SUPERVISOR MANUAL

This Manual was updated January 2022 for a Virtual Fair. If you find errors in this manual, please email webmaster@wwsef.ca

Introduction

The Waterloo-Wellington Science and Engineering Fair is a non-profit registered charity that operates the regional science fair. We are affiliated with Youth Science Canada and send some of our best projects to the Canada-Wide Science Fair. After participating in a CWSF, exhibitors who are in High School can apply to participate in the International Science and Engineering Fair (ISEF). Over the past years, several of our students have been part of Team Canada at the ISEF.

Table of Contents

NOTE: Other downloadable "Manuals" available on our website:

- Project Creation Manual
- Exhibitor Manual
- Written Report Manual
- Fair Day Manual

REGISTRATION

Contacting the Registrar email: registrar@wwsef.ca

General Information

- The school contact, usually the teacher involved, begins the registration procedure. (see below)
- Exhibitor(s) should read and/or print the registration procedures (see below) before beginning to register.
- Check the Exhibitor's eligibility (see the Exhibitor Manual on the Project & Exhibitor Information Page of our website) before beginning registration.
- Each Exhibitor and any supervising adult must verify that the exhibit meets all the rules and regulations of the Fair. (see the Exhibitor Manual on the Project & Exhibitor Information Page of our website).
- Exhibits entering the Fair that do not meet rules and regulations may be disqualified.
- Exhibitor(s) must fully complete the online registration form to participate in the Fair.

The completed application must be received by the registrar (see above) by the date shown on the online registration page.
Incomplete or late application forms may not be accepted.

School Sponsored Entries

Generally, young researchers develop science fair projects as part of a school activity (class or science club) with teacher support and apply for the regional WWSEF through their school.

Individual Entries

Researchers working on science fair projects independently (i.e. home-schooled or attending schools with no science fair activity) may apply directly to the Registrar (see above) to participate in the fair.
Before beginning work on a research project Exhibitor(s) should contact the Registrar **prior to January 31.**

Participation Formula

Schools of different sizes are allowed to apply for at least five (5), but no more than twenty (20), science fair entries depending upon their eligible population (number of grade 7 to 12 students) and the number of different grade Divisions covered by the school. See chart below.

Maximum Number of Projects by Number of Divisions.			
Eligible Population	One Division	Two Divisions	Three Divisions
1-200	5	9	11
201-400	10	11	13
401-999	11	13	15
1000+	14	16	18

Maximum Number of Projects: Add two to the above quotas if the school holds some form of local fair or judging to select some of the projects for the WWSEF from all those created in the school

Note: "**Eligible Population**" refers to students in the **three WWSEF Divisions:**

Junior	Grades seven and eight
Intermediate	Grades nine and ten
Senior	Above grade ten

For example - a three Division school would have students in all grades from seven to twelve, while a one Division school might only have students in grades seven, eight or both.

Registration Fee : For 2022 there is no Registration Fee

Any questions regarding registration procedures should be directed to the registrar@wwsef.ca

For **Online Registration Procedures**, please refer to the information on the Entry Registration page of the WWSEF website.

MATCHING the PROJECTS by DIVISION, CATEGORY & TYPE

FIRST The Science fair projects are divided by Division into:

Junior Division:	Grades 7 and 8.
Intermediate Division:	Grades 9 and 10.
Senior Division:	Grades 11 and 12

This is so that people of similar experience compete with each other.

SECOND The projects in each Division are put into one of three Categories:

Engineering:
Any topic in applied science, using electricity and magnetism, robots, pulleys, gears, rocketry, solar energy, lasers, aeronautics, structures, chemical processes to achieve a purpose, development of computer hardware, software or applications, etc. is Engineering.

Life Science:
Projects dealing with living organisms, factors affecting growth, etc., whether biology or social science, are Life Science. Biotechnology, the application of knowledge of biological systems to solve a problem, create a product or provide a service, is included in this category.

Physical and Mathematical Science:
Studies of chemical or physical phenomena, optics, colour and sound, radiation, comparison of similar products, corrosion, and studies in mathematics are examples of projects in this category.

Note: Many projects contain elements of two or more categories. The stated purpose or hypothesis of the project may be the best indicator of the exhibitor's thinking, and indicate into which category a project should be registered.

