SURREY SCHOOL DISTRICT SCIENCE FAIR

Greetings!

You will find attached a revised information booklet for the Science Fair Contact. This year we have introduced an optional theme of Environmental Sustainability. You will also notice:

- Updates to the rules (minor changes)
- Connections to the curriculum
- Connections to First People's Principles of Learning

I would very much appreciate it if you could forward this package to the appropriate teachers on staff.

Thank you very much in advance in helping to make this event a success!

Please direct any questions to Karen Alvarez, District Principal.

Regards,

District Science Fair Committee

Surrey Schools
LEADERSHIP IN LEARNING

ph: 604-595-5397

2017 Refreshed

SCIENCE FAIR

Booklet

This year's optional theme:
Environmental Sustainability

March is Science Month!
Join us at Central City Mall
March 2, 2017

For all students in grades 4, 5, 6, 7 & 8
(including Special Education, and French Immersion students)

The *50th* Annual Surrey School District

SCIENCE FAIR 2017

Central City Mall

March 2, 2017

4:00 - 5:00pm **Students arrive to set up display**

5:00 - 7:00pm **Public viewing**

5:00 - 7:00pm **Judging**

7:00 - 7:30pm **Judges deliver ribbons**

7:30 - 8:00pm **Award presentations and clean-up**

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2017 Science Fair
Rationale

The Surrey School Science Fair celebrates "the opportunity to develop the skills, processes, attitudes, and scientific habits of mind that allow [students] to pursue their own inquiries using scientific methods" (Ministry of Education, Science Goals and Rationale).

This year's optional theme of "**Environmental Sustainability**" supports the importance of students developing:

> place-based knowledge about the area in which they live, learning about and building on Aboriginal knowledge and other traditional knowledge of the area. This provides a basis for an intuitive relationship with and respect for the natural world; connections to their ecosystem and community; and a sense of relatedness that encourages lifelong harmony with nature. (Science Goals and Rationale)

Our goals reflect those outlined in the curriculum:

- An understanding and appreciation of the **nature of science** as an evidence-based way of knowing the natural world that yields descriptions and explanations that are continually being improved within the context of our cultural values and ethics;
- **Place-based knowledge** and experiences about the natural world in the area in which they live by accessing and building on existing understandings, including those of local First Peoples;
- A solid foundation of **conceptual and procedural knowledge** in biology, chemistry, physics, and earth and space sciences that they can use to interpret the natural world and apply to new problems, issues, and events, to further learning, and to their lives;
- The **habits of mind** associated with science – a sustained curiosity; a valuing of questions; an openness to new ideas and consideration of alternatives; an appreciation of evidence; an awareness of assumptions and a questioning of given information; a healthy, informed scepticism; a seeking of patterns, connections, and understanding; and a consideration of social, ethical, and environmental implications;
- A lifelong interest in science and the attitudes that will make them **scientifically literate citizens** who bring a scientific perspective, as appropriate, to social, moral, and ethical decisions and actions in their own lives, culture, and the environment.

(Science Goals and Rationale)

FIRST PEOPLES PRINCIPLES OF LEARNING
Within SCIENCE

There are many ways of applying the First People's Principles of Learning in your learning environment. These examples are a small sample of how the Principles might come alive in scientific learning opportunities.

Principles	What does it look like?	Core Competencies
Learning is holistic, reflexive, reflective, experiential and relational (focused on connectedness, on reciprocal relationships, and a sense of place).	• When learners are reflective they can articulate their understanding and identify what they did well and where they are going next. • All living things are connected within the environment; all aspects of a scientific experiment are connected	Communication Competency • *Connect and engage with others (to share and develop ideas)* • *Acquire, interpret, and present information (includes inquiries)* • *Collaborate to plan, carry out, and review constructions and activities* • *Explain, recount, and reflect on experiences and accomplishments* Critical Thinking Competency • *Analyze and critique* • *Question and investigate* • *Develop and design* Creative Thinking Competency • *Novelty and value (an idea may be new to that student…. It may solve a naturally occurring problem…. It may provide a new perspective that influences how people think… or the actions people take.)* • *Generating ideas (Students may generate creative ideas as a result of … a naturally occurring problem… or interest or passion.)* • *Developing ideas (…may require building the necessary skills, sustaining perseverance, and using failure productively over time)* Positive Personal and Cultural Identity • *Relationships and cultural contexts* • *Personal values and choices* • *Personal strengths and abilities* Personal Awareness and Responsibility • *Self-determination (they value… their ideas and their accomplishments. They are able to …seek help when they need it….)* • *Self-regulation (they set goals, monitor progress…. They are aware that learning involves patience and time [and] …are able to persevere in difficult situations)* Social Responsibility Competency • *Contributing to community and caring for the environment*
Learning recognizes the role of indigenous knowledge	• Place-based knowledge – involves leaving the four walls of the classroom to connect your learning to the natural world.	
Learning involves recognizing the consequences of one's actions.	• Within the theme of sustainability our actions significantly impact the environment. • Students realize that if one changes a variable to an experiment there are consequences for the outcome.	
Learning involves generational roles and responsibilities. Learning is embedded in memory, history, and story.	• Students present their learning to others; we learn from each other's stories. • Students conducting research are able to cite their sources, including interviewing people. They understand the importance of recognizing and acknowledging the learning of those who came before.	
Learning involves patience and time.	• Scientific experiments happen over time, often with repeated trials. • Learning is continuous; inquiry can continue over time.	

	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8
Questioning and Predicting	• Demonstrate curiosity about the natural world • Observe objects and events in familiar contexts • Identify questions about familiar objects and events that can be investigated scientifically • Make predictions based on prior knowledge	• Demonstrate a sustained curiosity about a scientific topic or problem of personal interest • Make observations in familiar or unfamiliar contexts • Identify questions to answer or problems to solve through scientific inquiry • Make predictions about the findings of their inquiry		• Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest • Make observations aimed at identifying their own questions about the natural world • Identify a question to answer or a problem to solve through scientific inquiry • Formulate alternative "If…then…" hypotheses based on their questions • Make predictions about the findings of their inquiry	
Planning and Conducting	• Suggest ways to plan and conduct an inquiry to find answers to their questions • Consider ethical responsibilities when deciding how to conduct an experiment • Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate • Make observations about living and non-living things in the local environment	• Explore and pose questions that lead to investigations • With support, plan appropriate investigations to answer their questions or solve problems they have identified • Decide which variable should be changed and measured for a fair test • Choose appropriate data to collect to answer their questions • Observe, measure, and record data, using appropriate tools, including digital technologies • Use equipment and materials safely, identifying potential risks		• Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified • Measure and control variables through fair tests • Observe, measure, and record data (qualitative and quantitative), using equipment, including digital technologies, with accuracy appropriate to the task • Ensure that safety and ethical guidelines are followed in their investigations	
Processing and Analyzing Data and Information	• Experience and interpret the local environment • Sort and classify data and information using drawings or provided tables • Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends • Compare results with predictions, suggesting possible reasons for findings	• Experience and interpret the local environment • Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data • Identify patterns and connections in data • Compare data with predictions and develop explanations for results • Demonstrate an openness to new ideas and consideration of alternatives		• Experience and interpret the local environment • Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, key, scale models, and digital technologies as appropriate • Seek patterns and connections in data from their own investigations and secondary sources • Use scientific understandings to identify relationships and draw conclusions	

Evaluating	• Make simple inferences based on their results and prior knowledge • Reflect on whether an investigation was a fair test • Demonstrate an understanding and appreciation of evidence • Identify some simple environmental implications of their and others' actions	• Evaluate whether their investigations were fair tests • Identify possible sources of error • Suggest improvements to their investigation methods • Identify some of the assumptions and given information in **secondary sources** • Demonstrate an understanding and appreciation of evidence • Identify some of the social, ethical, and environmental implications of the findings from their own and others' investigations	• Reflect on their investigation methods, including the adequacy of controls on variables and the quality of the data collected • Identify possible sources of error and suggest improvements to their investigation methods • Demonstrate an awareness of assumptions and identify information given and bias in their own work and secondary sources • Demonstrate an understanding and appreciation of evidence (qualitative and quantitative) • Exercise a healthy, informed skepticism and use scientific knowledge and findings for their own investigations to evaluate claims in secondary sources • Consider social, ethical, and environmental implications of the findings from their own and others' investigations
Applying and Innovating	• Contribute to care for self, others, school, and neighbourhood through individual or collaborative approaches • Co-operatively design projects • Transfer and apply learning to new situations • Generate and introduce new or refined ideas when problem solving	• Contribute to care for self, others, and community through personal or collaborative approaches • Co-operatively design projects • Transfer and apply learning to new situations • Generate and introduce new or refined ideas when problem solving	• Contribute to care for self, others, community, and world through personal or collaborative approaches • Co-operatively design projects • Transfer and apply learning to new situations • Generate and introduce new or refined ideas when problem solving
Communicating	• Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate • Express and reflect on personal or shared experiences of place	• Communicate ideas, explanations, and processes in a variety of ways • Express and reflect on personal, shared, or others' experiences of place	• Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate • Express and reflect on a variety of experiences and perspectives of place

Surrey School District Science Fair

PROJECT ALLOTMENTS

Each year an exhibit of science projects is scheduled for intermediate and junior secondary students in the Surrey School District. This popular event is open to all elementary schools and grade 8 students in Surrey, and will be held on March 2nd, with all the schools participating on one day, in the Central City Mall. Many schools hold their own Fairs beforehand using similar guidelines to those used in the District Science Fair. School representatives are encouraged to enter the District event. Schools are responsible for determining their criteria for the selection of their representatives.

Since the Science Fair is for intermediate students, we base the number of entries on the number of intermediate divisions in your school.

~ CRITERIA ~

1 - 5 Intermediate divisions or grade 8 science classes = 3 projects
6 - 10 Intermediate divisions or grade 8 science classes = 4 projects
11 + Intermediate divisions or grade 8 science classes = 5 projects

NUMBER OF PROJECTS ALLOWED FOR THOSE SCHOOLS THAT WISH TO PARTICIPATE

• • • NOTE: If the following table is incorrect please refer to the above criteria and inform the District Science Fair Committee • • •

School Name	Number of Projects	School Name	Number of Projects
A.H.P. Matthew	4	Johnston Heights	5
A.J. McLellan	4	K. B. Woodward	5
Adams Road	4	Katzie	4
Bayridge	4	Kennedy Trail	4
Bear Creek	4	Kirkbride	4
Beaver Creek	4	Kwantlen Park Secondary	5
Berkshire Park	4	L. A. Matheson Secondary	4
Betty Huff	4	Laronde	4
Bonaccord	4	Latimer Road	4
Bothwell	3	Lena Shaw	4
Boundary Park	4	Lord Tweedsmuir Secondary	5
Bridgeview	3	M. B. Sanford	4
Brookside	4	Maple Green	4
Cambridge	5	Martha Currie	4
Cedar Hills	4	Martha Jane Norris	4
Chantrell Creek	4	Mary Jane Shannon	4
Chimney Hill	5	McLeod Road	3
Cindrich	4	Morgan	4
Clayton	3	Mountain View Montessori	3
Clayton Heights Secondary	4	Newton	4
Cloverdale Traditional	4	North Ridge	4
Coast Meridian	4	North Surrey Secondary	5
Colebrook	4	Ocean Cliff	4

