



Judge Information Booklet 2019

Greater Vancouver Regional Science Fair

This document can be updated regularly. If any changes occur, you will be notified by the judging team before the fair.

Table of Contents

Interested in becoming a judge?	3
Judging qualifications.....	3
Judges registration	3
Background information for judges.....	4
Grade categories	4
Type of projects	4
Project challenges	4
Awards	5
Judging rounds	5
Overview of the judging process	6
Project evaluation	6
Judging philosophy	6
Judging criteria	7
Judging form.....	8
Assigning scores to the judging criteria.....	10
Judging interview	10
Project evaluation suggestions	11
Comparing projects with widely different levels of sophistication.....	12
Written feedback.....	12
Thank you!	13

Interested in becoming a judge?

Each year, the Greater Vancouver Regional Science Fair (GVRSF) welcomes returning and new judges who will evaluate the projects of hundreds of students on a variety of criteria such as scientific thought, originality and creativity, and communication. The judging is one of the most critical moments of the fair, when the students have a chance to discuss, communicate and share their ideas with scientists...and who knows, perhaps future colleagues and mentors.

Judging at the GVRSF is an enjoyable and constructive experience. For students, it provides a chance to share the results of many hours of hard work and to receive some helpful feedback from experts in their areas of interest. For judges, the interviews provide a chance to learn about the remarkable work - and enthusiasm - of some of Greater Vancouver's brightest young scientists.

The GVRSF is – for most students – the final stage in the science fair process. Students originally participating in classroom and school fairs proceed to the level of district fairs followed by regional fairs like the GVRSF. As a judge, you will play a role in deciding which of the projects will be sent to the national level. The Canada-Wide Science Fair takes place in Fredericton, New Brunswick in May of 2019.

Judging qualifications

To be eligible to judge, a Bachelor's degree (or equivalent expertise) in science, engineering or a related discipline is required. If you are representing an award sponsor, we always welcome your participation in the adjudication process. The projects at the GVRSF are often multidisciplinary and combine challenging topics such as engineering, energy, environment, health, and information.

Judges registration

You can register from the time that the system opens on December 21st, 2018 until March 22nd, 2019. When you register, you will select your areas of expertise, which will help us match you with related projects. If you know you will be available to judge, please register early to help us estimate our final numbers.

Register at reg.gvrsf.ca

The judging team will contact you in March to confirm your participation at the fair and to provide you with more information about the judging process.

Background information for judges

Grade categories

Projects at the GVRSF are categorized by school grade:

Junior:	Grade 7 & 8
Intermediate:	Grade 9 & 10
Senior:	Grade 11 & 12

Type of projects

Science projects may be one of three types:

Experiment: An investigation undertaken to test a scientific hypothesis using experiments.

Innovation: The development and evaluation of innovative devices, models or techniques, or approaches in technology, engineering or computers (hardware or software).

Study: 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.

The judging criteria will vary slightly depending on the type of science project. The full criteria is listed on Page 7 under the heading “Judging criteria”. You will be provided with the judging rubric at the fair.

Project challenges

For ease of organization on the floor, the projects have been divided into different “challenges” as defined by Youth Science Canada. These are as follows:

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, 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.

Awards

Gold, silver and bronze medals, and honourable mentions will be awarded to the overall best entries in each age category. As well, entries to the Greater Vancouver Regional Science Fair are eligible for Provincial Awards.

The British Columbia Provincial Awards Program is administered by the Science Fair Foundation BC and is available to all participants of British Columbia Regional Science Fairs. Please see the 2019 British Columbia Science Fairs booklet:

<http://www.sciencefairs.ca/>

As selected by the Judging Committee, the top Regional Science Fair entries will be invited to an expense-paid week at the 2019 Canada-Wide Science Fair in Fredericton, New Brunswick from May 11 to 18, 2018.

Judging rounds

At the GVRSF, there are two rounds of judging (both on April 4, 2019). Round 1 takes place from 1:30PM-5:00PM while Round 2 runs from 5:30PM-8:30PM. You are welcome to volunteer for either round, or even both! You can specify which round(s) you would like to volunteer for using the online registration system (<http://reg.gvrsf.ca>).

Overview of the judging process

One week before the GVRSF, you will be contacted by the judging team and told to check your judging assignment using the online registration system (<http://reg.gvrsf.ca>).

