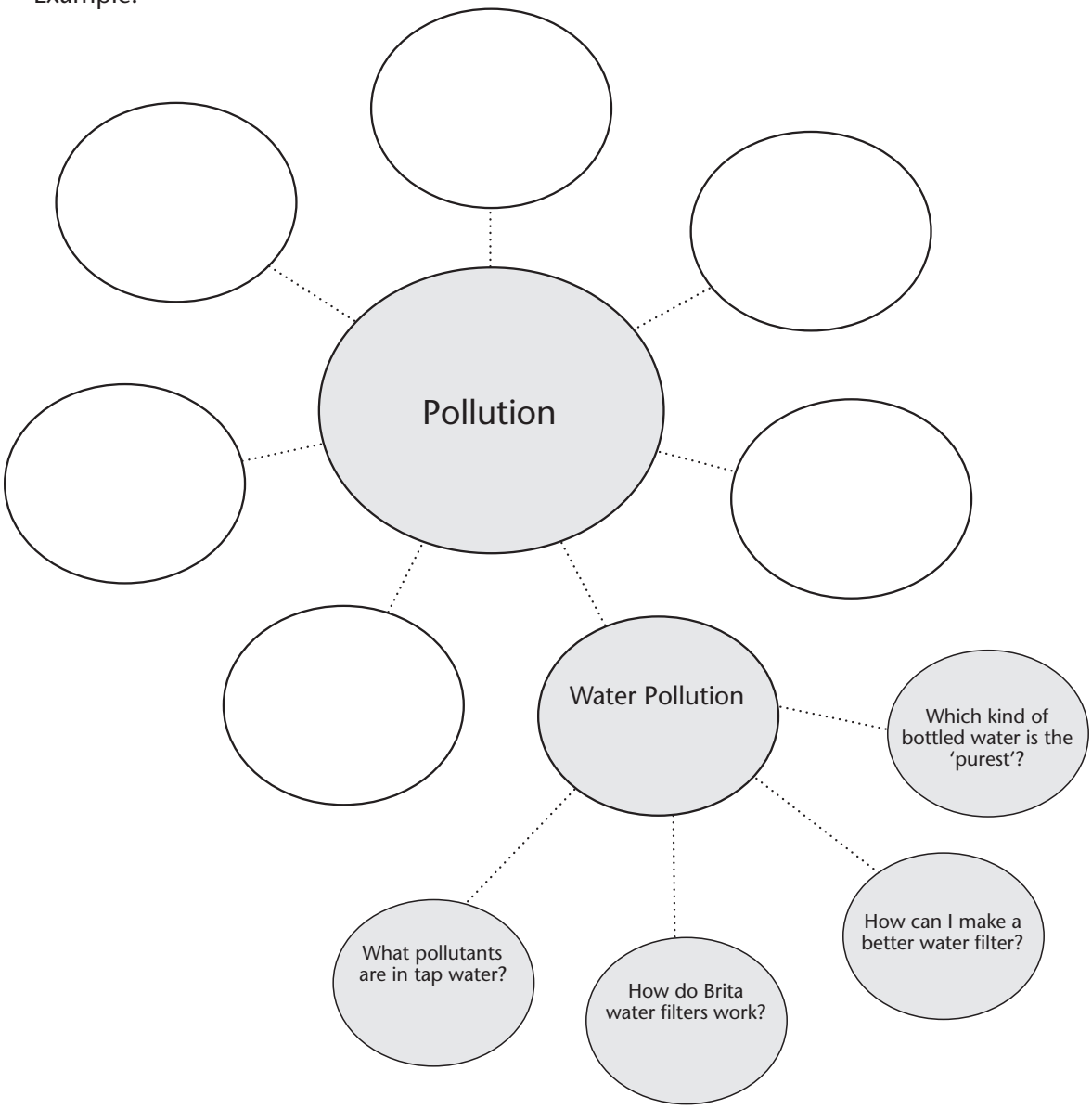
Science Fair Planning
Brainstorming your Ideas

Science begins with the art of observation! Notice what is going on around you. Think about all those times you wondered about something or asked yourself, "what if...?" This is the beginning of the creativity that is involved in science. Let's start by putting your ideas on paper.

Begin with a topic then brainstorm all the words that come to mind when you think of that topic: questions, what you know, what you would like to know. Once you have filled the page with words, sort them as follows:

Write the topic of interest in the middle. Choose more specific topics and write them in the bubbles. For each of these bubbles, form questions.