School Name	Number of Projects	School Name	Number of Projects
Continued			
Cougar Creek	4	Old Yale Road	4
Coyote Creek	5	Pacific Heights	3
Creekside	4	Panorama Park	4
Crescent Park	4	Panorama Ridge Secondary	5
David Brankin	5	Peace Arch	4
Dogwood	4	Port Kells	3
Don Christian	4	Prince Charles	4
Dr. F.D. Sinclair	4	Princess Margaret Secondary	5
Earl Marriott Secondary	5	Queen Elizabeth Secondary	5
East Kensington	3	Ray Shepherd	4
Elgin Park Secondary	4	Riverdale	4
Ellendale	3	Rosemary Heights	5
Enver Creek Secondary	5	Royal Heights	3
Erma Stephenson	4	Semiahmoo Secondary	4
Fleetwood Park Secondary	5	Semiahmoo Trail	4
Forsyth Road	3	Senator Reid	4
Frank Hurt Secondary	4	Serpentine Heights	4
Fraser Heights Secondary	5	Simon Cunningham	4
Fraser Wood	4	South Meridian	3
Frost Road	4	Strawberry Hill	4
George Greenaway	4	Sullivan	3
Georges Vanier	4	Sullivan Heights Secondary	5
Goldstone Park	4	Sunnyside	4
Green Timbers	4	Sunrise Ridge	4
Guildford Park Secondary	5	Surrey Centre	3
H. T. Thrift	3	Surrey Connect	3
Hall's Prairie	3	Surrey Traditional	4
Harold Bishop	4	T.E. Scott	4
Hazelgrove	4	Tamanawis Secondary	5
Henry Bose	4	W.E. Kinvig	4
Hillcrest	4	Walnut Road	4
Hjorth Road	3	Westerman	4
Holly	4	White Rock	4
Hyland	4	William Watson	4
J. T. Brown	3	William. F. Davidson	5
James Ardiel	4	Woodland Park	4
Janice Churchill	4	Woodward Hill	4
Jessie Lee	4		

☺ Adherence to this allocation is essential to maintain fairness to all schools in the Science Fair. We welcome your students, your parents and your staff to the Surrey School District Science Fair. This event promises fun, recognition and communication with others.

Surrey School District Science Fair

RULES

To ensure that all projects sent to this year's Fair may be judged fairly, the following guidelines will be observed.

1. Pupils may exhibit a project individually or in pairs. Where two pupils work together, each is expected to do their fair share and both must be able to demonstrate knowledge of the topic. **No more than two pupils may work on a project**. Parents and teachers may assist, of course, but the direction and assembly of a project must be done by the pupils.

2. Projects may be initiated at school and may also be prepared or assembled at home and/or at school.

3. Parents and teachers are encouraged to assist students but should remember that this is a **STUDENT SCIENCE FAIR**. Direction and **actual work on the project** must be done by the pupils.

4. To conserve space at the Fair, all projects and displays must be **within** the following dimensions:

   HEIGHT: 1.2 m WIDTH: 1 m DEPTH: 60 cm

5. Charts used for display purposes must be **self-supporting**. No charts may be taped or tacked to the walls. The entire science fair project must be contained **within** the 1.2 m x 1m x 60cm display.

6. The total cost of an exhibit must not exceed $25.00 before taxes. **The display board cost is exempt. *Grade 7 & 8 students who are interested in participating in the South Fraser Regional Science Fair, please see #13 below.**

   Note: a) The value of free items will not be included in the $25.00 cost limit provided that:
   - the items are discards (e.g. wood scraps, paper, paint, etc.) and are readily accessible to **any** pupil (i.e. not dependent on special or family relationship), and
   - the items are **not borrowed** (i.e. they do not have to be returned after the Fair). You are not allowed to use **borrowed** items except those listed in Rule 7.

   b) Pupils will be required to supply a list of materials used, and costs and sources for any free items acquired.

7. Pupils may use the following **school items** (not coming from home): cages, aquariums, microscopes (illuminated with a flashlight), **and digital devices (battery operated)**. These items are exempt from the cost rule #6 so long as the project is not about the item (i.e. "The Laptop Computer").

8. Commercially prepared kits, models and collections **will not** be accepted at the Science Fair.

9. Where any electrical components are used the power source shall be dry cells, limited to a maximum of 9 volts D.C. **Wall plug power may not be used in the projects.**

10. Pupils requiring an open flame may **only** use a can of Sterno.

11. Animals should be properly cared for and procedures that could harm or stress animals are not to be used. Rule #6 applies to use of animals as well.

12. All entrants are reminded to keep their projects **COMPLETELY SAFE**.

13. Grade 7 & 8 students who also wish to participate in the **South Fraser Regional Science Fair** consult the rules in their pamphlet that has been sent to all schools. The District Science Fair has a Regional-Experiments category, which is more in line with their regulations (including cost). Please see their site at www.surrey.sfu.ca/sfrsf.

Schools have many occasions to instruct their representatives on the rules and several opportunities to **screen out projects that do not comply**. If a school is uncertain as to whether a project is in compliance with all of the rules, especially Rule #6 on cost, please check with the District Science Fair Committee Teacher **BEFORE** sending the project to the District Fair

Surrey School District Science Fair

SCIENCE FAIR CATEGORIES

"Inquiry is an approach to learning whereby students find and use a variety of sources of information and ideas to increase their understanding of a problem, topic or issue of importance. It requires more than simply answering questions or getting a right answer. It espouses investigation, exploration, search, quest, research, pursuit and study. It is enhanced by involvement with a community of learners, each learning from the other in social interaction." (Kuklthau, Maniotes & Caspari, 2007)

The following categories are described with the intent that students are pursuing their wonders and curiosities as they conduct their investigations. Their discoveries would provide some understandings and inspire more wonders and queries.

Experimental

These projects ask a question; develop a method for solving the question, which usually includes the use of a control for comparison purposes; perform an experiment; and show data from the experiment, which may or may not answer the original question. The use of a **control** is an **extremely important** aspect of an experiment and must be included as part of the project.

Demonstrations

This will be a display or proof of some scientific fact, law, principle, etc. A scientific idea must be clearly stated either in the project title or in a statement. The proof or evidence to support the idea should be clearly stated and a conclusion based on the evidence should be provided. A model may be a part of these displays, however, projects that have a model will be closely considered to ensure that it is demonstrating some scientific fact, law or principle. The emphasis in this category is in the **process** of demonstration.

TITLE:	**The Earth is a Sphere**
EVIDENCE:	Photographs of the earth taken from space and showing the profile of the earth to be circular from a variety of locations.
PROOF:	The only geometric shape which has a circular profile from any perspective is a sphere.

TITLE:	**The Archimedes Screw**
DISPLAY:	Print and visual materials illustrating and explaining what the screw is, how it is used in the past and present times. A model, working or non-working, could be a part of this project. The Archimedes Screw is a demonstration of a simple machine.

Models (Static and Working)

These must be a student made, operating, three-dimensional model. The model must work in a manner similar to that of the real-life thing that it is depicting. The model may or may not have moving parts.

TITLE:	**Why is Burns Bog a Phenomenon? (Static Model)** The model might depict Burns Bog either before or after restoration episode. (i.e. just prior 1970 / after 1995)

TITLE: **What Makes Burns Bog Special? (Working Model)**
The model of Burns Bog would include actual peat moss. Water mixed with solid particles such as soil can be poured on peat moss to show how bogs are effective systems of filters of carbon.

Inventions

A) Student Made Inventions

- students will be asked to display and explain a new item or idea that they have developed to do something "better".
  - **i.e. * Is there a more efficient way to feed the dog?**
  - *** How can we reduce the disposal levels of latex gloves?**
- This category will be judged on idea, originality and thought involved.

Regional - Experiments ***(See "British Columbia Science Fairs " Booklet for rules)***

All projects in this category must be experiments and investigative in nature (similar to Experimental). However, this category gives student projects more flexibility in topic design and cost. It is an avenue for students who wish to have their project more compatible with guidelines for the ***South Fraser Regional Science Fair***. See the Regional Science Fair Booklet for more specific details on projects in this category or contact the District Science Fair Committee. **Cost limit of $25 DOES NOT apply.**

Suggested School Science Fair Judging Criteria

Updated criteria will be provided

Suggested School Science Criteria and Marking

Updated criteria will be provided

Surrey School District Science Fair
Judging Criteria

Students: _____ _____

School: _____

Comments: _____

_____

_____

The following criteria provide a guideline for project evaluations. While judges are asked to assign scores for each section, it is not necessary for the projects to demonstrate the complete list to attain a Gold ribbon.

Extent to which the criteria are met:

4 – all of the criteria are met with distinction
3 – all of the criteria are met with success; the project is effective
2 – most of the criteria are met; there are minor deficiencies
1 – some of the criteria are met; there are significant deficiencies

Surrey School District Science Fair

CRITERIA / COMPETENCIES	DESCRIPTION	SCORE
Questioning & Predicting / Planning & Conducting / Processing & Analyzing	• identified a question to investigate an inquiry /curiosity / wonder • posed predictions based on prior knowledge • planned an appropriate investigation to test inquiry, possibly incorporating a variable(s) • recorded relevant observations e.g. data, information, measurements etc. • compared and interpreted data in relation to predictions / intent of project	/4
Content Evaluation / Application & Innovation	• provides relevant information • sites sources of information • demonstrates an understanding & appreciation of evidence • transfer and apply learning to new situations • demonstrates impact of learning on self and others • generates and introduces new or refined ideas as a result of the learning	/4
Communicating / Presenting	• represents ideas / information in a variety of ways e.g. diagrams / graphs / pictures / videos • clearly communicates ideas, evidence and learning • project area is well organized and clearly displayed	/2
Ribbons are awarded based on the following scores: **GOLD** score > 8.5 (Excellent) **SILVER** score > 7.0 (Very Good) **BRONZE** score < 6.5 (Good) Surrey Schools LEADERSHIP IN LEARNING	**Total**	**/10**

AWARDS

1. All entrants will receive a participation button upon arrival at the Fair and a certificate, which is sent to the school after the District Fair. Please ensure that during online registration, student names are spelled correctly as this data will be used to generate certificates.

2. Several projects (up to 5) will be selected for display and presentation to a meeting of the Surrey Board of School Trustees on _____ (date to come).

3. Ribbons will be awarded at the District Fair to each student for every project that reaches the following score, based on the judge's evaluation:

   A. If the project adheres to **ALL** the rules and achieves the following scores on the criteria judged:

   > 8.5 ~ Gold

   > 7.0 ~ Silver

   > 6.0 ~ Bronze

   B. If the project does not adhere to all the rules: **Participant (button)**

4. Ribbons in French will be awarded for projects that are judged in French.

ORGANIZING CLASS and SCHOOL FAIRS

Many Surrey schools organize both class and school fairs for the benefit of their pupils. Please ensure that your school fair is held before February 24th. What follows are some ideas on their organization.

CLASS FAIRS

In many schools, teachers organize a class science fair in order to give a trial run for their pupils. As the science fair day approaches they use the regular review sessions to confirm the progress of each project, the topic of each and the partners that have been selected. They review with the class the criteria that will be used when the projects will be looked at, especially if the projects will be evaluated for marks, and set the date for the class fair. Many teachers set aside a series of periods that fall about three days before the school fair to organize their class fair.

If the projects will be graded for reporting purposes, it is important to take the time to review the objectives for science fair the school has adopted, in order to consider the reasons and the methods for the assessment. Keep in mind that it is necessary to review both the **processes practiced** as well as the **product presented**. Teacher assessment and student self-assessment are both appropriate when looking at the stages of the project development and at the final presentation.

After the students present their projects to their peers and answer questions, it is often useful to ask the class to identify areas for positive feedback. In doing so all of the pupils are asked to find ways in which the projects have been well done, and this information will provide ideas for all of the class for their future work.

