



SENIOR SCIENCE & INVENTORS' FAIR

HANDBOOK 2016-2017



With

Avon Maitland District School Board

Huron Perth Catholic District School Board

Foundation For Enriching Education Perth Huron





All About.....Sci-Tech Encounters

Science and Inventors' Fair is a one-day event, which allows students to show their own research or invention to a series of judges. The projects can take the form of an experiment, a research paper, or an engineering project and students are asked to create a report, design a display and be prepared to present their project to the judges. The process usually begins in the classroom where the teacher is using the science fair or invention process as a means of teaching the scientific method.

When will this opportunity occur?

Science Fair

Senior Science Fair	April 12, 2017
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*All Scitech events will be held at the
Seaforth & District Community Centre.*



General Information – Science & Inventors' Fair

This year the Avon Maitland District School Board, the Huron Perth Catholic District School Board, and the Foundation For Enriching Education are proud to announce the annual **Science & Inventors' Fair** for Grades 7- 12, will be held Wednesday, April 12, 2017. Five of the participating students will be chosen to attend the Canada Wide Science Fair in Regina, Saskatchewan.

The Science and Inventor's Fairs are being organized by a volunteer committee of educators and is funded in part by local community sponsors.

Curriculum Links:

1. Inventions and projects may involve any of the Science strands in the Ontario Curriculum Science and Technology (1-8) and the Ontario Secondary Schools Curriculum for Science Grades 9-12.
2. Inventions and projects allow the students to develop attitudes and 'habits of mind' that are essential for meaningful work in science and technology. These include: commitment to accuracy, precision, and integrity in observation, experimentation, and reporting; respect for evidence; concern for the observation of safety procedures; and respect for living things and environment.
3. The inventions and projects allow for development of both oral and written communication skills.
4. The inventions and projects allow students to learn and use specialized scientific and mathematical language.
5. These projects also build on and reinforce certain aspects of the language and mathematics curricula. For example, they emphasize the importance of clear, concise communication and involve the use of various charts, tables, and graphs for communicating observations and measurements.
6. Inventions and projects provide integrated learning opportunities which are ready-made for differentiated instruction.



Participants

Elementary Schools may send a maximum of five entries. Additional entries may be arranged by contacting Don Pottruff or John Corsaut.

Secondary School are encouraged to participate and send projects.

Registration

Registration for the Senior Science Fair will be online at SciTechEncounters.ca

Past pictures and additional information can also be found on this website.

A password is needed for registration and will be sent to schools when registration opens.

Fees

Fees are \$10.00 per student.

Awards

The top five individuals will go on to the Canada Wide Science Fair. Additionally, a wide variety of prizes are presented such as certificates, medallions, cash awards and magazine subscriptions.

Assessment and Evaluation

A rubric for assessment has been developed for possible use within your school.

Canada Wide Science Fair

This will be held in Regina, Saskatchewan, from May 14-20. All projects will be eligible for the opportunity to represent the Avon Maitland District School Board and the Huron Perth Catholic District School Board.

Projects and inventions are judged using
Canada Wide Science Fair criteria.



New Science Fair Categories

The regional science fair will now use the seven Canada Wide Science fair challenge categories. Youth Science Canada has identified seven challenges, known as the Canada-Wide Youth Science Challenges, which focus on issues that are important to Canada's youth, the future of our country and our world. They reflect the growing trend in current Canadian science, technology and innovation to focus on specific multi- and interdisciplinary global, national and provincial issues.

During registration, finalists identify the challenge best addressed by their project.

Youth Science Canada's Challenges are meant to inspire youth to exercise their curiosity and creativity by doing a project that addresses one of these Challenges:

Discovery

Create new fundamental knowledge based on your curiosity by asking a question and using the techniques of scientific inquiry to develop an answer.

Energy

Improve our use of current energy sources, enable the transition to alternative energy sources, or reduce our energy footprint.

Environment

Reduce our impact on, improve our understanding of, and ensure the quality of water, air, soil, and the diversity of living things.

Health

Increase our understanding of the human body, or apply science and technology to improve health, control disease, or support an aging population.

Information

Enhance communication and our use of information using digital and networking technologies, or applications of new media.

Innovation

Combine scientific principles with your creativity to develop a new material, structure, device, or system to solve a problem or improve an existing solution.

Resources

Develop better ways to use our natural resources that provide sustainable sources of food, products, or prosperity.



The Exhibits

1. Display size: The maximum measurements are, Width: 1.2m, Depth, 0.8m, Height 3.5m., including the table on which the project sits. Oversize projects will be disqualified from the awards program
2. If an electrical cord is required, you must bring your own C.S.A. Approved (3 prong) extension cord. You will need at least a 15m length of cord.
3. Students are encouraged **not** to write their names on the back of the backboard.

Safety

Safety is a prime consideration at our fair. Suitable precautions must be taken to prevent personal injury, property damage, and legal action that could result from a lack of concern for safety.

A Safety and Regulations Checklist is to be completed as part of the online registration process. Feel free to contact Don Pottruff with any and all questions. This will ensure a safe and successful fair. **Projects involving humans or animals as test subjects** (including surveys) must meet the attached guidelines provided by Youth Science Foundation Canada in order to be eligible to represent this region at the Canada-Wide Science Fair.

Science & Inventor's Fair Summaries

The project summaries require the students to write a concise summary of their project using a scientific style of reporting. Students are required to select only what is important, and state it in a concise way. Each exhibitor will be required to provide a project summary of no more than five 8.5" x 11" pages, typewritten and double-spaced on one side only.

Do not include an "inside" title page or enclose in any cover or folder. Appendices are not permitted in the project summary. Reports of excessive length will only have the first five pages read.