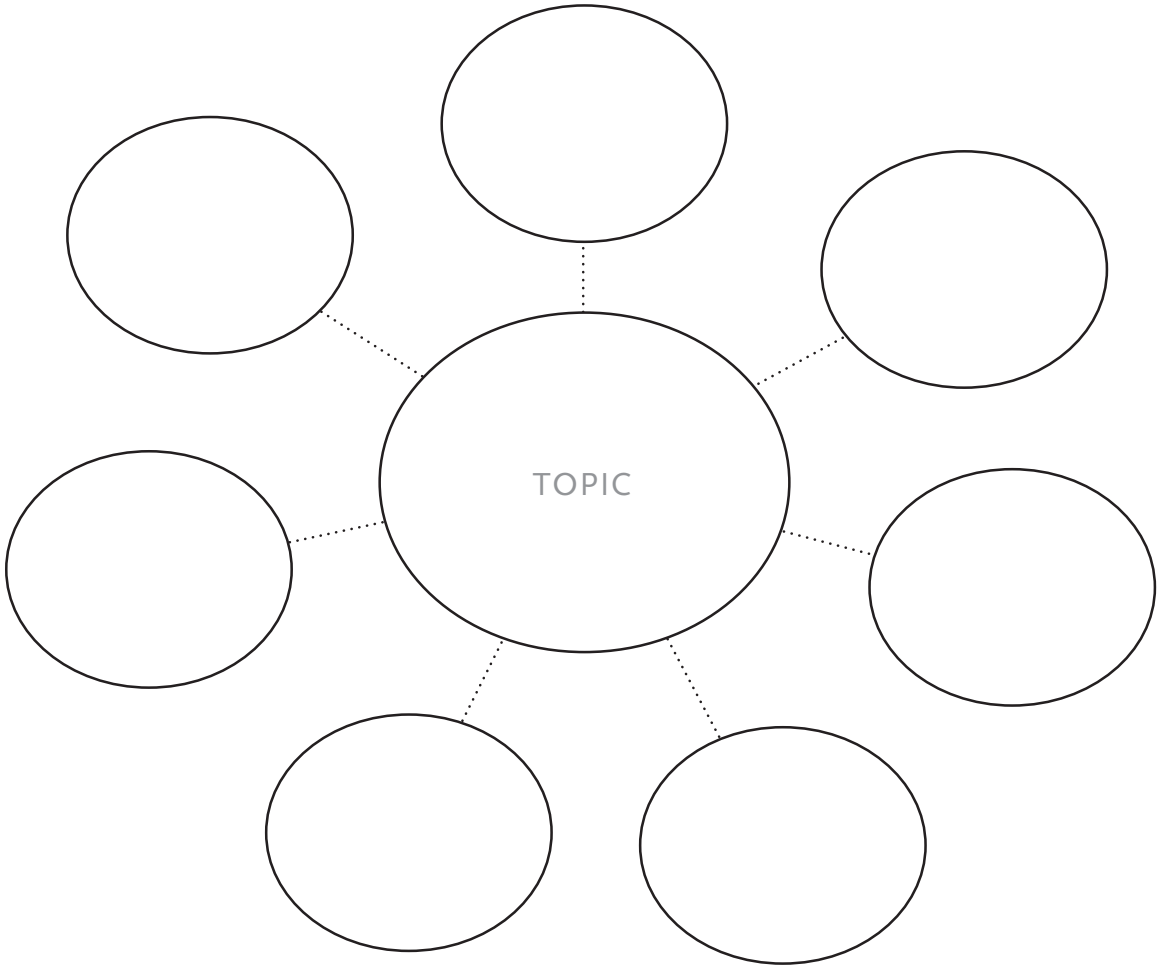
Example:



Science Fair Planning
Brainstorming your Ideas

Name: Date:

Now try brainstorming one of your own topics!



Science Fair Planning
What Type of Project?

Name: Date:

Now that you have your thoughts written down, let's start to organize them.

What is your topic or question?

What do you already know about this topic?

What more would you like to know about this topic?

WHAT TYPE OF PROJECT ARE YOU DOING? (check one)

☐ **Experiment**

Conduct an experiment testing a hypothesis. The process follows the scientific method and involves variables. A common format is: "How does_____ affect_____?"

☐ **Innovation/Technology**

Design and build a model or technique. A common format is: "How can _____ improve the performance of _____?"

☐ **Study**

Research a topic, compare data, and present information and conclusions. A common format may be: "What kind of information exists about _____?" and "What is the relationship between_____and _____?"