If the size of your school means that the number of projects to the school fair must be limited, why not try having the class themselves select their representatives? The class is often then able to brainstorm for suggestions to help their representatives to improve their projects in the time before the school fair.

SCHOOL FAIRS

Over the years, schools have developed procedures and timelines that have been useful, and they are included here for reference. The details of the procedures all follow a clear set of objectives that have been agreed upon by the school. As each school will have their own objectives for their participation in science fair, the details of organization and the criteria for recognition will differ from school to school.

*** It is strongly suggested to have your school fair completed the week before the District Fair in order to allow those students selected to represent your school time to rehearse their presentations for the judges.

Surrey School District Science Fair

INTRODUCTORY STAFF MEETING

1. Enlist support and assistance for the idea of a Science Fair from the staff.
2. Become familiar with the information in both the Teacher's Copy and the Pupil's Copy of the District Science Fair booklets.
3. Determine what the objectives will be for your school fair.
4. Refer to the objectives to determine what kind of a fair it will be:

   primary/intermediate/both? optional/assigned? competitive/participative?

   class fairs/school fair?
5. Use the objectives to determine your awards system, and the judging criteria to be used.
6. Set a date and time for the school fair, and a timeline to complete the various steps necessary ensuring that the school representatives will be identified prior to **February 22nd**.

   Online registration will be cut off Friday, February 24th – sorry, but there can be no late registrants.
7. Use the school objectives to help decide upon ribbon requirements. Will it be Gold/Silver/Bronze to a standard? Will it be 1st/2nd/3rd for each grade? Will it be the six outstanding overall? Estimate the number of participation ribbons and finalist ribbons that must be ordered, and place your order early.
8. Decide on how school representatives to the District Fair will be selected.
9. Establish judging process for school fair. Points to consider:
   - How many judges will be required?
   - Where will they come from?
     - → Will they be from within the school?
     - → Within the school system?
     - → From the community?
     - → Or a combination of these?
   - Many secondary schools have agreed to make some students available to act as judges. Please contact your local secondary school directly.
   - Enough judges should be provided so that all pupils can have time for a thorough presentation.
   - Consider how much time will be provided for judging, how many projects there will be, and how much time will be spent on each project.
   - Remember to arrange for judges well in advance.
10. Discuss how to encourage the appropriate extent of parental involvement at the school level - for judging, open house, support services, etc.
11. Consider how to encourage maximum communication with staff, parents and community about Science Fair.

Surrey School District Science Fair

SUGGESTED DATES

January (week 1)

- Student and teacher information sheets and list of previous elementary Science Fair exhibits provided to staff. Some staff duplicate this information for their students.
- Staff meets to discuss organization and associated issues: objectives, participation, communication, involvement, awards and judging.
- Volunteers will be required to: make signs and set up bulletin board displays promoting the school science fair, make name tags for projects and any furniture used; and set up and clean the gym for the school fair.

January (mid)

- Order ribbons and awards.
- Arrange for judges and tables.

Jan – mid Feb

- Monitor, assist and pace pupil progress
- In-classroom and at home research, writing, drawing, etc.

February (last week)

- Projects at school, except for those with perishable projects. Class fairs are conducted to determine representatives to school fair.
- Gym clean-up in the morning. Gym organized in the afternoon.
- All projects completed and set up in gym by dismissal time

School Fair

- 8:30 - 9:00 Judges meet with coordinator and are briefed and supplied with necessary materials
  9:00 - 12:00 Projects judging; classes tour gym
  1:00 - 2:00 District representatives determined
  2:15 Open House: parents and pupils circulate through gym
  2:45 Finalists and representatives announced
  6:00 - 7:00 Open House for those parents who couldn't make it earlier that day

- District representatives groomed. Projects perfected for visual impact, neatness, presentations practiced, further research, etc.

- District representatives demonstrate projects to teachers and parents.

- Other projects put on display around school.

MARCH (1st week)

- **DISTRICT SCIENCE FAIR – March 2nd at Central City Mall**

MARCH (2nd week)

- Thank-you letters sent out to Judges. **Deadline to enter South Fraser Regional Science Fair** is **March 9th** – Please visit their site at http://www.surrey.sfu.ca/sfrsf for more information.

Surrey School District Science Fair

TIMELINE CHECKLIST

Instructions: The dates in brackets ( ) represent the Monday of each week. Check off and record the date as each step is completed.

				DONE/DATE
Preparing (January)				
Week 1	(_____)	1.	Read The Rules	[ ] _____
			Select A Topic	[ ] _____
Week 2	(_____)	2.	Webbing	[ ] _____
		3.	Select Category	[ ] _____
			Judging Criteria	[ ] _____
Researching (January)				
Week 3	(_____)	4.	Research	[ ] _____
		5.	Investigate Other Resources	[ ] _____
Week 4	(_____)	6.	Outline	[ ] _____
Displaying (February)				
Week 5	(_____)	7.	Begin Model	[ ] _____
			Begin Display	[ ] _____
		8.	Charts and Diagrams	[ ] _____
Week 6	(_____)	9.	Titles and Lettering	[ ] _____
		10.	Practice Your Talk	[ ] _____
Presenting (February/March)				
Week 7	(_____)		Class Fair this week	[ ] _____
Week 8	(_____)		School Fair this week	[ ] _____
Week 9	(_____)		District Fair this week	[ ] _____

NOTE: Step 4 Research may require more time, especially if the project involves doing an experiment.

DATES TO REMEMBER:

Our class Fair _____

Our school Fair _____

District Fair at Central City Mall March 2, 2016

Regional Fair Entry Deadline March 9, 2016

PLANNING SHEET

PRIOR TO SCIENCE FAIR:

[ ] 1. Hold a committee meeting
[ ] 2. Appoint a coordinator/resource person
[ ] 3. Develop a timeline for the day
[ ] 4. Make a motion for a Science Fair date at staff meeting
[ ] 5. Inform parents in a newsletter (advertising) and on school web page
[ ] 6. Order ribbons
[ ] 7. Arrange judges (send confirmations)
[ ] 8. Order tables
[ ] 9. Cancel community groups for gym if necessary
[ ] 10. Cancel school classes for gym
[ ] 11. Have posters and signs made up
[ ] 12. Have name tags made up
[ ] 13. Have a P.A. system to use
[ ] 14. Confirm number of projects
[ ] 15. Confirm number of tables
[ ] 16. Pick up tables and label for return
[ ] 17. Pick up ribbons
[ ] 18. Arrange for refreshments
[ ] 19. Display case advertising
[ ] 20. Timely newsletters
[ ] 21. Arrange for parking attendants if necessary
[ ] 22. Staff bulletins showing times, information, expectations
[ ] 23. Set up gym the night before

PLANNING SHEET (cont'd)

SCIENCE FAIR DAY:

[ ] 24. Have mop and bucket handy

[ ] 25. Brief judges

[ ] 26. Coordinate class visits to gym

[ ] 27. Awards/students going to Central City Mall selected

[ ] 28. Hand out prizes and acknowledgments

[ ] 29. Clean up

AFTER SCIENCE FAIR:

[ ] 30. Return tables

[ ] 31. Meet with student representatives going to Central City

- [ ] compliance with rules
- [ ] category selection (use Quickie Classifier)
- [ ] improvement to projects
- [ ] improvements to presentation
- [ ] procedures at Central City (times, etc.)
- [ ] expectations at Central City (behavior)
- [ ] transportation to/from Central City

[ ] 32. Report event in newsletter

[ ] 33. Send thank you letters to judges, thank you notice to parents

Surrey School District Science Fair

SAMPLE LETTER (#1)
(may be downloaded from Science Hub)

January, 2016

Dear Parents/Guardians:

Once again our school is planning to hold a school-wide Science Fair. The Science Fair will take place on _____, during the (morning/afternoon/evening). Participation is voluntary, but we are expecting an enthusiastic response at all grade levels. The purposes of the Fair are:

- to create interest and enthusiasm for Science,
- to help students develop good research and organizational skills, and
- to show parents and community the scientific work of students

Attached is a copy of a letter from the district committee and the rules which the students will have to follow. Please take a few minutes and read both of these with your child. You are encouraged to advise, direct and motivate your child, but he/she is to do the work.

At school we will be providing lots of ideas and help about selecting and researching a topic. The children will be allowed to do some of their work at school, but much of the construction of the display and any models will need to be done at home.

Children should start planning for their project immediately. They may wish to contact experts or members from the community about their topic. The school encourages this but time should be allowed for making appointments. Most people are happy to help but are not pleased about being contacted in a rush the week before the Science Fair. Your assistance in helping the children plan these contacts is greatly appreciated.

If you have any questions, please don't hesitate to contact me. Thank you in advance for your assistance in helping to make this a memorable experience.

Sincerely,

Surrey School District Science Fair

SAMPLE LETTER (#2)

Dear Parents/Guardians:

Science Month is coming, and along with it comes the Surrey District Science Fair. We are sure your child will want to enter a project in the class Science Fair, so here are a few suggestions to help you guide your child as the project is prepared.

1. Your child should become familiar with the rules, especially those of size and cost.

2. Encourage your child to make an early start to the project. Common sense suggests that working over a reasonable period of time is essential to a successful project. Begin at least four weeks before the deadline, and earlier if doing an experiment, or if contacting companies or government departments for information.

3. Your child should develop a timeline and checklist. Everybody feels good about being able to tick something off as it is being completed. It is also an indication that progress is being made.

4. Shorter, more frequent work sessions allow for slow but steady progress, and they are much more pleasurable than longer marathons.

5. Remember that quite often the most satisfactory projects are the simpler ones which have been well done. Make sure that the topic selected is appropriate for your child.

6. Projects should be inquiry based and reflect the "scientific approach" in some way. This includes forming a question, describing the method of answering that question, gathering and thinking about appropriate information, and forming an answer to the question. Describing the method of answering the question provides for clear thought about the steps of the project. The information may be gathered in a variety of ways such as doing an experiment, reading books, magazines, pamphlets, internet searches or talking to authorities on the topic.

7. Making the display is an important step. Good displays are colorful, neat, easy to read, uncluttered, correctly spelled, and sturdy. The judges are expecting to see work that has been done by children.

   Your child should decide on the most effective method of displaying the data. It could include posters, graphs, models, real samples, an experiment or any combination of these things.

8. Your child will be asked to explain the project to fellow students, teachers, judges and to the public, and should practice the presentation several times before the big day.

9. Your child should feel comfortable about asking for the help of teachers, librarians and other school staff, and of community resources such as libraries and industry. Assistance is there if it is asked for.

10. Please remember that the project is your child's and should reflect his or her capabilities. Your role as guide is an important one. There can be no more fitting place for learning to occur than at the hands of a loving, interested parent.

We sincerely hope you will both experience the satisfaction and the pride that come from the successful completion of the project. Good Luck!

Science Fair Committee

Student Planning Guide

Things That Interest Me:

1. _____
2. _____
3. _____
4. _____

Science Area I Like Best:

- Life Science
- Earth Science
- Space Science
- Physical Science

What type of project would interest me the most:

- Experimental
- Demonstration
- Working Model
- Static Model
- Inventions
- Regional – see your teacher or "British Columbia Science Fairs" booklet

Possible Topics:

1. _____

Materials I already have:

Materials I would have to buy

Help I will need with this topic: None _____ Some _____ A lot _____

How difficult will this be for me? Very _____ Somewhat _____ Easy _____

2. _____

Materials I already have:

Materials I would have to buy:

Help I will need with this topic: None _____ Some _____ A lot _____

How difficult will this be for me? Very _____ Somewhat _____ Easy _____

Questions/Problems to Explore

Some questions about my topic I want to find answers to:

1.
2.
3.
4.
5.