When you arrive at the GVRSF, we will have signage posted to help you find the judging room where you can meet your judging teammates. You will be provided with your judging assignment ahead of time and will receive your judging schedule when you arrive on the day of the fair. You will also be provided with the judging forms that you will fill out as you meet with the students at their projects. The students receive a schedule at the beginning of the fair that indicates when they can expect a judge and when they may leave their projects to participate in other activities. For this reason, please stick to the time slots on the schedule with which you are provided.

Although you are a part of a judging team, you will conduct your project interviews individually. The interviews take place in 20-minute time slots; 15-minutes are allocated for the interview, followed by a 5-minute period to write down comments and move on to the next student. The end of the interview period and comment-writing period will be indicated by a bell to ensure that all participants have the same judging experience. Try to take notes about each project, as you will provide written feedback to the student afterwards.

Once you have conducted all of your interviews, meet back with your team in the judging room where you will compare your rankings, fill out the final judging forms and provide written feedback for the students. Please do not leave without meeting a member of the Chief Judging team!

Project evaluation

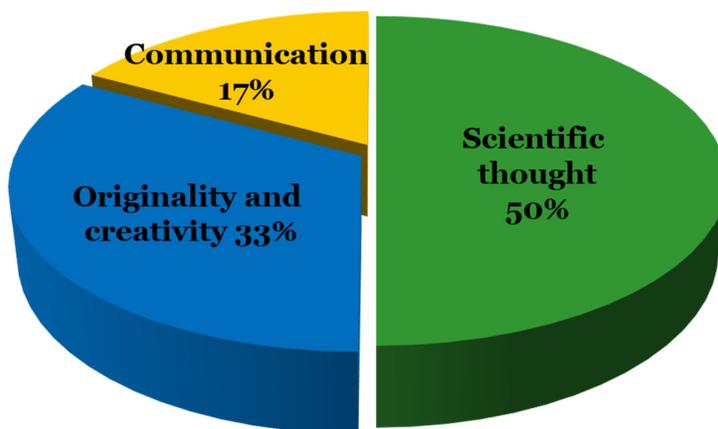
Judging philosophy

Many students have been working hard for many months in preparation for this fair, and they will find their discussions with you to be a highlight of their three days at UBC. Many students look up to their judges as role models - as the type of student or scientist they would like to become. While this is a competitive science fair, our first priority is that all students have a positive judging experience.

Your role as a judge is not only to evaluate the merit of the projects, but also to provide helpful, constructive feedback as an expert in your field. Please acknowledge the strengths in each project you visit and phrase suggestions constructively. Detailed feedback and critique should be provided on written comment sheets that will be delivered to the students on the final day of the fair. Many students are disappointed if they receive only positive feedback and yet do not win a gold medal; please do provide constructive feedback that will give the student some idea of how the project might be strengthened.

Judging criteria

The projects will be evaluated based on three major criteria: scientific thought, originality and creativity, and communication. The most weight is given to scientific thought and original and creativity. The project display and presentation are important in that they should demonstrate the student's ability to communicate concepts, methods, and results relevant to the work presented. The prettiness or flashiness of the display is of far less value in the ranking process. The judging criteria is derived from the same criteria applied to the Canada-Wide Science Fair (<http://cwsf.youthscience.ca/node/2225>)



Scientific thought (50%): The judges will evaluate the scientific thought in the design, analysis, and interpretation of the work. New, original experimental research will get marked on a higher level than projects that duplicate existing work.

Originality and creativity (33%): The judges will determine whether the project shows a novel approach and uses creativity in its design. Did the student think outside of the box to answer the research question or develop a new prototype, or was there limited imagination put into the project?

Communication (17%): Communication is evaluated based on four components: the visual display, the oral presentation, the project report with background research and the logbook. It is important to note that the project report is not mandatory at the GVRSF. The display, report, and logbook should be logical, self-explanatory, complete, and reflect the student's scientific skill. The oral presentation will be evaluated based on the student's enthusiasm, ability to effectively communicate findings, and ability to answer questions.

Remember that the students will show their scientific thought and creativity through their presentations!

Project Judging Form

Greater Vancouver Regional Science Fair



Youth Science Canada
Sciences jeunesse Canada

Use this rubric to assign a Level (1, 2, 3, or 4) to Parts A, B, and C for the project. In addition to the Level, please enter a single letter rating: H (High), M (Medium), or L (Low) that reflects the quality of the project and its strength relative to other projects you have assigned the same level.