What materials do you need to do your project and where can you get them?

What are the keywords you can use while doing research?

Science Fair Planning Experiment

Name: Date:

Let's expand on the planning and write information down into a different format.

Purpose: What are you going to do?

Hypothesis: What do you think will happen?

Materials needed: ☐ ☐

☐ ☐

☐ ☐

☐ ☐

☐ ☐

Procedure: What steps will you take?

Control:

Independent variable:

Dependant variable:

Results:

Science Fair Planning
Innovation/Technology

Name: Date:

Let's expand on the planning and write information down into a different format.

Purpose: What are you going to build and why?

Materials needed: ☐ ☐

☐ ☐

☐ ☐

☐ ☐

☐ ☐

Research: What do you need to know before you start?

Diagram: Draw a labelled diagram of your model.

Testing: How will you test it?

Discussion: How does your model apply to real-world situations?

Science Fair Planning Study

Name: Date:

Let's expand on the planning and write information down into a different format.

What do you already know about this topic?

Purpose: What questions are you planning to address?

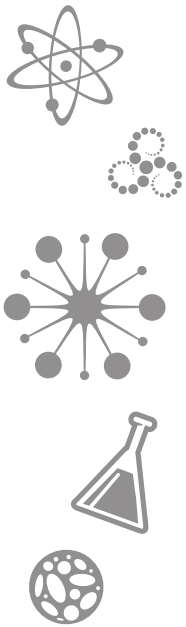
Research Plan: List the website, books and other resources you will refer to.

What kind of models and diagrams will you use to support your study?

Display: What key features will you present on your backboard?

Applications: How does your study apply to real world situations?

Science Fair Research Journal



Type	Title	Author	Date	Pages	Notes
Internet	*Avian Flu*	*BC Centre for Disease Control*	*Oct 31, 2009*	*www.bccdc.org*	*See 'health alerts'* *See health topics*

Science Fair
How to Reference Material Using MLA Style

Books	
One author	Laurence, Margaret. The Stone Angel. New York: Knopf, 1964.
Two authors	Mort, Michael, and Wendy Wickwire. Stein, the Way of the River. Vancouver: Talon Books, 1988.
No author	The National Atlas of Canada. 5th ed. Ottawa: Energy, Mines and Resources Canada, 1985.
Author and editor	Richler, Mordecai. The Apprenticeship of Duddy Kravitz. Ed. Malcom Ross. Toronto: McClelland, 1969.
Editor	Geddes, Gary, ed. 20th Century Poetry and Poetics. Toronto: Oxford University Press, 1996.
Books in multivolume series	Stacey, C.P. Canada and the Age of Conflict: A History of Canadian External Politics. Vol.1. Toronto: MacMillan, 1977-1981. 2 Vols.
Chapter in book	Innis, Harold. "Cod." Chapter in The Cod Fisheries: The History of an International Economy. Rev. Ed. Toronto: University of Toronto, 1954.
Government publication	Canada. Indian and Northern Affairs. Outstanding Business: A Native Claims Policy. Ottawa: Minister of Supply and Services Canada, 1982.
Signed article in an encyclopedia	Brink, Jack. "Head-Smashed-in-Buffalo Jump." The Canadian Encyclopedia. 1998.
Unsigned article in a reference book	"Salishan Indians." The Oxford Companion to Canadian History and Literature. Toronto: Oxford, 1967.

Periodicals/Articles	
Newspaper articles signed	Hutchinson, Allan. "A Case of Private Rights and Public Wrongs." Globe and Mail. 10 December 1998: A21.
Newspaper articles unsigned	"Crisis in the valley." Chilliwack Progress. 14 November 2000:1.
Magazine article signed	Zuehlke, Mark. "The Pitfalls of Free Enterprise." Canada and the World. April 1999; 24-27.

Non-Print Sources	
Interview	Kelly, Walt. President, Alano Club. Telephone interview. 20 April 2000.

Non-Print Sources	
Film or video tape	Native Land Claims in BC. Video Recording. Target Canada, 1976.
Recording	Mozart, Wolfgang. Symphony Nos.40 & 41 ("Jupiter"). Cond.George Szell. Cleveland Orch. CBS, MYT-37220, 1981.
Radio and television programs	The Scales of Justice. Written and Directed by Eddy Greenspan and George Jones. With Barbara Turnbull. CBC, Vancouver. 2 December 1999.
Databases on CD	"Lewis Carroll." Encarta Encyclopedia. CD-ROM. Microsoft, 2000.
Internet	"Witches and Sorcerers." The Skeptic's Dictionary. 2 June 2000. http://dcn.davis.ca.us/~btcarrol/skeptic/witches.html.
Discussion list message	Soon, Gerald. Research in the High School. BCTLA FORUM. (Listserv) bctalforum@mala.bc.ca 24 May 1997.