Student Planning Guide (cont'd)

Conducting Research
Printed, audiovisual and electronic materials I should find and read:

1.

2.

3.

4.

5.

6.

Places I could visit:

1.

2.

3.

People I could talk to:

1.

2.

3.

Surrey School District Science Fair

PREPARING
(Week 1)

1. ***READ THE RULES***

a. You may work by yourself or with **one** friend. If you work with a friend, you are both expected to do your fair share and both of you should have good knowledge about the project. Your parents and teachers may help but **you** must do most of the work.

b. Your project including the charts or display can be no larger than:

HEIGHT	**1.2 m**	**WIDTH**	**1 m**	**DEPTH**	**60 cm**

c. All charts must be **self-supporting**. There will not be walls available to put your posters or charts on.

d. The total cost of your project must be no more than **$25.00** (display board is exempt from the cost). (See rule l below if you are in grade 7 or 8 and plan to participate in the South Fraser Regional Science Fair.) You will be required to display a list of costs. You do not have to include items which are discards and are **freely available to all pupils** e.g. wood scraps, paper, paint, etc. You are not allowed to use **borrowed** items except those listed in Rule 6. You should discuss with your teacher any ideas you have about obtaining your supplies **before** you start to make your display.

e. The following **school** items may be used as part of the display where necessary: microscopes, aquariums, cages, and digital devices. **(These must not be the topic of the project. i.e. a microscope may not be borrowed if the project is about "microscopes")**

f. Store bought kits are not allowed.

g. If you are using electricity it must be powered by a maximum of 9 volts D.C.

h. If you are going to need an open flame you may only use a can of Sterno.

i. If you plan to use animals in the project you must refer to Rule #6 & 11 on page 7.

j. Your project can come from something you have done in school or at home.

k. Remember to keep your project **COMPLETELY SAFE**.

l. If you wish to also participate in the **South Fraser Regional Science Fair**, ask your teacher for information about their rules or visit their website (www.surrey.sfu.ca/sfrsf). The District Science Fair has a Regional-Experiments category that is more in line with their regulations.

PREPARING

(Week 1 Cont'd.)

2. *TOPICS*

Think of something that you might have always wondered about. Sometimes it is easier to think back to when you were younger and had those "silly" questions.
Talk about it with a friend or someone at home.
It can all start with…
What if…?

PREVIOUS PROJECTS

Here are some questions that may lead to projects that we haven't seen recently at Science Fair.

What is a Wind Tunnel?
How are Fibre Optics Used in Communication?
How is Infrared Light Measured?
How do Air Plants Live?
How do Common Materials Reflect Light?
Does Washing your Hands with Soap Prevent Colds?
Why are Mirrors Such Good Reflectors of Light?
Where Does the Motion in Motion Pictures Come From?
What Causes Mold to Grow on Bread?
Can a Child's Vision be Better Than 20/20?
What are Plate Tectonics?
What are the Solar Winds?
How can We Measure the Amount of Moisture in the Air?
Under Which Color of Light do Pea Plants Grow Best?
How Fast Do Different Fabrics Burn?
Which Paper Towel is Really Most Absorbent?
How did Abraham Gesner Invent Kerosene?
What is the Best Shape for a Propeller?
What is the Best Shape for a Kite?
How Do Some Insects Change as They "Grow Up"?
What Can Be Done to Slow Rusting?
In What Shape Will Paper Support the Most Weight?
How Does Overcrowding Affect Life in a Terrarium?
How Do They Find Planets in Distant Solar Systems?
Are Girls Stronger Than Boys?
What Happens at the Juan de Fuca Plate?
How Do Animals Become Extinct?
What Will Follow After the Space Shuttle?
How Can Homes Become More Energy Efficient?
Why does a cedar canoe float?
How is traditional paint made? What is the environmental impact of traditional paint vs. store-bought paint?

What is Electrotyping?
How are Caisson Bridge Footings Made?
What is Mononucleosis?
How are Rainbows Created?
How is Sound Obtained from a Phonograph Record?
How Can You Make a Superconductor?
How are We Affected by Dust and Smoke in the Air?
What causes a satellite to stay in orbit?
What are Ways to Correct Poor Vision?
How did Wilfred Bigelow Invent the Pacemaker?
Which Fertilizer is Better?
How do Animals use Camouflage?
How Can a Tomato Plant be Grafted to a Potato Plant?
How Can We Measure the Altitude of Stars and Planets?
What Makes Hovercrafts Hover?
Which Paper Towel is Really the Strongest?
Does the Moon Rise at the Same Time Every Night?
Where Do You Find the Fibonacci Sequence in Nature?
Can Fish See Colour?
How can Christmas Trees be Salvaged?
What is the Golden Ratio?
How can Cars be Made to Cause Less Air Pollution?
What is the Effect of Detergent on the Germination of Bean Seeds?
How Did Early Civilizations use Simple Machines?
What is the Ballard Shale?
How Are We Affected by the Jet Stream?
What is the Ballard Fuel Cell?
What are the Advantages of Hydro Electricity?
What makes a NiCad battery Different Than a Regular Battery?
What are traditional ways of preserving food?
How are baskets made waterproof?

How do you Whistle?
How Does an Electric Arc Heater Work?
What is the Bernoulli effect?
How do Gases and Liquids Mix?
How can Water Boil at Room Temperature?
How can Electricity Create Magnetism?
Why are Multistage Rockets used to Launch Satellites?
Will Eating Protein Make you Feel More Alert?
How Does Oil Come from Canada's Tar Sands?
Which Chewing Gum Holds its Flavor Longest?
How Do Thermometers Work?
How Do Coffee Pots Work?
Nutra Sweet: What is It? What is it In?
What is Meant by Right Brain, Left Brain?
How are School Supplies Made?
Which Detergent Breaks Up Cooking Oil Best?
How Does a Bicycle Test in a Wind Tunnel?
What are Antibiotics from the Seashore?
Were Does Rainwater Go?
What Living Things May be Found in Garden Soil?
How Does a Pulley Work?
How Does Baking Soda Affect the Growth of Plants?
How Does Sound Travel Through Different Materials?
Why Should We be Concerned About the Ozone Layer?
How are Plastics Recycled?
How did they Fix the Hubble Telescope?
Is There a Planet Beyond Pluto?
What Alternate Fuels are Being Used for Vehicles?
Can People Identify Different Kinds of Kool-Aid by Taste Alone?
Why doesn't stripping the cedar bark harm the tree?
How Can the Developing of Films and the Printing of Pictures be Done at

PREPARING
(Week 2)

Making Electricity From Wind Power, From Tidal Power
How Do Biodegradable Items Disintegrate?
What is Inertia?
How Hard are Your Teeth?
Why Are Coastal Cities Warmer in Winter and Cooler in Summer Than Inland Cities at the Same Latitude and Elevation?
How Is Our Water Purified?
How Are Water Lilies Used in Sewage Treatment?
How Are Levers and Pulley Used?
What Is a Tsunami?
How is the Strength of a Magnet Affected by its Acting Through Cardboard, Glass, or Plastic?
Why are Some Animals Endangered?
What is the Effect of Coke on Heartbeat?
What is Surface Tension?
What is Centrifugal Force?

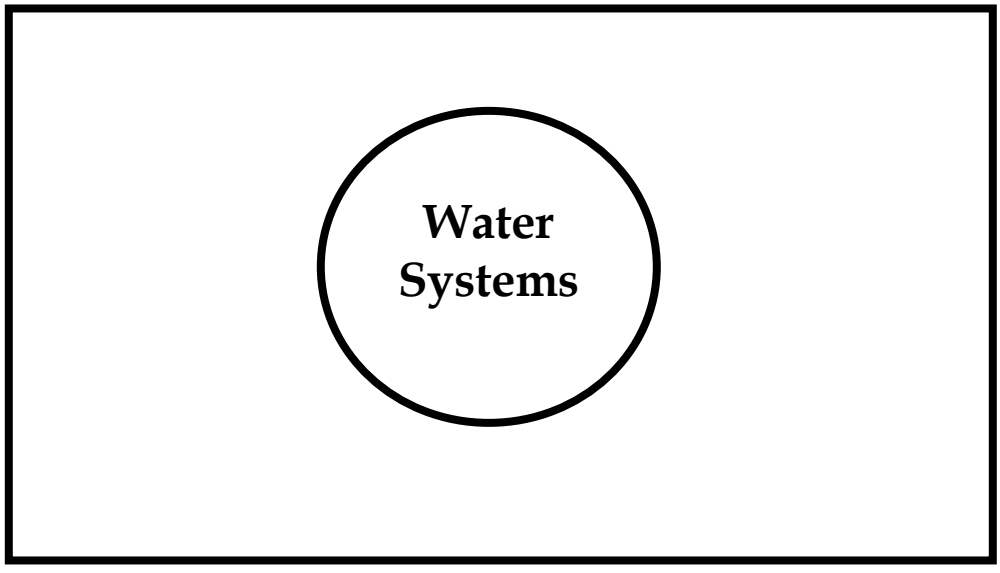
3. ***WEBBING IDEAS***

Webbing is a useful way of assisting your pupils to get started by **identifying** and **selecting** a science fair topic.

Begin with an example as a board exercise. Ask for a typical science fair project topic that everyone is familiar with so that all may assist. When the class has selected a topic, ask what areas should be covered in order for this to be a complete project. For example, if you were to come to see this project, what areas would you expect the person to be able to discuss? Brainstorm for ideas, group and categorize.

Here's how someone might web a subject about the Water Systems.

A. Think of a general topic and put it in the middle of a large piece of paper.

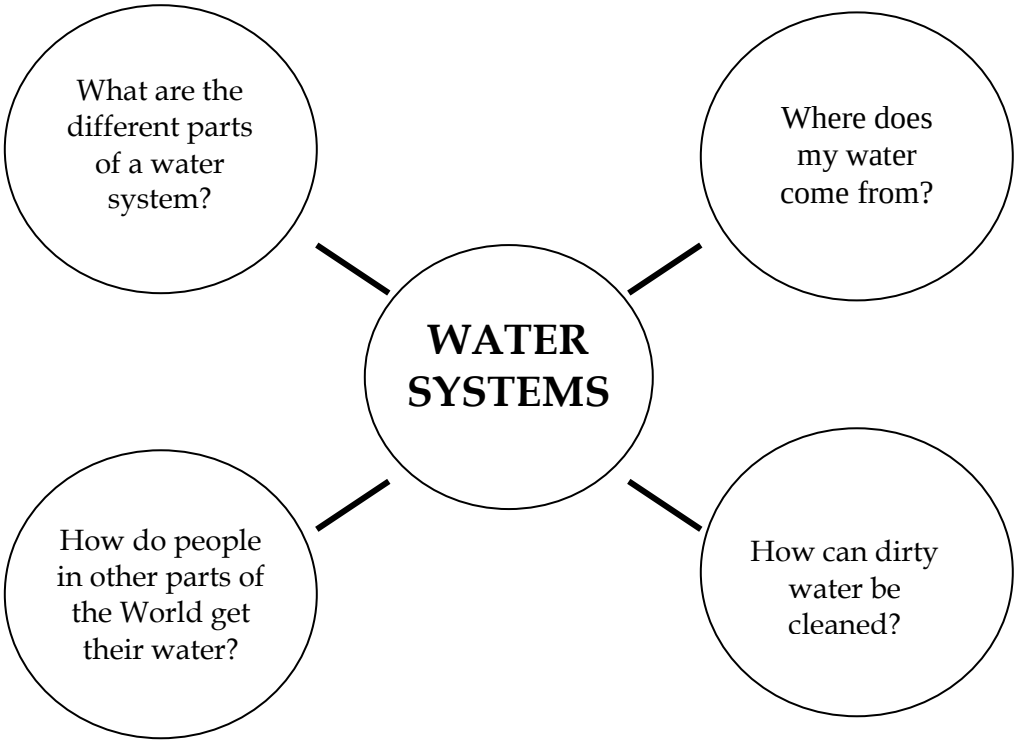


PREPARING
(Week 2 Cont'd.)