Project Summaries include:

1. Background, Purpose, and Hypothesis: Why the project was done.
2. Procedure: A very brief outline of the significant materials & methods used.
3. Results and Conclusions: No raw data or observations are to be concluded.
4. Acknowledgements: Recognition of those who provided assistance in the form of guidance, materials, or facilities.

This summary will be used in the judging, and is worth 10 of the 100 judging points. The summary must be kept brief and to the point. Judges cannot be expected to adequately digest more than a few pages of information at a time.



Regional Science & Inventors' Fair Schedule

Wednesday, April 12, 2017 Seaforth & District Community Centre

8:30 am – 10:00 am	Students arrive / Judges Briefing
10:30 am – 12:00 pm	Judging with students <i>Students are asked to bring a book to read during judging time.</i>
12:00 pm – 12:30 pm	Lunch. Students are asked to bring their own lunch.
12:30 pm – 1:30 pm	Judging with students
1:30 pm – 3:30 pm	Student Tech Activity
3:30 pm – 4:30 pm	Presentations of Participation Certificates
4:30 – 6:00 pm	Dinner -Provided for the participating students Open House
6:00 pm	Awards presentation, Project removal

Setting Up Projects

The Seaforth & District Community Centre will be open for set-up:

Tuesday, April 11

7:00 pm – 9:00 pm

Transportation is to be arranged by the school or parents.

When students arrive at the Centre they will be assigned an Exhibit Number and directed to a specific location for project setup.

Please advise parents by newsletter of the time of Open House, Presentation of Awards, and "Take-Down" of projects. Be sure to extend an invitation to all friends and relatives on behalf of the Science Fair Committee



Science Fair Ethics Guidelines

1. Humans

1.1 Participation of Humans

Science fairs often include excellent projects involving human research participants. These projects are based in the social and behavioral sciences such as psychology, sociology, and education, and in related health sciences such as physiology, kinesiology and nursing.

We need to ensure that participants are safe, that they are treated with respect and dignity, and that the information they provide will be kept confidential. These ethical safeguards are primarily the responsibility of the science fair student researchers and their supervisors. We do want to make sure that projects that involve the participation of humans are mentored, and that all appropriate safety and ethical concerns are addressed.

1.2 Ingestion Projects

Ingestion projects are not allowed at the science fair, unless carried out under professional supervision at a laboratory licensed to carry out such studies. These are projects in which humans are required to consume an item. Some measurements are then made. This complete ban has been instituted because there are rare cases of serious side effects from ingesting substances, including fatal interactions occurring between such items and other medications being taken by the Participant.

2 Animals

There are restrictions on the use of animals in science fairs.

Projects involving non-vertebrate animals are allowed. Vertebrate animals can only be used under very restricted conditions.

2.1 Invertebrate Animals

Lower orders of life - bacteria, fungi, protozoa, insects, plants and invertebrate animals with elementary nervous systems - can be used in experimentation to reveal valuable basic biological information. Except for the cephalopods, invertebrates have small nervous systems, consisting of many small brains (ganglia). Students may do experiments on such invertebrate animals, and exhibit their work in science fairs. Cephalopods, e.g. squid, octopus or cuttlefish, have a large, vertebrate-like central nervous system and are treated according to the rules for Vertebrate Animals. The YSF reserves the right to disallow a project involving experimentation on invertebrates that is of questionable scientific or educational value, or is judged to be unethical.



2.2 Vertebrate Animals and Cephalopods

2.2.1 Vertebrate animals, (i.e. fish, amphibians, reptiles, birds, and mammals,) and Cephalopods are not to be used in any science fair projects, with the following four exceptions:

i) Observation of animals in zoological parks, farm animals and pets is permitted. Observation of wild animals is permitted, except for those at risk. Species listed as *Endangered*, *Threatened* or *of Special Concern* by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) are not suitable subjects for research by science fair participants.

Vertebrate animals are not to be used in any active experiments which may be deleterious to the health, comfort or physical integrity of the animals.

ii) Observation of wild animals falls within the definition of hunting in some jurisdictions. Students should obtain advice and permission from conservation authorities to ensure that they are not interfering with the animal's life, and to ensure that their project is permissible. A permit may be required.

iii) Behavioural experiments with positive rewards are permissible only if the animal is not placed in a stress situation. Training an animal to travel through a maze to receive a food reward is allowed as long as the animal is not stressed, e.g., by withholding food well beyond normal feeding times.

iv) Projects involving animal experimentation may be conducted under the supervision of research personnel employed by a University, Hospital, Government Organization or Agency, or Industrial Laboratory and where the animal experimentation has been pre-approved by a Scientific Review Board (or equivalent) in the institution employing the supervisor(s). A copy of the Letter of Approval from the SRB must be included in the documentation submitted. All projects so approved are eligible for the Canada Wide Science Fair, and do not need further approval .

v) Experiments on embryos are subject to the same rules that apply to the animal producing the embryos. If embryos are incubated until the end of the gestation period, the offspring must be reared normally. Otherwise all embryos must be destroyed by freezing or other approved methods before 85% of the normal incubation.

2.2.2 Cells and animal parts, including organs, tissues, plasma or serum may be used in science fair projects. They can be obtained only in one of three ways: i) from biological supply houses; ii) from registered institution/laboratory research facilities; or iii) salvaged from the food industry. Evidence of the source of the materials must be available at the project display

2.2.3 The YSF reserves the right to disallow a project involving experimentation on vertebrates (including cells, animal parts, or embryos) or cephalopods that is of questionable scientific or educational value, or is judged to be unethical.