Remember:

- Alphabetize all entries top to bottom by first word of citation;
- Leave a space between entries;
- Single space lines in each citation;
- Indent the second (and third) line of each citation;
- If no author is given, start with the title of the work;
- Be consistent! Use the same style of sheet all the time.

Science Fair
Abstract Template

An abstract is created after the experiment/innovation/study is complete. It is a summary of the purpose, procedures, results and conclusion that gives judges a quick overview of the project. Prepare to write it as four separate 'paragraphs'. Once this handout is completed, combine all the sentences so that it appears as one paragraph.

Write one or two sentences about what you studied and you wanted to find out (example: purpose):

Write three or four sentences about your procedure briefly highlighting what you did (example: procedure/method):

Write three or four sentences about important observations and the general trends of your results (example: observations and results).

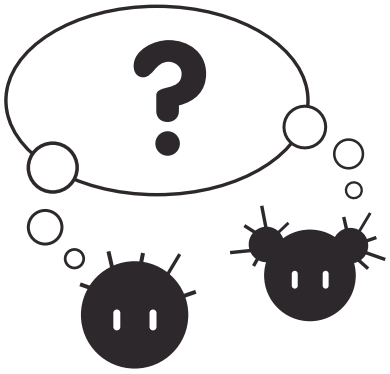
Write one or two sentences about your conclusion. This will include the answer to your question, extensions and applications to your project.

Science Fair Guide
Primary—Grades K–3

Types of Projects

Students can do anything from a report to a demonstration or a model. They may also consider a more original approach such as an experiment, an innovation or a study. An experiment is an investigation. An innovation or invention is something they build, like a model or device. A study involves extensive research of a topic that is already well known. It may also include a demonstration.

How to do a Science Project



1. Select a topic
2. Collect all the materials
3. Do the experiment/invention/study
4. Design and assemble the backboard
5. Prepare a presentation

More Details about the Process

Research your Topic: Use the library and internet.

Plan your Experiment, Innovation or Study: Decide what you will do and how you will do it.

Get the Materials: Buy, borrow or make the things you need.

Talk with your Teacher: Discuss your work with your teacher/parent/mentor on an ongoing basis.

Conduct your Experiments, Innovation or Study: Keep detailed notes of every experiment, measurement, and observation.

Examine your Results: When you complete your experiment, innovation or study, examine and organize your findings.

The Science Fair

The First Annual [*School Name*] School Science Fair will take place on [*Fair Date*], [*Year*]. From [*Start Time*] to [*End Time*] you will present your project to students, VIPs, teachers, parents and other family members. The award ceremony will then take place from [*Start Time*] to [*End Time*].

Dates to Remember

[*Due Date*]: Deadline for application of projects from the Primary Division

[*Fair Date*]: Science Fair. VIP interviews, Public Viewing, Awards Ceremony

Science Fair Guide
Grades 4–5

Types of Projects

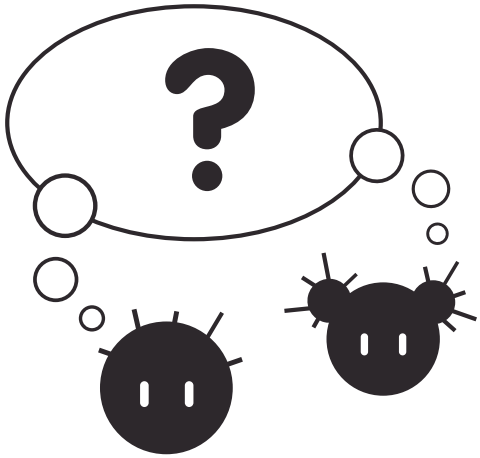
Experiment: An investigation undertaken to test a specific hypothesis.

Innovation / Invention: Make a device, or model.

Study: Explain something that is already known. Include a creative demonstration.