B. Now think of a few (4 - 5) questions about your topic. These questions could be ones that you would like to find the answers to or you may already know the answers.

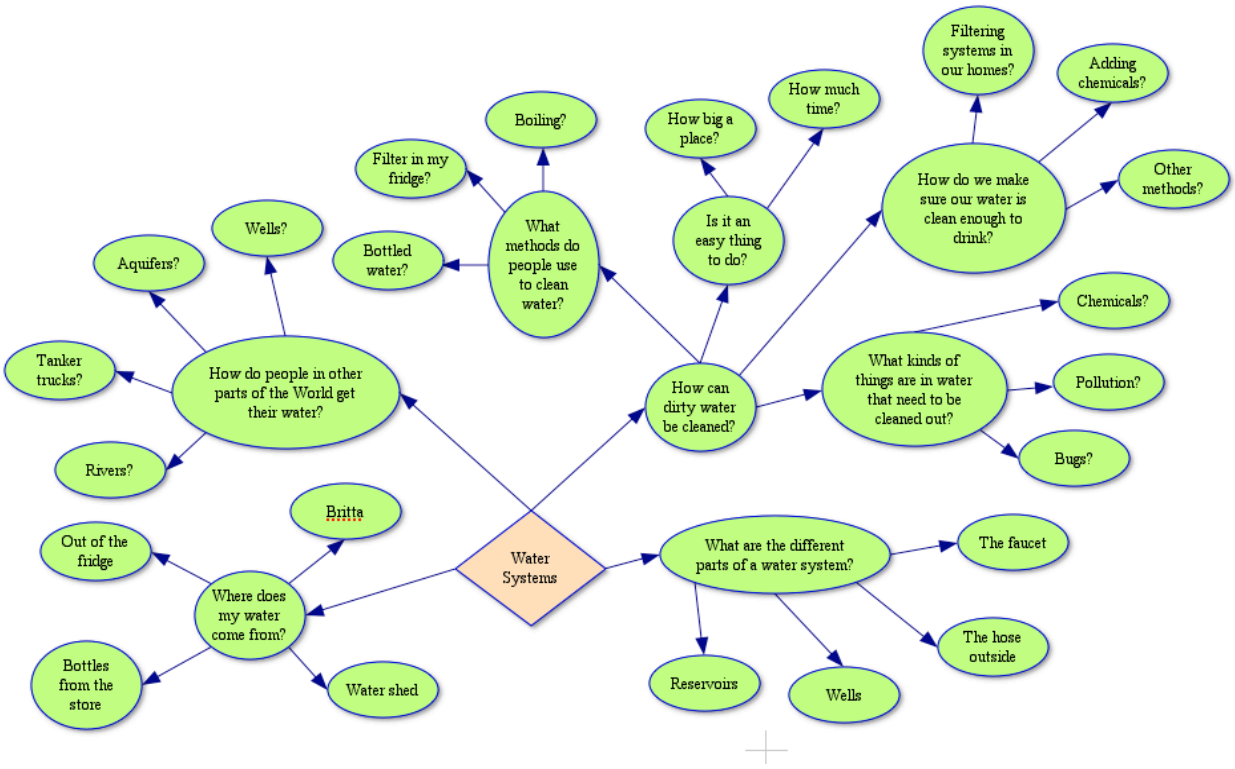
I. What are the different parts of a water system?
II. Where does my water come from?
III. How do people in other parts of the world get their water?
IV. How can dirty water be cleaned?

C. Put your questions on the paper around your general topic like this:



PREPARING
(Week 2 Cont'd.)

D. Look at each of the questions and answer them or make up new questions. Don't worry about your answers or ideas being correct or good ones. You want to think of as many different ideas as you can.



E. When you have gone as far as you can, stop and read the web over again. Somewhere on the page is an interesting idea that you can develop into a project. **LOOK CAREFULLY.**

Water Systems . . . How can dirty water be cleaned? . . . **An experiment to determine the most efficient way to clean water. That's it!**

Somewhere **within** the web, there will be a suggestion for an interesting topic question. How about, "Why do hummingbirds migrate?" This will result in a title and the focus for the project. Do practice webbings for a few other suggested topics, and share on the blackboard.

For seatwork have the class work on their own webbing of their own project, or if they have not yet decided, web a project that they have seen and thought was well done. Have them share their webbings with others in their class for assistance and to help provide new ideas. Have the webs turned in for teacher assistance and input, and review and decide upon the project titles. These titles will provide a focus for the project questions.

Finish the record sheet with names and partners, and project title questions. Record the webbing as completed. Use the record sheet at regular intervals to review the progress that has been made on each project, and to brainstorm for suggestions as to where to go for additional help and direction.

PREPARING
(Week 2 Cont'd.)

4. ***SELECT CATEGORY*** **(reminder: CHECK JUDGING CRITERIA)**

Webbing Ideas (finalize)

Select Category: There are several ways to approach any one topic. Before the pupils have made up their minds as to what their finished product might look like they should think about what the best, most interesting or most appropriate presentation might be. The project will remain the same, with the same kind of information gathered, but the presentation can be made to be more effective.

Experimental

You must do an **experiment** of your own in order to answer a question.
e.g. Does a plant grow better on the windowsill or in the closet?

Note: There is a step-by-step **Scientific Method** plan in the appendix.

Demonstrations

Proving and displaying scientific theories, laws, principles, etc.

Working Models

Active, operating models of machines, systems, inventions, etc.

Static Models

Non-operating models of machines, systems, inventions, animals, etc.

Regional – Experiments

Experimental research projects that are aimed at entering the South Fraser Regional Science Fair as well. Please refer to the rules as well.

Inventions

Inventions that do a task "better" OR Rube Goldberg invention, ones that do simple tasks in very complex ways.

Surrey School District Science Fair

CLASSIFYING PROJECTS

INSTRUCTIONS:

Refer to the project under consideration and answer the following questions. Your answers will determine the project's category. This chart is meant only to provide some guidelines and should not be considered as "the final say". Please refer to the more detailed descriptions found earlier in this booklet. There will always be a few projects which don't seem to clearly fit into the categories as outlined therefore you will have to use your best judgment to classify them.

3. Does this project perform an experiment in order to answer a question? (See **Scientific Method** handout in appendix)

Yes	**Experimental**
No	

4. Does this project illustrate, explain, prove, define, etc. a basic scientific fact, law, principle, etc.?

Yes	**Demonstrations**
No	

5. Does the model really work? (or could it really work if given the proper conditions e.g. sunlight?)

Yes	**Working Models**
No	**Static Models**

6. Is this project experimental and do you desire to go to the South Fraser Regional Science Fair?

Yes	**Regional – Experiments**

7. Did you "invent" all or part of this project?

Yes	**Inventions**

RESEARCHING

Weeks 3 and 4 (3 - 6 periods)

5. ***RESEARCH***

Depending on your situation, the research for Science Fair might be done completely at school, partly at school and some at home, or all at home. How the project will be evaluated will often determine where much of the research will be completed.

Discuss with your teacher-librarian well in advance any plans you have and any assistance you will be looking for. Science Fair time is often one with heavy demands made on the library, so it is necessary to work with your teacher-librarian and spread out the timeline.

Many schools use Science Fair as an opportunity to visit the community library. They have science fair materials and are always ready to help.

Use your web and begin to gather the facts for each area. Use a variety of sources such as print, people, and electronic. Emphasize the need for taking notes in point form, concentrating on the main ideas. When there is enough material the information will be sorted and sequenced. Try to use all the references that are available within the school and at the community library and begin searching for other resources available. Perhaps there is an organization or a specialist familiar with the topic who has information to share. It is likely that some parts of your web will have more facts easily available than another part of your web. The objective is to make the gathering of information as complete as possible. One area should not be emphasized and another neglected simply because it is simpler to do so. This step is on-going in that the storehouse of information is never completely exhausted therefore the research step will continue throughout the time available.

6. ***INVESTIGATE OTHER RESOURCES***

It is always helpful to use the identification of other resources as a separate step. During a regular review time brainstorm a list of organizations and individuals that might provide additional assistance. Professionals may be found at universities, museums, nature centres, industries, local businesses, airports, zoos, government agencies, environmental organizations, hospitals, pharmacies, utility companies, and all sorts of other places! Pupils should set some timelines to avoid waiting until the last minute to make contact. A written list of questions should be prepared beforehand to insure the pupil has a clear idea of what is wanted from the contact.

7. ***OUTLINE***

Refer again to your web of the project. Have any other aspects of your web emerged? Has there been enough information gathered for all parts of your web? With the information now available, how can it be organized for the most effective presentation?

Think about organizing the presentation into between four and six main parts. What are the important points that are to be brought out in each of these parts? What do you want the person looking at the project to understand when they see it? What do you want the person listening to the presentation to understand when they listen to it? Has your main question been answered?

Surrey School District Science Fair

DISPLAYING
(Week 5 and Week 6)

8. ***BEGIN MODEL/BEGIN DISPLAY***

This is a very important step in doing a Science Fair Project. First, look over the categories again and decide which method of displaying your project is the best. You may choose from a working model, a non-working model, a real object, a collection of objects or charts and diagrams. Almost all projects include some charts and diagrams.

Begin Model: Depending on the topic of the project and the category decided upon, a model of some kind may be appropriate for part of the display. What is the best way in which to present this information? A collection, an example, a demonstration, a working model or a static model should be an integral part of the project, neither secondary to nor of more importance than the display.

Remember that the use of common, ordinary household materials is encouraged, and so displays made of cardboard, paper, string, paper rolls and plastic tubs will show more resourcefulness than one where pieces of specialized equipment have been obtained.

Begin Display: It is often helpful to return to your web once again and decide upon which is the most essential part of the topic and which parts are less important. Use this information to rough out on scrap paper what the display will look like. With careful planning each section of the web can become one section of the display made separately. These parts can be brought together in the final presentation. In this way changes can easily be made.

Ask questions such as: "How much room is needed for the title?" "Will these parts fit conveniently on the wings of the display?" Keep in mind that the display should 'tell the tale' of the project, so organize it in such a way as to make it clear what the focus is. For maximum visual effect keep the amount of text material to the bare essentials and word process or print, not write, all work. The display should be mostly charts, pupil diagrams, graphs, maps, pupil pictures, etc.

Here are some things to think about:

- **Organize** your display. It should tell **"the tale"** of your project and someone should be able to understand your project just by looking at the display.
- Make your project as **neat** as you can.
- Display should not look **cluttered**.
- Make sure all words are **spelled correctly**.
- Make your display **colorful.**
- Don't use **photocopied** pages. Judges want to see your own words.

