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2020

Western Manitoba Science Fair

Guide

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Western Manitoba Science Fair 2020

The fair will be held on Tuesday April 7, 2020 at The Healthy Living Centre at Brandon University. Information for participants can be found in this guide, with additional resources available on our website at www.wmsf.com. It is important for students, teachers, parents, mentors, and judges to read through all of the information available in order to be fully prepared and aware of what is expected of them.

Detailed schedules will be available on our website close to the fair date, including a timeline for the day, parking information, maps, etc.

About the WMSF

The Western Manitoba Science Fair is the Regional Science Fair for Southwestern Manitoba and has been in operation since 1969. It provides an opportunity for students to showcase their scientific talent for their parents, teachers, and the community. Applicants come from grades 1 through 12.

WMSF Objectives and Aims

- To develop a respect for and an understanding of humanity's quest for knowledge. To encourage natural curiosity. To provide a basis for creativity.
- To develop in students an understanding of the necessity for organization, planning and experimentation in research. To encourage independent thinking. To develop mechanical skills.
- To expose students to and acquaint them with the use of scientific methods through practical application.
- To provide an opportunity for self-expression. To emphasize the necessity of having and developing the ability to communicate ideas.
- To aid in channeling students into worthwhile science endeavors. To provide stimulation for scientific hobby pursuits. To meet the needs of talented students.
- To offer an opportunity for students to consult and work with specialists in science fields in the community and elsewhere. To provide constructive suggestions for teachers and pupils of science.
- To serve as a showcase for scientific talent. To report to parents and the community about one phase of the academic performance of students and thereby stimulate a greater interest in science by all.
- To encourage teachers of Western Manitoba to view science fairs, projects and displays as an integral part of their science program.

Academic Integrity

One of the most important traditions in the scientific community is the tradition of academic integrity. Scientists build on others' achievements and they must be able to trust the integrity of the published literature they build on. Students want to work in communities where competition is fair, integrity is respected and cheating is not tolerated. At all science fairs, including the Western Manitoba Science Fair, students are required to present work that is the result of their own efforts. All assistance received from others must be acknowledged, and all written material that draws on the work of others must be accompanied by appropriate references. Specific examples of violations include:

- Plagiarism – presenting the work of others as your own without acknowledging the source. This includes work done by a family member or a mentor.
- Fabricating or falsifying data
- Forging signatures
- Fabricating or falsifying registration information
- Entering a project that is either derived from a previous project or is a continuation or revision of a previous project by the student (or by another) without documentation of the previous work.

Entries

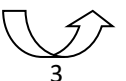
School science fair coordinators who are entering students into the WMSF should make special note of this section. In past years we have had several schools send ALL of their projects to the WMSF and while we love to see so many participants, this has created a situation where we are overcapacity. This not only means overcrowding at the fair, but also creates issues with too many projects to judge. This means the judges are having to work very quickly and spend less time than desired on each project. This is not fair to the judges, who are not able to do their job properly, and more importantly it is not fair to the students with strong projects who have put extra time and effort into their work. We'd like to emphasize to school fairs that the WMSF should be viewed as the 'next level' and to only send your 'finalists' as explained in the next paragraph.

Top finalists (gold and silver medal winners) at any school science fair or divisional fair will be allowed to enter the Western Manitoba Science Fair. If your fair is run based on our model, then approximately 10% of students will receive gold medals, approximately 15% will receive silver medals, and approximately 15% will receive bronze medals. The top winners, meaning gold and silver medal winners, would move on to the WMSF. **This would be approximately 25 - 30% of your fair's students.** Please note that we DON'T want schools to cut their numbers drastically. Please contact us at info@wmsf.com if you have concerns about this.

Home schooled students, or students in schools without science fairs may enter projects in the Western Manitoba Science Fair directly. A student may enter or participate in only one project in the Western Manitoba Science Fair.

Deadline: The entry deadline for the Western Manitoba Science Fair is Friday, March 13, 2020. This is a firm deadline, so please make every effort to have entries in on time. For school coordinators we advise making your deadline for entry forms from students several days ahead of time so you are able to get your entries package to us by our

Continued, over



deadline. Within a few days of the entry deadline, all of the entries we have received will be entered into our database. At that time, an email will be sent to the coordinator email address listed on the entry form; this email will contain the entry information for your school. There will also be information for parents and students with schedules for the day. It is VERY IMPORTANT for the school coordinator to check the information carefully and report any corrections or changes immediately. Within a few days of sending this confirmation, the information starts to flow to other areas, to prepare the fair day project layout, and all the forms needed for setup and judging. Once this starts, it is very difficult, and sometimes impossible to make changes.