How to do a Science Project

1. Select a topic that interests you
2. Collect all the materials you need
3. Design a flowchart showing how you will do the project and have it approved by your teacher
4. Do the experiment/invention/study
5. Collect the data and organize them into a table, graph, etc.
6. Write your conclusion
7. Design and assemble the backboard
8. Prepare a written report
9. Prepare a presentation



More Details about the Process

Research your Topic: Read books from the library; observe related events; gather existing information from the internet. Talk to professionals and obtain or construct needed equipment.

Organize: Organize your research.

Plan your Experiment, Innovation or Study: Draw a flowchart to explain how you will do your project.

Consult your Teacher/Supervisor: Discuss your work and timetable with your teacher on an ongoing basis.

Conduct Your Experiment, Innovation or Study: Keep detailed notes of every experiment, measurement, and observation.

Examine Your Results: When you complete your experiment, examine and organize your findings. Did your experiment give you the expected results?

Draw Conclusions: Did you collect enough data or information? Do you need to do more or different experiments?

The Science Fair

The First Annual *School Name* School Science Fair will take place on *Fair Date* , *Year* . From *Start Time* to *End Time* you will present your project to students, VIPs, teachers, parents and other family members. The award ceremony will then take place from *Start Time* to *End Time* .

Project Management

See the timetable handout.

Dates to Remember

Due Date — Project Management Timetable Meetings

Fair Date — Science Fair. VIP interviews, Public Viewing, Awards Ceremony, Written Report Due

Science Fair Guide
Grades 6–7

Types of Projects

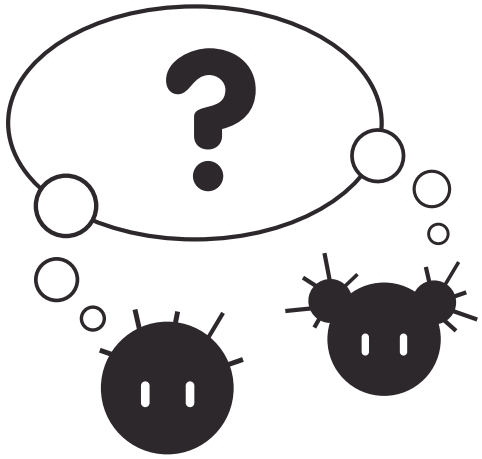
Experiment: An investigation undertaken to test a specific hypothesis.

Innovation / Invention: The development and evaluation of innovative devices, models, techniques or approaches in technology, engineering, or computers.

Study: A collection and analysis of data to reveal evidence of a fact, situation or pattern of scientific interest. It could include a study of cause and effect relationships or theoretical investigations of scientific data.

How to do a Science Project

1. Select a topic that interests you
2. Collect all the materials you need
3. Design a flowchart showing how you will do the project and have it approved by your teacher
4. Do the experiment/invention/study
5. Collect the data and organize them into a table, graph, etc.
6. Write your conclusion
7. Design and assemble the backboard
8. Prepare a written report
9. Prepare a presentation



More Details about the Process

Research your Topic: Read books from the library; observe related events; gather existing information; look for unexplained or unexpected results. Talk to professionals; write to companies; and obtain or construct needed equipment.

Organize and Theorize: Organize your research. Narrow down your hypothesis by focusing on a particular idea.

Plan your Experiment, Innovation or Study: Draw a flowchart to explain how you will do your experiment.

Consult your Teacher/Supervisor: Discuss your work and timetable with your teacher on an ongoing basis.

Conduct Your Experiments, Study or Innovation: Keep detailed notes of every experiment, measurement, and observation. Change only one variable at a time when experimenting. Include control experiments in which none of the variables are changed. Include sufficient numbers of test subjects in both control and experimental groups.

Examine Your Results: When you complete your experiments, examine and organize your findings. Did your experiment give you the expected results? Was your experiment performed with the exact same steps each time? Are there other causes that you had not considered or observed? Were there errors in your observations? If possible, analyze your data statistically.

Draw Conclusions: Which variables are important? Did you collect enough data? Do you need to conduct more experimentation?

The Science Fair

The First Annual [*School Name*] School Science Fair will take place on [*Fair Date*], [*Year*]. From [*Start Time*] to [*End Time*] you will present your project to students, VIPs, teachers, parents and other family members. The award ceremony will then take place from [*Start Time*] to [*End Time*].

Dates to Remember

[*Due Date*] — Project Management Timetable Meetings

[*Fair Date*] — Science Celebration. VIP interviews, Public Viewing, Awards Ceremony, Written Report Due

Science Fair Registration

School Name Science Fair

Name: Grade:

Project Title:

Brief Description of Project:

Please hand into the front office by *Fair Date* , *Year* .