DISPLAYING (cont'd)
(Week 5 and Week 6)

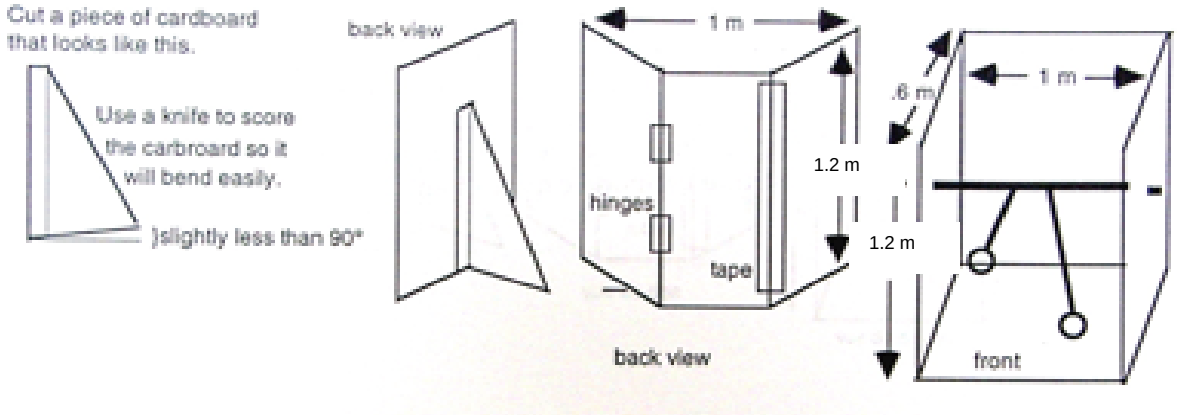
- Make your display **sturdy** so that it can be moved easily without falling apart.
- Use household **throw-aways** whenever possible. Reuse and Recycle!
- **READ THE RULES AGAIN! Look at the judging criteria.** Remember how important both the rules and the criteria are in determining your award.
- Give yourself lots of time -- two weeks or even more to build your display. You can't make a winning display overnight.
- Look below for some ideas about how to make your charts self-supporting.

9. CHARTS AND DIAGRAMS

Below are a few ideas and tips on how to make your Science Fair project display self-supporting. These are not the only ways of making your charts stand up, but they are easily made. Here are a few tips:

i. Use heavy corrugated cardboard or plastic for the back of the display. Ask for old packing boxes at appliance or department stores. Old real estate "for sale" signs work.
ii. The display should be **sturdy**. You will be putting up and taking down the display plus moving it many times so it must be able to stay together.
iii. Your whole project, including the charts, must be within a space of **1 metre** wide**, 1.2 metres** high and **60 centimetres** deep.
iv. You should be able to "bump into" your display without having it fall down. Accidental bumpings do occur and your project should be able to withstand them.
v. The cost of anything used in making your display must be added to the project cost. (Display board cost is exempt.)

a) One Chart b) Two or More Charts 3) A Self-contained Project



PRESENTING

(Week 7, Week 8 and Week 9)

10. TITLES AND LETTERING

Bold, clear titles help people understand what your project is about and what ideas are the most important. Your titles and your lettering should be neat and colorful. Use underlining and borders to make information stand out. Cut construction paper or use thick felt pens to make large letters with.

11. PRACTICE YOUR TALK

At the Science Fair you will be asked to explain your project to the judges and to the public. Your presentation to the judges should be clear, to the point and about 2 to 3 minutes long. Ask yourself, "What must the judge understand about my project?" Think of only the most important things to tell the judges. **Practice** your presentation to your parents, relatives and friends so that you feel **confident** when talking at the Science Fair. The judges will also be asking **questions** about the display so have your friends ask you some questions for practice.

The judges put as much if not more emphasis on your oral presentation as your visual display so your ability to answer their questions is very important.

Conseil scolaire de Surrey - Foire de sciences

REGLEMENTS

1. Les élèves peuvent présenter leur projet individuellement ou avec un partenaire. Si tu choisis de travailler avec un partenaire, vous devez vous séparer la tâche équitablement et être capable de démontrer, l'un et l'autre, une bonne connaissance du projet. Pas plus de **deux élèves** peuvent travailler à un même projet.

2. Les projets peuvent être débutés à l'école mais peuvent aussi être préparés ou assemblés à la maison et à l'école.

3. Ton professeur et tes parents peuvent t'aider, mais tu dois faire la majorité du travail.

4. Ton prototype, incluant les chartes ou maquettes, **ne peut pas** dépasser les dimensions suivantes:

   hauteur 1,2 m **largeur 1,0 m** **profondeur 0,6 m**

5. Toutes chartes doivent être **sur pied**, de manière à ce qu'elles se tiennent d'elles-mêmes. Ton projet de science doit couvrir une surface n'excédant pas 1m X 1m X 0.6m.

6. Le coût total du projet **ne peut excéder 25$.** On te demandera de présenter une liste d'achats. *Tu n'as pas besoin d'y inclure les objets qui sont jetables et que tu as obtenus gratuitement:* bouts de bois, papier recyclé, peinture, etc. Tu ne peux pas utiliser des objets empruntés à moins que tu aies reçu, au préalable, l'approbation de ton professeur. Il serait bon que tu discutes avec ton professeur des moyens que tu prendras pour te procurer les matériaux dont tu auras besoin, avant même de commencer à travailler sur ton modèle.

7. L'équipement et les machines appartenant à l'école peuvent être utilisés, si disponibles, après avoir obtenu, toutefois, au préalable, la permission de ton professeur.

8. Les modèles, trousses ou collections achetés dans un magasin ne sont pas permis!

9. Si tu as besoin d'un courant électrique, ce doit être un courant continu d'une charge **maximale de 9 volts**.

10. Il n'est pas permis d'utiliser une flamme à ciel ouvert.

11. Si tu te sers d'animaux dans ton projet ou pour ton expérience, tu dois t'en occuper et prendre soin d'eux. Ne prends pas un animal exotique ni un animal de compagnie, le coût de l'animal dépasserait sûrement les 25$ permis (voir règlement #6). Il serait préférable que tu en parles à ton professeur si tu as l'intention d'utiliser des animaux pour ton projet.

12. Il est très important que ton projet soit COMPLETEMENT SECURITAIRE. Si tu as des doutes sur la solidité et la sûreté de ton modèle, **consulte ton professeur** ! !

13. Si tu désires participer à la foire de sciences de la région de South Fraser, consulte leur réglementation. La foire de sciences de Surrey possède une catégorie régionale qui correspond davantage à la réglementation de la région de South Fraser.

Foire de sciences de l'école

SE PRÉPARER

1. **Lire bien les règlements.**

2. **Choisir son sujet**

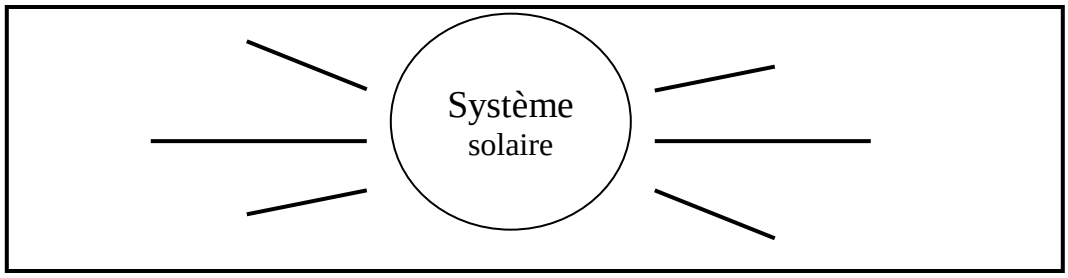
   Pense à ce que tu aimerais faire ou monter pour ce projet. Parles-en à des amis, à ta famille à la maison ou à ton professeur à l'école.

3. **Mettre les idées en grappe - Faire un "idée-gramme"**

   C'est beaucoup plus facile de faire un bon projet si le sujet est précis et spécifique. Par exemple, le système solaire est un bon sujet général mais le projet serait bien plus facile si le sujet était : " Qu'est-ce qu'une comète ? " Plus ton sujet sera précis et spécifique et plus il te sera facile d'exécuter ton projet.

   Si tu as de la difficulté à préciser ton sujet, essaie de faire une grappe avec tes idées. Voici comment t'y prendre. Prenons comme exemple le système solaire.

   A. Pense d'abord au sujet général et mets-le au milieu d'une page.

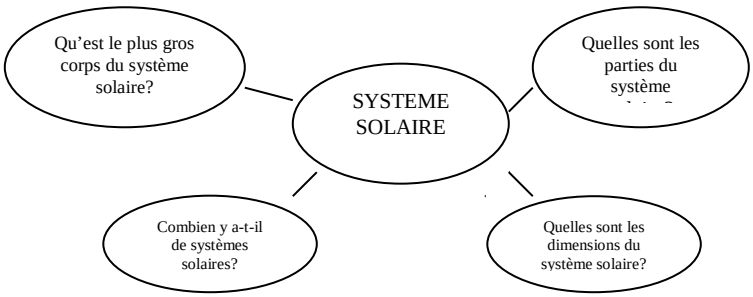


   B. Maintenant, imagine 4 à 5 questions qu'on pourrait te poser par rapport à ton sujet. Tu connais peut-être déjà les réponses à ces questions.

1. Quelles sont les parties du système solaire.
2. Quelles sont les dimensions du système solaire?
3. Combien y a-t-il de systèmes solaires?
4. Quel est le plus gros corps du système solaire?

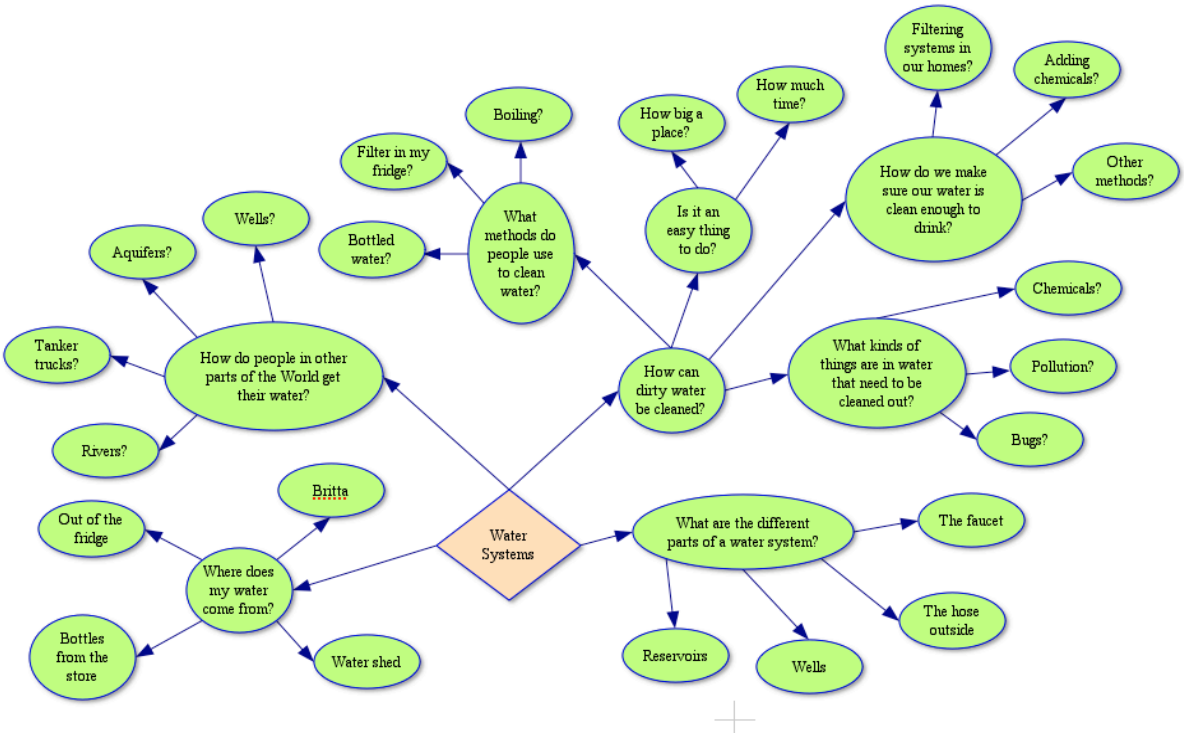
Foire de sciences de l'école
SE PRÉPARER (Cont.)