PART A: SCIENTIFIC THOUGHT		
Experiment	Innovation	Study
Undertake an investigation to test a scientific hypothesis by the experimental method. At least one independent variable is manipulated; other variables are controlled.	Develop and evaluate new devices, models, theorems, physical theories, techniques, or methods in technology, engineering, computing, natural science, or social science.	Analysis of, and possibly collections of, data using accepted methodologies from the natural, social, biological, or health sciences. Includes studies involving human subjects, biology field studies, data mining, observation and pattern recognition in physical and/or socio-behavioural data.
LEVEL 1		
Replicate a known experiment to confirm previous findings.	Build a model or device to duplicate existing technology or to demonstrate a well-known physical theory or social/behavioural intervention.	Existing published material is presented, unaccompanied by any analysis.
LEVEL 2		
Extend a known experiment with modest improvements to the procedures, data gathering and possible applications.	Improve or demonstrate new applications for existing technological systems, social or behavioural interventions, existing physical theories or equipment, and justify them.	Existing published material is presented, accompanied by some modest analysis and/or a rudimentary study is undertaken that yields limited data that cannot support an analysis leading to meaningful results.
LEVEL 3		
Devise and carry out an original experiment. Identify the significant variables and attempt to control them. Analyse the results using appropriate arithmetic, graphical or statistical methods.	Design and build innovative technology; or provide adaptations to existing technology or to social or behavioural interventions; extend or create new physical theory. Human benefit, advancement of knowledge, and/or economic applications should be evident.	The study is based on systematic observations and a literature search. Quantitative studies should include appropriate analysis of some significant variable(s) using arithmetic, statistical, or graphical methods. Qualitative and/or mixed methods studies should include a detailed description of the procedures and/or techniques applied to gather and/or analyse the data (e.g. interviewing, observational fieldwork, constant comparative method, content analysis).
LEVEL 4		
Devise and carry out original experimental research in which most significant variables are identified and controlled. The data analysis is thorough and complete.	Integrate several technologies, inventions, social/behavioural interventions or design and construct an innovative application that will have human and/or commercial benefit.	The study correlates information from a variety of peer-reviewed publications and from systematic observations, and reveals significant new information, or original solutions to problems. Same criteria for analysis of significant variables and/or description of procedures/techniques as for Level 3.

PART B: ORIGINALITY & CREATIVITY			
LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
The project design is simple with little evidence of student imagination. It can be found in books or magazines.	The project design is simple with some evidence of student imagination. It uses common resources or equipment. The topic is a current or common one.	This imaginative project makes creative use of the available resources. It is well thought out, and some aspects are above average.	This highly original project demonstrates a novel approach. It shows resourcefulness and creativity in the design, use of equipment, construction and/or the analysis.

PART C: COMMUNICATION			
The level is based on four elements: visual display, oral presentation, project report with background research, and logbook.			
LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Most or all of the four elements are simple, unsubstantial or incomplete. There is little evidence of attention to effective communication. In a pair project, one member may have dominated the presentation.	Some of the four elements are simple, unsubstantial or incomplete, but there is evidence of student attention to communication. In a pair project, one member may have made a stronger contribution to the presentation.	All four elements are complete and demonstrate attention to detail and substance. The communication components are each well thought out and executed. In a pair project, both members made an equitable contribution to the presentation.	All four elements are complete and exceed reasonable expectations of a student at this age/grade. The visual display is logical and self-explanatory, and the exhibit is attractive and well-presented. The project report and logbook are informative, clearly written, and the bibliography extends beyond web-based articles. The oral presentation is clear, logical, and enthusiastic. In a group project, both members contributed equitably and effectively to the presentation.

Assigning scores to the judging criteria

A score is provided in the form of a level (1, 2, 3, or 4) for each of the three major judging criteria. Each criteria (scientific thought, originality and creativity, and communication) have separate rubrics. It is important to note that the rubric for scientific thought will depend on the type of project that is being evaluated. For example, the criteria for an experiment based project will be different from a study based project, which in turn will be different from an innovation.

Please refer to the rubric provided on the second page of the judging form for specific details.