Science Fair
Project Management Timetable

Meet with each student regularly to evaluate their progress. Together, fill in the form below and discuss the next set of goals.

Timetable	Goal											
	January			February			March			April		
	Start	½ Way	Done	Start	½ Way	Done	Start	½ Way	Done	Start	½ Way	**Done**
Select a Topic												
Collect the materials												
Design Methods Flowchart												
Check with Teacher												
Do the Experiment												
Collect and Organize the Data												
Write the Conclusion												
Design and Assemble the Backboard												
Prepare Your Written Report												
Practice Your Presentation												

3.0 During the Event

Itinerary

see Appendix p.52

Passport to Science

see Appendix p.53

Interview Sheet

see Appendix p.54

Comment Sheet

see Appendix p.55

3.01 Itinerary

The itinerary can be included in the school or community newsletters, written on the notice board, given to students, or posted at the venue. In this example, the event will take place in the school.

3.02 Presentation Models

Because this is a non-competitive fair, the coordinator can organize student presentations in whatever way works for them. Students can be organized into groups where one group interviews the other, students introduce another person's project, interviewers complete an answer sheet, interviewees give stickers to interviewers and so on! Students may present to:

- parents;
- members of the public;
- VIPs which may include older students or special invited guests from the community;
- to each other: see Passport to Science, Interview sheet, and Comment sheet.

3.03 Interview Questions for the VIPs

Suggested interview questions:

- What inspired you to choose this topic?
- What question or problem were you trying to answer?
- Explain your hypothesis.
- How did you investigate your question or problem?
- What were your results?
- Were you surprised by your results?
- What would you do differently?
- Do the results apply to real life?
- What are your plans for next year?

3.04 Draw Prizes

If you have sponsors, you can include in-kind donations for draw prizes for students, VIPs, or volunteers. Have draws throughout the event or ongoing (posting the winners' names in a common area). Saving draw prizes for adults until the end encourages VIPs and volunteers to stay for the entire event.

Science Fair Itinerary

Fair Date , *Year*

Set-Up

Where: Grades K–3 will set up in *#* classroom downstairs

Grades 4–7 will set up in *#* classroom downstairs

When: From *Start Time* to *End Time*

Viewing of Science Projects

Where: *#* and *#* classrooms downstairs

When: From *Start Time* to *End Time*

Awards Ceremony

Where: *#* classroom

When: From *Start Time* to *End Time*

Clean Up

Students will clean up and put away their science projects after the awards ceremony. Students will be dismissed from school by either *Teacher* or *Teacher* at around *End Time* .

Science Fair
Passport to Science

Name: Date:

Interview students at five different projects and get a sticker.

If you get all five stickers, see a VIP to get a special sticker!

1	2	3
4	5	Bonus

Science Fair Interview Sheet

Name of Interviewer

Project Title

Name of Interviewee(s)

What is the purpose of your project?

What did you do?

Describe your conclusion.

If you did this project again, what would you do differently?

What was the best part of doing this project?

Science Fair Comment Sheet

Name of Interviewer

Project Title

Name of Interviewee

Two Questions about the project

1.

2.

Two Good points

1.

2.

Two Suggestions

1.

2.

4.0 Evaluation

Even though there is no formal judging during the non-competitive presentation or fair, there are many assessment opportunities the teacher/coordinator may choose to use for grading or for feedback.

Reflections

see Appendix p.57

Teamwork Evaluation

see Appendix p.58

Project Evaluation

see Appendix p.59

Written Report Evaluation

see Appendix p.62

Certificate of Participation

see Appendix p.64

Looking for Competition

see Appendix p.65

4.01 Self & Peer Evaluation

Students can reflect on their own project, allowing for self-assessment and planning for the next year. They may also interview each other during the fair and evaluate how they worked as a team.

4.02 Project Evaluation

If a teacher/coordinator chooses to evaluate projects for marks, be sure to customize the form and distribute to the students prior to the evaluation.

4.03 Written Report Evaluation

If you have assigned written reports to students, these forms may be useful in helping students prepare their reports and helping you evaluate them. This particular marking scheme was created to emphasize the skill of following directions (example: font size, etc.).

4.04 Certificate of Participation

Purchase certificate paper from an office supply store. Print out the school or district logo at 50% as the background, then print out the names of each of the participants.

4.05 Looking for Competition

For those students interested in taking their project to a competition, please refer to this letter to parents to initiate the process.