C. Mets tes questions sur le papier tout au tourde ton sujet général comme ceci :



D. Relis tes questions et écris les réponses ou formule de nouvelles questions. Il n'est pas important à ce point-ci que tes réponses soient exactes. Ce qui est important, c'est d'avoir autant d'idées possibles.

Exemple:



F. Quand tu as extrapolé autant que tu as pu, arrête et lis la grappe en entier. Il y a parmi tous ces débranchements une idée que tu peux développer pour ton projet. REGARDE BIEN ATTENTIVEMENT.

Système solaire . . . différentes parties . . . comètes . . . Hé! Ça y est! J'ai trouvé!: Comment se fait-il que les comètes aient des queues?

SE PRÉPARER (cont.)

4. Choisis une catégorie et décide le type de ton projet

Les descriptions qui suivent te donneront des idées de catégories et t'aideront sûrement lorsque tu commenceras tes recherches. Par exemple, comme sujets :

La contribution du Canada dans le domaine scientifique

Les scientifiques canadiens ont contribué très largement au développement et au progrès de la civilisation mondiale. Ton projet peut être un modèle mobile, stationnaire, une collection ou une expérience reliée à la contribution du Canada à la science. Exemples:

Catégories	**Points/Questions à développer**
· Recherches sur le diabète :	- Qui a découvert l'insuline ? Pourquoi est-ce si important ?
· L'agriculture :	- Quelles variétés de blé, de pommes, etc. ont été développées par des canadiens ? - Dr. Keith Downey - Dr. Leonard Siemens
· La génétique :	- Dr. David Suzuki ?
· L'espace :	- Dans quoi utilise-t-on le bras articulé "Canadarm" ? Comment a-t-il été conçu? - Quelle est la contribution canadienne dans le domaine des satellites de télécommunication ? - Dr. Roberta Donbar
· La fission nucléaire :	- Qu'est-ce qu'un réacteur Candu ?
· La géologie :	- Qui est John Tuzo Wilson ?
· SEEDS :	- Le programme d'éducation sur l'énergie Dr. Robert Westbury
· La résonnance magnétique nucléaire:	- Dr. Laurie D. Hall - Dr. Roxanne Deslauriers
· La gestion de l'écosystème :	- Jack Miner
· Le génie biomédical :	- Dr. Robert Scott
· L'écologie :	- Pierre Dansereau
· Les télécommunications :	- Douglas Parkhill
· La science pour la paix :	- Dr. Ursula Franklin
· Les communications :	- Dr. Donald Chisholm
· La chimie :	- Dr. John Polanyi
· La biochimie :	- Dr. Michael Smith
· Peux-tu en trouver un autre	- ? ? ?

L'encyclopédie *Canadiana* est une bonne source à consulter pour commencer tes recherches. Une autre bonne source de renseignements est le Conseil National Canadien de la Recherche.

SE PRÉPARER (Cont.)

Recherche expérimentale

Tu aimerais peut-être choisir de mener ta propre expérience afin de répondre à une question très spécifique, comme par exemple : est-ce qu'une plante pousserait mieux sur le rebord d'une fenêtre que dans une garde-robe ?

Démonstration

Fabriquer des prototypes pour prouver et tester des théories, lois ou principes scientifiques...

Modèles mobiles

Fabriquer des prototypes mobiles de machines, systèmes, inventions, mécanismes et petits trucs pratiques...

Modèles stationnaires

Fabriquer des prototypes non-mobiles de machines, systèmes, inventions, animaux, organes et membres…

Inventions

Inventer des modèles qui accomplissent une tâche de meilleure façon OU trouver des inventions du genre Rube Goldberg qui servent à accomplir des tâches simples de façon complexe.

Foire de sciences de l'école

CLASSIFIER LE PROJET

INSTRUCTIONS :

Considère ton projet en répondants aux questions suivantes. Tes réponses détermineront la catégorie de ton projet. Il y aurait toujours des projets qui n'entrent pas dans une catégorie spécifique donc utilise ta jugement pour le classifier.

1. Est-ce que le projet inclut une expérience scientifique pour répondre à une question? (voir **Scientific Method** dans l'appendice).

   OUI *Recherche expérimentale*
   NON

2. Est-ce que le projet illustre, explique ou défini un fait scientifique, un loi scientifique ou un principe scientifique?

   OUI *Démonstration*
   NON

3. Est-ce que le modèle fonctionne? (ou pouvait fonctionner dans les conditions nécessaire comme sous le soleil)?

   OUI *Modèle mobile*
   NON *Modèle stationnaire*

4. Est-ce que le projet est expérimental ET tu désires participer au South Fraser Regional Science Fair?

   OUI *Expérimentale - Régional*
   NON

5. As-tu inventé l'entier ou une partie de ton projet?

   OUI *Invention*
   NON

ENTREPRENDRE LA RECHERCHE

5. Recherche

Maintenant que tu as ton sujet, tu dois chercher de l'information. Les meilleurs endroits par où commencer sont les bibliothèques de ton école et de ta municipalité. Quand tu découvres un article ou un livre se rapportant à ton sujet, souviens-toi de ces points :

i. Lis tout l'article ou le chapitre avant de prendre des notes.
ii. Prends en note uniquement les parties que tu comprends. Ne copie pas des pages et des pages de renseignements qui ne veulent absolument rien dire pour toi. Demande à tes parents ou à ton professeur de t'aider à utiliser les documents que tu as trouvés.
iii. Fais une liste des titres de livres et des encyclopédies que tu as utilisés. Ce sera ta bibliographie.

Ne perds pas ton temps à chercher aux mauvais endroits. Il est peu probable que tu trouves des renseignements sur les "planètes" dans une revue du genre de "Sports Illustrés". Le ou la bibliothécaire peut t'aider à localiser rapidement des revues et des livres appropriés.

Si c'est une expérience que tu as choisi de mener comme projet, c'est maintenant que tu dois la commencer. Tu auras peut-être besoin de plus de temps pour ton projet si ton expérience doit s'étendre sur une longue période de temps - si, par exemple, tu dois faire pousser des plantes.

6. Rechercher d'autres sources

Dépendant de ton sujet, il te sera peut-être utile de contacter des compagnies, des universités, des zoos, des agences gouvernementales, des professionnels tels : docteurs, ingénieurs, garde-malades, etc... Quand tu es prêt à téléphoner aux compagnies, universités, etc... pour demander des renseignements, tu dois déjà avoir en tête une question très précise. Écris- la sur un papier. Plus ta question sera précise et plus tu recevras des renseignements clairs et riches en information. Si tu crois avoir besoin d'entrer en contact avec ce genre d'institutions, fais-le le plus tôt possible. La plupart de ces institutions sont tout à fait disposées à t'aider, mais ne t'attends pas à recevoir beaucoup d'aide si tu les contactes une semaine avant la tenue de l'Exposition!

7. Faire le plan

Maintenant que tu as recueilli de l'information pertinente à ton sujet, retourne à ta grappe d'idées. Demandes-toi : " Est-ce que j'ai bien couvert tous les sujets et sous-sujets ? Est-ce que j'ai besoin de continuer mes recherches pour trouver plus d'information? " Regarde bien, attardes-toi en profondeur.

Il y a beaucoup de personnes qui, à cette étape-ci, mettent leurs renseignements les plus importants sur des cartes ou des morceaux de papier, un renseignement par carte ou morceau. Ensuite, ils étendent leurs morceaux sur une table et utilisent la grandeur de la table pour regrouper l'information. Ils organisent de cette manière leur information en quatre ou cinq groupes.

Après avoir organisé ta matière de cette façon-là, trouve un titre pour chaque groupe. Ces titres et les renseignements importants formeront le plan de ton projet et de ta présentation écrite et orale.

EXPOSER SON MODÈLE

8. Se préparer à exposer son projet

Cette étape est très importante dans toute la réalisation de ton projet pour l'ExpoScience. Premièrement, retourne lire toutes les catégories encore une fois et choisis la meilleure méthode pour présenter ton projet. Tu auras probablement comme choix : un prototype mobile, stationnaire, un objet concret qui existe déjà, une collection d'objets, de données ou de résultats de recherches ou bien encore, des chartes et diagrammes.

Voici quelques petits points qu'il est bon de se rappeler :

i. **Organise** ton exposition. Selon sa disposition, les étapes de ton projet et son **"histoire"** doivent y être évidents si bien qu'un visiteur peut comprendre l'objet et le but de ton projet rien qu'à regarder ta présentation.

ii. Arrange-toi pour que ta présentation soit le plus **propre** possible.

iii. Ne remplis pas trop les panneaux ou n'empile pas trop d'objets sur ta maquette. Il ne faut pas que ta surface de présentation paraisse **en désordre**.

iv. Assure-toi que tous les mots que tu utiliseras soient **écrits correctement**.

v. Monte ton exposition pour qu'elle soit attrayante, **colorée**.

vi. Ne te sers pas de pages **photocopiées**, les juges préfèrent voir un texte que tu as toi-même écrit.

vii. Construis ta maquette **solidement** pour qu'on puisse la manipuler sans qu'elle s'écroule.

viii. En autant que possible, sers-toi de trucs prêts à jeter que tu as trouvés dans ta maison. **N'oublie pas de recycler**!

ix. **RELIS LES RÈGLEMENTS ENCORE UNE FOIS!!**

x. Alloue-toi suffisamment de temps pour construire ton modèle - deux semaines ou même plus encore. Rome n'a pas été bâtie en une nuit! En d'autres mots, il faut plus d'une journée pour construire un modèle qui se tient.

Foire de sciences de l'école

EXPOSER SON MODÈLE (Cont.)

9. La toile de fonds

Tu trouveras, plus loin, des trucs et des idées pour t'aider à monter ta toile de fonds de façon à ce qu'elle se tienne d'elle-même. Ta toile de fond peut être une charte, un ou plusieurs panneaux, un grand dessin, etc.. Il existe bien d'autres façons, mais celles que nous te donnons ici sont les plus faciles à faire :

i. Utilise du carton fortifié, ondulé, pour les côtés arrière de ta toile. Les régies d'alcool et les quincailleries ont souvent des boîtes de la sorte qu'ils laissent à la disponibilité du monde.