THIRD: For each Category there are three different types of project

An Experiment:
This is the most common type of project. A gold award project of this type should involve an original scientific experiment that recognizes and controls all significant variables and demonstrates excellent collection, analysis, and presentation of data. Significant positive findings are not essential to achieve a successful experiment. Design is more important than results

An Innovation:
This type of project would involve the development and evaluation of new devices, models, techniques or approaches in fields such as technology, engineering, and computers. A computer innovation may involve software or hardware. A gold award project should integrate several technologies, innovations, or designs; or construct an original system that will have commercial application or benefit society. It must demonstrate development and design based on sound understanding of scientific, engineering, or technological principles.

A Study:
This type of project involves the collection and analysis of data from other sources. Its intent is to reveal evidence of a fact or a situation of scientific interest. This could include cause and effect relationships, in-depth studies, or theoretical investigations of scientific data. A gold award exhibit in this area must demonstrate sound scientific techniques for data collection and show evidences of analysis with insight.

Note: If the exhibitor classifies the project as the wrong Type, no penalty will be assessed. The judges will assess the proper project Type so that the project will receive the fairest possible judging.

Some examples of the distinctions between categories:

Physical Science or Life Science?
A project examining the formation of acid rain would be Physical Science, but one that investigates the consequential effect on micro-organisms and plants would be Life Science.

Physical Science or Life Science?
A project investigating the factors affecting bubble gum bubble size (time, brand, etc.) would be a Physical Science project, even though some factors to be considered (chewing and enzymes in saliva) are biotic. If the focus was on the effect of chewing and saliva as a digestive process, using gum as an indicator, it would be a Life Science project.

Physical Science or Engineering?
A project examining the variables involved in Bernoulli's Principle would be entered as Physical Science. Designing wings, sails or other devices, which use the principle, would be Engineering.
Measuring solar energy would be Physical Science whereas using it would be Engineering. Similarly, comparing the effectiveness of sunscreens would be a Physical Science project while formulating a new one would be Engineering.
Comparing the properties of papers, even home-made, would be Physical Science while attempting to design a particular paper, or a new method for making the paper, would be Engineering.

Physical Science, Engineering or Life Science?
A project which examines and/or compares the physical properties of materials which absorb oil would be placed in Physical Science.
A project which developed a new material or a method to clean up oil spills would be Engineering.
A project dealing with the effect of an oil spill on flora or fauna would be a Life Science project.

SAMPLE TIME LINE for a SCHOOL SCIENCE FAIR
(and students preparing for the WWSEF)

	School Fair Organization	Student(s) Project Development
Six to five Months Prior	1. Get administrative permission and support. 2. Get a few teachers to help support your efforts. 3. Get support of English, Art, P.E., Math Teachers and Librarian. 4. Set dates for school fair. Remember if you wish to enter the regional fair, your process must be completed according to the WWSEF deadlines on the website (wwsef.ca). 5. Prepare a student information booklet. It might include material such as: time lines, how to choose a topic, rules and regulations, evaluation criteria, project check points, project levels, plus additional material as needed. 6. Reserve space for school fair. (Gymnasium, Library, etc.) 7. Order extra tables and/or chairs. 8. Investigate sources for judges (professionals, parents, secondary school science teachers and/or students.)	1. Inform students of school science fair and WWSEF dates. 2. Encourage students to think about possible areas of investigation. (Topics) 3. Inform students of evaluation criteria and how projects will enter into term assessment. 4. Inform students of due dates. 5. Distribute the student information booklet. Students working on their own can find information on time lines, how to choose a topic, rules and regulations, evaluation criteria, and project levels in this website.

	School Fair Organization	Student(s) Project Development
Four to Three Months Prior	1. The WWSEF website has pictures and reports from students who have been to the Canada-Wide Science Fair in the past. There may be other information available from the General Inquiries person on the website contact page. 2. Reserve library and teacher-librarian for topic research and information gathering. 3. Assist students with equipment needs and supplies. 4. Send out letters to judges outlining date, time, location, task, scoring information. Judges may have to cancel at the last minute.	1. Describe typical science fair projects: ○ display - collection ○ demonstration (demo of scientific principle) ○ experimental (slides and video tapes of previous science fair projects) ○ innovation ○ study (field study) 2. Review rules and point system for judging. 3. Review maximum dimensions allowed. Show how a typical display is set up. 4. Since judges expect students to understand and explain their project, emphasize that most of the work in the project must be their own, and that judges are looking for what the students have done.