Science Fair Reflections

Name: Date:

Title of Science Project:

Skills I learned or used:

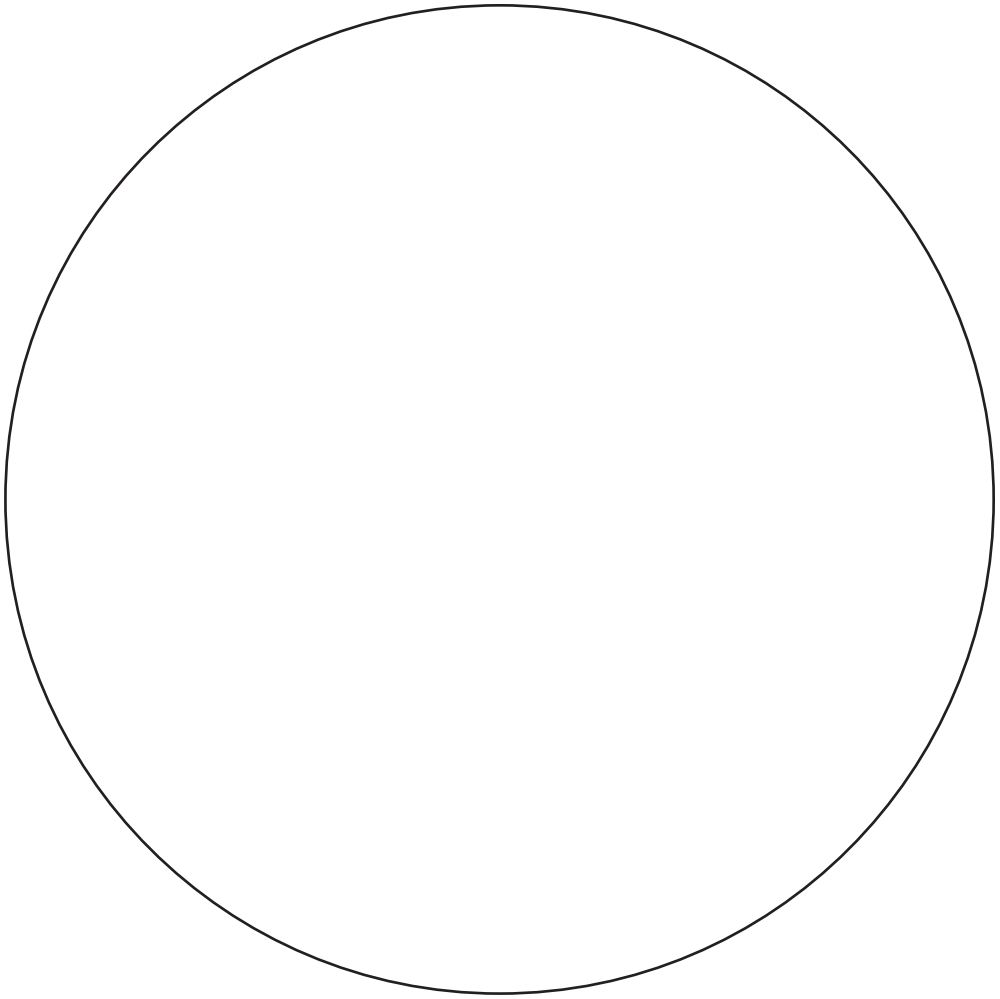
Something I learned from another Science Fair participant:

Things I could do better next year:

Ideas for next year's project:

Science Fair
Teamwork Evaluation

A circle represents the total amount of work done on the project.
Color in the area that reflects your contribution.



Science Fair
Project Evaluation: *Primary*

Date:

Project Title: Name(s):

Judge's Name:

	Impressive		Adequate		Minimal
Part I. Creativity					
Original topic or approach	5	4	3	2	1
Level of difficulty	5	4	3	2	1
Part II. Scientific Thought					
Purpose is clearly stated	5	4	3	2	1
Data support conclusion	5	4	3	2	1
Part III. Skill					
Use of equipment/demonstration	5	4	3	2	1
Part IV. Clarity					
Easy to understand by someone not trained in the subject area	5	4	3	2	1
Part V. Knowledge					
Shows understanding of project	5	4	3	2	1
Shows understanding of subject area	5	4	3	2	1
Able to answer questions	5	4	3	2	1
Part VI. Presentation					
Speaks naturally (not memorized)	5	4	3	2	1
Part VIII. Backboard					
Visually appealing	5	4	3	2	1
TOTAL POINTS					/55