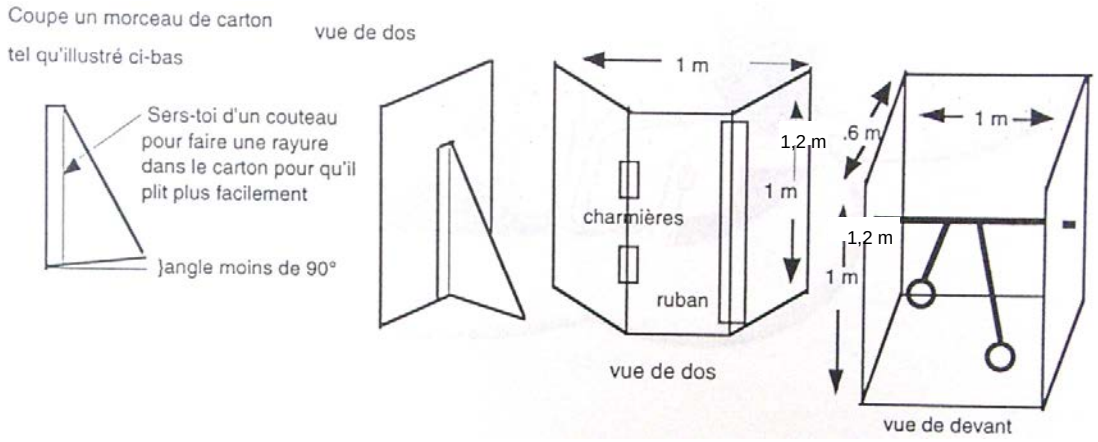
ii. Ton exposition au complet doit être très solide. Plusieurs fois, tu auras à la changer de place, à la descendre et à la remonter. Les morceaux doivent donc rester collés ensemble.

iii. Ton exposition au complet, incluant la toile de fond, ne doit pas excéder les dimensions maximales de 1 mètre de largeur, 1 mètre de hauteur et 60 centimètres de profondeur.

iv. En principe, ton modèle devrait pouvoir se faire bousculer sans s'écrouler. Il faut s'attendre à ce que quelqu'un, par accident, se heurte ou se butte contre ton modèle.

v. Le coût de ta toile de fond doit être inclus dans le coût maximal de ton projet, c'est-à-dire, 25$.

vi. Il est possible de construire un grand nombre de projets pour une Foire Scientifique en utilisant des matériaux qui n'ont rien coûté ou qui ont coûté très peu.



EXPOSER SON MODÈLE

10. Diagrammes et chartes: titres et lettrage

Des titres clairs, écrits en gras, aident les gens à comprendre l'objet du projet et les idées importantes qu'il véhicule. Les titres et le lettrage doivent être propres, colorés et facilement visibles d'une distance de plusieurs mètres. Souligne ou encadre les renseignements que tu veux faire ressortir le plus. Sers-toi de papier bristol à construction pour faire tes lettres.

11. Pratique ta présentation orale

Durant l'ExpoScience, les professeurs et les autres juges te poseront des questions sur ton projet. Ta présentation orale doit être précise, claire et ne doit pas excéder 3 minutes. Tu dois te demander quels sont les points les plus importants intéressants pour les visiteurs qui t'écouteront. " Que doivent-ils retirer en gros de mon projet ?" Pratique-toi devant tes parents, tes amis et ta famille pour que tu sois plus à l'aise lorsque tu parleras à l'Exposition. Les visiteurs aussi te poseront des questions à propos de ton exposition. Alors, demande à tes amis de t'en poser pour t'habituer à répondre.

Surrey School District Science Fair

Previous Projects

Canada's Contribution to Science

Ballard Fuel Cell
Canada's Space Program
Avro Arrow

Demonstrations

Presenting Paper
Why Do Earthquakes Occur?
Wonder of Water
Radios
The Heart
Soap
Oxidation
Water Cycle
Salt
Friction
Water and Suds
Seat Belt Safety Demo
Liver
Volcanoes
Oils in the Engine
Sleep Dept
Tornadoes
Illusions
Ants
Caffeine
Animation
Earthquake
How Bees Make Honey
What is Bernoulli's Effect?
How is Our Water Purified?
What are Ways to Correct Poor Vision?
How Did Early Civilizations use Simple Machines?
What is Water?
What is Erosion and What are it's Effects?
Inventions
Optical Illusions
Electrolysis of Water
Density
Electricity
The Tongue
Smoking
Electric Current
The Ear and Sound
Mummification
Conductivity
Bubbles
Hurricanes
Natural Disasters
Vents
Acid Rain
Why is the Ocean Salty?
Trigger Epileptic Seizures?
UFO's
From Egg to Chick
The Hazards of Smoking
Generator Vs Transformer
What are the Advantages of Hydro Electricity?
How Does Sound Travel Through Different Materials?
Why Should We be Concerned About the Ozone Layer?
4-Stroke Engine
Forecasting the Weather by Monitoring Air Pressure
Jet Propulsion
Solar Energy
Laser Eye Surgery
Wings
In Your Dreams
Succession
Surface Tension
How Oxygen is Formed?
Hydro Electricity
Cork in a Bottle
Carbon Cycle
The 5 Senses
Land Snails
Animation
Automobiles
Ancient Brain Surgery
All About Clouds
Frogs
The Human Body
Forensic Science
What is the Human Ear?
How to Feed your Parrot?
What Happens at the Juan de Fuca Plate?
What are Ways to Correct Poor Vision?
Surface Tension
ABC's of Fire Extinguishers
Head Lice
Amazing Light
Electric Conductors
Telephones
The Eye
Can a Lens Bend Light?
How Planes Fly/Flight?
Echolocation
What are the Bends?
Siphon
Tornadoes
Addiction
Dyeing Naturally
Why Your Ears Pop?
The Eye
Leukemia
Cells and Viruses
Spider Webs
Diabetes
Les Leviers Articules
Soap: Making & Testing
Pyramids
How are we Affected by the Jet Stream?
How are Plastics Recycled?

Inventions

Cookie Dispenser
Car of the Future
Nature's Little Helper
The Hockey Net On Wheels
The Super Feeder
How can Hamsters Feed Themselves?
A Marble Sorter
Simple Timer Machine
The Amazing Toothpaste Squeeze
Plant Waterer
Spray Paint

Outer Space

Meteors and Meteorites
Parabolic Space Flight
Mercury
How Do They Find Planets in Distant Solar Systems?
Eclipses
Mars: In Search of Life
The Earth in Space
The Sun
How Did They Fix the Hubble Telescope?
Space/Solar System
Rocket to Mars
Hydrogen Fuel Cell
Mir Space Station
What Will Follow After the Space Shuttle?
Stars
Space Shuttle
Saturn

BC Interest

How is Our Water Purified?
What is the Ballard Shale?
What are the Advantages of Hydro Electricity?
How Are Plastics Recycled?
What Happens at the Juan de Fuca Plate?
How Are We Affected by the Jet Stream?

Experimental

Purification
Respiratory System
Greenhouse Effect
Oil Spills
Paper Airplanes
Amazing Plants
Which is Stronger?
Perfume
Crystals
Color & Heat absorption
Air Pollution
What is Corrosion?
How much Fat is in Potato Chips?
Are Other Gases Heavier than Air?
Steam
It's a Mystery
Sunscreen
Bean Growth
Separating Salt
Fats, Starch & Vitamin C
Why Planets Orbit the Sun?
Optical Illusion
Ginseng/Magical Med. Plant
Opposable thumb
What you Remember
Hamster Memory
Acid Rain: Cause & Effect
Is Bacteria Lurking in Your Kitchen?
Conductivity of Salt & Fresh Water
Is the Bunny Telling the Truth?
Erosion & Its Effects
Water vs Oil
Les pluies acides
Popcorn Mystery
Carbon Dioxide
Plant Needs
Momentum
Cotton vs Polyester
Hot House Vs Garden
To Fade or not to Fade?
Fungi
Plants and Pollution
Chemicals & How They Clean
Which Pop Has The Most Citric Acid?
Reaction Times
Skin
Acid Rain
Are Rats Colour Blind?
Commercials
Electro Magnets
Which Battery is Best?
Solar Energy
Density
Mould
Pre-heating
Civil Engineering
Pollution: How it Affects Plants?
Brand Name or Price Diapers

Static Models

Rubber & Latex
Pulp to Paper
Bridges
Making a Mountain
La Maison (F)
Catapults
Underground Rivers
Feng Shui
Surveillance Bug
How a Model Rocket Works
Volcanoes Erupt: Why?
The Brain
How Car Engines Work
What Causes Static Electricity?
Caves - "Come Spelunking"
Panama Canal an Engineering
Mummies
Refrigeration
The Eye
Leeches
Earthquake & Plate Tectonics
Spare me the details
Hot air balloon
Airplanes
Pain
"The Cycle of Waste Management"
Wolves
Taste and Taste Buds
Water and Evaporation
How do dams produce electricity?
Wind Tunnel
Holograms - How are they Made?
Hydro Electric Dam
Nuclear Power
Speleothems
Volcanoes
Waves & Tides
Lasers
Ocean Oil Rigs
Earthquakes
Reasons for Seasons
Dragon Fly Model Prehistoric Size
Bone Marrow Transplants
Hydro Electricity
Pinhole Camera
The Body's Filter "The Kidneys"
Bugs
Scoliosis
Tsunamis
Lady Bugs
Lightning
Bones
Jet Flight
The Heart
Radar
Tropical Rainforests
Wind Energy
What are the Three Parts of the Brain?
Inside a PC
Inside the Shuttle
Triumph
Salmon and its Environment
Dams

Working Models

Geyser
Hot Air Balloons
Electricity
Weather
Buoyancy & Submarine
How Airplanes Fly?
La Purification de L'eau(F)
Submarines
Why does Water Freeze?
Electromagnets!
Rocket
Robotics
Electromagnetic Waves and the Radio
Light
Wind Powered Water Pump
Muscles
Jet Propulsion
Wind Mill
Submarines
What is a Hovercraft?
DC Current & Generators
Hero's Fountain
How Do Batteries Work?
Hydraulics
Elevators
Solar Cells - Energy of the Future
Electric Train
Tapis d'Alarme
Flight
Steam Engine
Locking Water
Tapper Talk
Magnets
Electric Boat/tugboat
The Telegraph
Static Electricity
The Gear
The Electric Circuit
Physics in the Neighborhood
Electric Motor
Floods
Steam Power
Energy From Water
Morse Code
Earthquake
Clouds
The Bell Curve
Chair"
Space Rockets
Airtrains
Seismographs
How do Gasoline Engines Work?

Affects of Powders on Plants

Grandma Goldberg's Rocking Chair

Why does Water Freeze?

Energy

Making Electricity from Wind Power, from Tidal Power

What Alternate Fuels are Being Used for Vehicles?

How can Homes Become more Energy Efficient?

What makes a NiCad Battery Different than a regular Battery?

How Does Oil come from Canada's Tar Sands?

Scientific Method

Step 1: The Question

- Ask a specific, testable question (for example: do boys or girls have faster heartbeats?).

Step 2: The Hypothesis

- This is an educated guess answer to the question (for example, girls have faster heartbeats than boys).

Steps 3: The Variables

- Only 1 variable is tested in an experiment
- 2 types of variables exist in an experiment: controlled variables and manipulative variables
- The manipulative variable is the one you will be testing (for example, the difference in heartbeats between boys and girls)
- The controlled variables are all the others (for example, age of boys and girls, activity level, method of measuring heartbeat, etc.)

Step 4: The Procedure

- This is the list of steps that will be performed to answer the question

Step 5: Equipment and Materials

- This is a list of equipment and materials needed to perform the procedures

Step 6: Data Collection/Results

- How will the data be collected?
- How will the data be recorded and presented?
- How much data will be collected?
- How accurate will the data be?

Step 9: Hypothesis Check

- Check your results with the hypothesis
- Do they agree or disagree with the original hypothesis

Step 10: Conclusions

- What did you learn from this investigation?
- What were the results?
- What do they mean? Are they useful? How
- Do you need to investigate further?

JUDGING RECORD

3 = all of the criteria are met with distinction; the project may go beyond expectations
2 = all of the criteria are met with clear success; the project is effective
1 = most of the criteria are met; there are minor deficiencies

NAME	RULES	KNOWLEDGE	SCIENTIFIC SKILLS	PRESENTATION	TOTAL	COMMENTS