	School Fair Organization	Student(s) Project Development
Three to one Month Prior	1. Continue to monitor the development of plans for the fair: arrangements for the fair location, acquisitions of tables and chairs, volunteers to assist with set up and take down, recruitment of judges, etc.	1. Assist students with the ongoing development of their projects. 2. Continue to remind students of the importance of maintaining a notebook or logbook, detailing all steps in the project development, including things that didn't work. 3. Continue to monitor student understanding and adherence to all rules and regulations.

	School Fair Organization	Student(s) Project Development
One Month Prior	1. Create a floor plan of the exhibit area (note electrical outlets and table locations). 2. Send invitations to parents, other schools and the public to visit the Science Fair (school newsletter). 3. Reserve a location for judges to meet. 4. Invite those who have assisted you or the students to visit the Fair.	1. Ensure students are progressing so that projects will be completed on time. 2. Work on project summary and display should have begun. 3. Provide sample student Science Fair project summaries, review and discuss summary and display guidelines, provide assistance as needed.

	School Fair Organization	Student(s) Project Development
One Week Prior	1. Inform staff of expected timetable interruptions. 2. Finalize organization re assistance of others to help with set- up, supervision, etc. 3. Confirmation of judges. 4. Arrange for coffee, tea, snacks, etc. for judges. 5. Assign students their Science Fair project numbers and make a list of project titles and other details. (i.e. electrical, special requirements). 6. Review the process for set-up, judging, viewing and clean up.	1. Check status of students' projects. 2. Some schools have the project summary due a week or so prior to the school fair. These are then judged separately by the teacher or one of the volunteer judges. 3. Assist students with project display details. 4. Review techniques, skills needed for interview process during judging.

	School Fair Organization	Student(s) Project Development
Day of the School Fair	1. Assist students with project set up. 2. Perform Safety Rules check and allow for final project adjustments. 3. Meet with judges about a half hour prior judging. Review judging criteria. 4. Assist judges as needed during judging process. 5. Oversee selection of students for participation in regional fair. 6. Gather judging sheets to assist with project assessment for term mark. 7. Announce results of judging of the projects. The regional WWSEF reverses steps 7 and 8 so that spectators don't just look at the "best" projects. 8. Oversee open house or parent/public viewing time of projects. 9. Supervise dismantling of projects and clean up of display area	1. Have students carefully set up projects then make any necessary adjustments as a result of Safety and Rules check. 2. Encourage students to observe other projects to get ideas for future projects or displays. 3. Have students participate in a self-evaluation and/or peer- evaluation of the Science Fair projects. 4. Oversee students during judging process. 5. Assist students during dismantling of projects and clean up. Ensure project and display materials for projects selected for regional fair are not damaged.

	School Fair Organization	Student(s) Project Development
Days/Weeks Following the School Fair	1. Write appreciation notes to staff, judges, others. 2. Return all material borrowed. 3. Evaluate process, note revisions and changes. Set up a file for next year. 4. Provide WWSEF information to parent/guardian; obtain parent/guardian permission for inclusion in the WWSEF. 5. Register online (wwsef.ca) for projects to be in the WWSEF. 6. Encourage staff, parents, judges, etc. to visit the WWSEF. 7. Announce science fair results in school newsletter. The local newspapers are often interested in science fair results. The more publicity the better.	1. Have students write appreciation notes to those who have assisted with their projects. 2. Students should evaluate the process they followed in developing their projects. 3. Students selected for the regional fair should continue to refine and modify their project based on feedback from the school fair judging. Some students do very extensive revision and up grading.

WATERLOO-WELLINGTON SCIENCE AND ENGINEERING FAIR JUDGE'S TALLY SHEET

Exhibitor Name(s)

- -

- -

Project Number _____

PART B: DISPLAY

(Maximum 20 marks)

1. Skill (Maximum 10 marks)

- Is the work neat and carefully done?
- Is the lettering legible and well done?
- Are the grammar and spelling appropriate?
- Are the colours attractive and suitable?
- Is the layout logical and self-explanatory?
- Is the content clearly and logically presented?
- Was the level of adult assistance appropriate?

1 2 3 4 5 6 7 8 9 10
(circle one)

2. Dramatic Value (Maximum 10 marks)

- Is the display visually balanced and uncluttered?
- Does the display capture attention?
- Is there good balance and use of contrast?
- Does it have an impact?
- Are the background, table and display well integrated?
- Are acknowledgements and bibliography included?