Positive Comments:

Suggestions:

Science Fair
Project Evaluation: *Intermediate*

Date:

Project Title: Name(s):

Judge's Name:

	Impressive		Adequate		Minimal
Part I. Creativity					
Original topic or approach	5	4	3	2	1
Level of difficulty	5	4	3	2	1
Innovative use of materials	5	4	3	2	1
Part II. Scientific Thought					
Purpose is clearly stated	5	4	3	2	1
Procedure Flowchart is accurate	5	4	3	2	1
Information is varied	5	4	3	2	1
Data support conclusion	5	4	3	2	1
Creative aspect is included	5	4	3	2	1
Part III. Skill					
Use of equipment/demonstration	5	4	3	2	1
Part IV. Clarity					
Easy to understand by someone not trained in the subject area	5	4	3	2	1
Part V. Knowledge					
Shows understanding of project	5	4	3	2	1
Shows understanding of subject area	5	4	3	2	1
Able to answer questions	5	4	3	2	1
Part VI. Presentation					
Speaks naturally (not memorized)	5	4	3	2	1

	Impressive		Adequate		Minimal
Part VIII. Backboard					
Visually appealing	5	4	3	2	1
Quality of appearance of tables, graphs, word processing, etc.	5	4	3	2	1
Written Report Included	5	4	3	2	1
TOTAL POINTS					/85

Positive Comments:

Suggestions:

Science Fair
Written Report Evaluation: *Grades 4–5*

Name: Date:

Criteria					
Proper font size			3	2	1
Proper spacing			3	2	1
All diagrams are labelled			3	2	1
Title			3	2	1
Abstract			3	2	1
Introduction			3	2	1
Experiment ☐ Observations, Data, Results	**Innovation** ☐ Demo/ Model is included	**Study** ☐ Diagrams/ Models are included	3	2	1
Conclusion			3	2	1
References			3	2	1
In order			3	2	1
Met all deadlines throughout the project			3	2	1
Used class time well			3	2	1
Group Cooperation Mark					/10
TOTAL POINTS					/46

Science Fair
Written Report Evaluation: *Grades 6–7*

Name: Date:

Criteria					
Proper font size			3	2	1
Proper spacing			3	2	1
All diagrams are labelled			3	2	1
Title			3	2	1
Abstract			3	2	1
Introduction			3	2	1
Experiment ☐ Observations, Data, Results ☐ Control/ Experimental Group ☐ Independent/ Dependant variables ☐ Sources of error	**Innovation** ☐ Demo/ Model is included ☐ Sources of error	**Study** ☐ Diagrams/ Models are included ☐ More than 5 resources are referenced	3	2	1
Conclusion			3	2	1
References			3	2	1
In order			3	2	1
Met all deadlines throughout the project			3	2	1
Used class time well			3	2	1
Group Cooperation Mark					/10
TOTAL POINTS					/46

Science Fair
Certificate of Participation

Name

Date

Science Fair Coordinator

School Principal

Science Fair
Looking for Competition

Today's Date ,

Re: Science Fair winners to apply to compete at the Greater Vancouver Regional Science Fair

Dear Parents/Guardians:

I congratulate your son/daughter on their participation in the School Name School Science Fair! Thank you for your support during these last two months. I am inviting four students, Student , Student , Student , and Student to apply to represent School Name School at the Greater Vancouver Regional Science Fair which will be held at the University of British Columbia.

Before we arrange the application package for each student, I would like to encourage you to discuss the following points with your child:

- The Greater Vancouver Regional Science Fair will be held Regional Fair Date , . Students must be available all 3 days. I will accompany them for the duration.
- The $ Price registration fee will be paid by the school. Each student may order an optional T-shirt which costs $ Price . Please include a cheque payable to the Greater Vancouver Regional Science Fair.

Students must prepare an Abstract according to the following guidelines:

- The length should be a maximum of 1 page (8½ x 11 inches) with a minimum of 10 point font.
- This paper must be available by Due Date , Year at Time to Teacher for proofreading.
- Students must be available to meet Teacher at lunchtime to finalize application packages.

I realize that this is happening quickly. The deadline to submit the application package is on Due Date , Year and applications are processed on a first-come-first-serve basis (with a limit to 250 projects). If each student is willing to meet the above requirements, I will interpret your signed application as permission to proceed with the application.

Please contact me at school if you have any questions.

Thank you, Phone: #