In addition to the Level, for each of the three major criteria, please enter a single letter rating: H (high), M (medium), or L (low) that reflects the quality of the project and its strength relative to other projects to which you have assigned the same level, based on the judging criteria.

Judging interview (from <http://judging.youthscience.ca/>)

Here are some suggestions that may be helpful during your interview:

- Consider sitting, so that you and the student are more nearly the same height.
- Introduce yourself and ask each student to do likewise.
- Ascertain, through questioning, each participant's contribution to and knowledge of the project.
- The physical display is secondary to the participant's understanding.
- Pose your questions in a positive, non-threatening manner.
- Even if you experience a sense of dismay at a project, be careful not to convey this to the student via tone of voice, body language or lack of attention.
- Give any appropriate feedback, and note this on the judging form. Be sure that it is done in a positive and encouraging way. This is the only feedback the students will receive.
- Thank each participant for his or her time.
- Be discreet and confidential when discussing any judging matter, so that no student or teacher can hear you.

Project evaluation suggestions

The following four items refer to aspects of evaluation, which may be helpful to you as you assign your Level and Rating.

Organization and Completion:

Good organization is part of conducting an effective investigation. This includes a clear objective, a plan for carrying out that objective, well-organized and comprehensible data, and a lucid discussion of experimental conclusions and implications. This means, too, that the investigation will have been completed and not simply ended because the student may have run out of time. In other words, the project should represent a completed body of work even if the results do not support the hypothesis. Finally, the implications of the project need to be addressed.

Some aspects of organization and completion include:

- Well-defined goal/objective. This can be embodied in the hypothesis or consist of additional statements regarding the project goals.
- Well-organized and executed experimental procedures.
- Data recorded in orderly manner.
- Experiments repeated as needed.
- Project represents a completed body of work.
- Implications of the project fully addressed.
- Well-organized display board.

Effort and Motivation:

One measure of this is the amount of time spent on the project, including background reading and project execution. More difficult to determine, but possibly more important, are the depth of reading and resulting project quality as well as what the student learned from his/her experience. An additional measure of effort is the quality of the display, particularly its effectiveness in communicating. To the extent that an attractive display may communicate more effectively and indicate greater effort, that aspect also may be considered. Some aspects of effort and motivation include:

- Amount of time spent on project.
- Amount of time spent on background reading and study.
- Extent to which the depth of background reading and study was reflected in the project.
- What the student learned.
- Display board informative and attractive.

Clarity:

Although clarity is a theme found in all of the judging criteria, it applies specifically to certain elements such as notebooks. Some aspects of clarity include:

- Original project notebook available for inspection.
- Project notebook clear, well organized and accurate.
- Hypothesis, purpose, procedures, results, and conclusions clearly stated.
- Project title accurately portrays the project.
- Abstract clear and well written.
- Oral presentations are clear.
- Audio-visual materials, including the display board, clear and relevant.

Comparing projects with widely different levels of sophistication

Sometimes students have access to sophisticated laboratories, have advanced scientific equipment available to them, and/or carry out their projects under the guidance of a professional scientist. Comparing such projects with those done in a home environment can be difficult. As a judge, you should not be in the position of assuming that a project would have been better or worse with or without the advantages of better equipment or instruction.

The critical issue here is not the level of the tools used. Rather, it is what the student has done with the resources at his/her disposal. If advanced instrumentation is used to further a strong scientific investigation, and that is clearly communicated in the interview, such a project should do well. However, a student who does better science and has superior understanding but used only items found in an ordinary kitchen deserves a better rating. The use of sophisticated equipment in a weak project and/or by a student who does not understand the scientific principles involved should receive little or no credit.

It is important that the student's knowledge should be appropriate to the project and its goals. If advanced instrumentation is used, for example, the student should be conversant with the principles underlying that use, and how results obtained from the equipment relate to conclusions reached.

Written feedback

We ask that each judge provide written feedback for the student on the form provided. These forms will be given to each student after the Awards Ceremony on Saturday. You should have sufficient time during the judging process to ensure that this feedback is specific and complete. Please acknowledge what was done well and provide constructive suggestions for improvement or future work.

Thank you!

We really appreciate the time you are giving to be a judge at our fair! Your participation makes the students experience inspiring and enriching.

We are working hard to make the judging process better each year for the students and the judges; we welcome any suggestions and comments you may have and encourage you to contact us. We hope to see you again next year!