1 2 3 4 5 6 7 8 9 10
(circle one)

PART C: INTERVIEW (Maximum 20 marks)

Understanding / Presentation, Logic, Confidence, Poise, Fluency, Enthusiasm

State 1: The exhibitor is unsure of the material or the process of the project and has difficulty answering questions about the project. The vocabulary may be inappropriate and project may not be the student's own work.	**4 6** **8 10**
State 2: The exhibitor can summarize the project adequately and can answer the majority of questions about the project. Appropriate vocabulary is used.	**10 12** **14 16**
State 3: The exhibitor explains the project well and can answer all questions about the project clearly and logically. Shows evidence of background reading in the area and is aware of project extensions.	**14 16** **18 20**

PART D: NOTEBOOK / REPORT

(Maximum 10 marks)

1. The Notebook or Work Journal (Maximum 5 marks)

- Is it summarizing both failures and successes?
- Is it neat, clear, and concise?
- Is it different from the backboard display?
- Is it well organized?

1 2 3 4 5
(circle one)

2. Pre-submitted Research Report (Maximum 5 marks)
Pre-marked for the judges. See posting.

1 2 3 4 5
(circle one)

Return this completed form to your Division Chairperson

JUDGE'S SUMMARY

Part A:	Thought/Creativity (Maximum 50)	
Part B: Display	Skill (Maximum 10)	
	Dramatic Value (Maximum 10)	
Part C:	Interview (Maximum 20)	
Part D:	Notebook: (Maximum 5)	
	Pre-submitted Report: (Maximum 5)	
	Total of all above =	

JUDGE'S COMMENTS

PART A: SCIENTIFIC THOUGHT - CREATIVE ABILITY (Maximum: 50 marks)						
SCIENTIFIC THOUGHT			**CREATIVITY**			
EXPERIMENT	INNOVATION	STUDY	LEVEL 1 (poor)	LEVEL 2 (fair)	LEVEL 3 (good)	LEVEL 4 (excellent)
Definition: An investigation undertaken to test a scientific hypothesis using experiments. Experimental variables, if identified, are controlled to some extent.	**Definition**: The development and evaluation of innovative devices, models, or techniques or approaches in technology, engineering, or computers (hard/ software)	**Definition:** A collection and analysis of data to reveal evidence of a fact or a situation of scientific interest. It could include a study of cause and effect relationships or theoretical investigations of scientific data.	Little imagination shown, Project design is simple with minimal student input. A textbook or magazine type project.	Some creativity shown in a project of fair to good design. Standard approach using common resources or equipment. Topic is a current or common one.	Imaginative project. Good use of available resources. Well thought out above ordinary approach. Creativity in design and or use of materials.	A highly original project or a novel approach. Shows resourcefulness, creativity in design, use of equipment and/or construction of a project.
Level 1 (poor) Duplication of a known experiment to confirm a totally predictable hypothesis.	Level 1 (poor) Build models (devices) to duplicate existing technology.	Level 1 (poor) Study existing printed material related to a basic issue.	20 21 22 23	24 25 26 27	28 29 30 31	32 33 34 35
Level 2 (fair) Extend a known experiment through modification of procedures, data gathering, and application.	Level 2 (fair) Make improvements to, or demonstrate new applications for existing technological systems or equipment and justify them.	Level 2 (fair) Study material collected through compilation of existing data and through personal observations. The display attempts to address a specific issue.	25 26 27 28	29 30 31 32	33 34 35 36	37 38 39 40
Level 3 (good) Devise/carry-out an original experiment with controls. Variables are identified and some significant variables are controlled. Analysis with graphs or simple statistics.	Level 3 (good) Designing and building innovative technology or providing adaptations to existing technology that will have economic applications and or human benefit.	Level 3 (good) Study based on observations and literary research illustrating various options for dealing with a relevant issue. Appropriate analysis (arithmetical, statistical, or graphical) of some significant variable(s).	30 31 32 33	34 35 36 37	38 39 40 41	42 43 44 45
Level 4 (excellent) Devise and carry out original experimental research, which attempts to control or investigate most significant variables. Data analysis includes statistical analysis.	Level 4 (excellent) Integrate several technologies, inventions or designs and construct an innovative technological system that will have commercial and/or human benefit.	Level 4 (excellent) Study correlating information from a variety of significant sources that may illustrate cause and effect or original solutions to current problems through synthesis. Significant variable(s) are identified with in-depth statistical analysis of data	35 36 37 38	39 40 41 42	43 44 45 46	47 48 49 50