Official Entry Form: Can be found at <https://www.wmsf.com/resources>. Make sure all sections are completely filled out, and signed by parent/guardian. Only one form per project is needed. Group projects have room for two students' information and parent signatures on one entry form. Class projects (grades 1-2 only) will have to attach a list of students with the appropriate information. Project title should be under 35 letters long. Long names will not print properly on certificates and other lists.

Levels are by grades; 1-2, 3-4, 5-6, 7-8, 9-10 and 11-12. Students on Individualized Education Plans or taking modified high school credits are also listed as IEP or Modified. These projects are judged separately and marked accordingly.

Project types include individual, group and class. An individual project is done by one student. A group project is two students, and a class project (only available in grade 1-2 level) is 5 to 15 students from the same classroom, under the direction of a teacher. The teacher of a class project cannot be in the project area during judging, but all students in the project may be there.

Please note if you have a group project that crosses two levels, the project is entered and judged at the higher level. For example, if student in grade 4 and a student in grade 5 have done a group project they will be entered and judged in the grade 5-6 level at WMSF.

Student information must be completed in full. Be sure to show both first and last names. T-shirt sizes range from child small to adult extra large.

Self-nominated Awards List: This is page 2 of the entry form. Certain sponsors provide special awards with specific criteria. Please nominate yourself for up to five awards by checking the appropriate box, and submit with your Entry Form. Some students may find that they are not eligible for any self-nominated awards. This self-nominated awards list is finalized in early March, so if you print off your entry form before then you may not be getting the full list. It is best to wait until early March to print off and complete your entry form.

Registration Summary: Schools must complete this form. The e-mail address for contact is absolutely crucial. After the money summary is completed, the school must send one cheque for the whole amount. Please have students/parents write their individual cheques to the school, not the Western Manitoba Science Fair. Home school students, and others entering without coming from a school fair, must also send a Registration Summary.

Project Report/Abstract: Students in the grades 7 - 12 MUST also attach a minimum one-page typed project report/abstract to their entry form. This abstract will be given to judges be-

fore they see the project. It is a very important part of the judging process.

IMPORTANT - the project report/abstract must include:

- The project name and name(s) of students
- A statement of the basic problem or question.
- A brief summary of observations and/or data.
- A summation or generalization of the conclusions drawn as a result of the investigation.
- Good grammar and no spelling errors
- SI (metric units), if applicable
- Bibliography and references

A project abstract is mandatory for grades 7-12. It is also encouraged for grades 6 and under, but not mandatory.

Project Size and Safety Regulations

- Maximum dimensions for projects, including backboards, are 0.8 metres from front to back, 1.2 metres from side to side, 2.0 metres high. No oversized projects will be accepted for entry unless it has been given approval in advance by the Western Manitoba Science Fair Committee. An approved oversized project is to have a backboard that does not exceed regulation size.
- Exhibits should be durable, with moving parts securely fastened and safe. Self-supporting backboards and extension cords are to be furnished by the exhibitors. Paper on backboards should be securely applied so there are minimal air pockets behind the paper. Overlapping or loose sheets of paper should be stored in a data book.
- Local fire regulations must be followed. No flammable liquids, compressed gas cylinders or open flames may be used.
- Dangerous chemicals may not be exhibited. Simulations may be used for display purposes.
- All extension cords and 110 volt alternating current apparatus must be CSA –approved. No exposed live parts over 36 volts are allowed. Current (amperage) must be low so as not to cause any discomfort or danger if touched. Wet cells are not allowed because of the hazardous chemicals involved.
- No firearms or ammunition are allowed at the fair. Experiments using firearms must be carried out in accordance with federal and provincial legislation.
- Lasers, radioisotopes and x-ray or radiation producing apparatus may not be displayed. High voltage apparatus capable of generating in excess of 10kV is considered an x-ray hazard.
- Biological hazards, including live cultured bacteria, cells and tissues, or any material which

may decompose are suitable for research under controlled laboratory conditions, but may not be displayed at the fair. Simulations (must be labeled 'simulated') or pictures may be displayed. Live plants can not be brought to the fair. Example: Displaying pictures of plant growth cycle is proper; bringing the actual plants is not allowed.

- Living vertebrate animals are not to be used in experiments for the Western Manitoba Science Fair with the following exceptions: observations of normal living patterns of wild animals in the free living state or in zoological parks, gardens or aquaria, and observation of pets, fish or domestic animals. No live animals, mounted specimens or animal parts may be displayed at the fair.

Participation of Humans in Research Projects

Human Research refers to any project that involves the generation of data about persons. Examples of such projects may include:

- Some surveys
- Some food and drink projects
- Some caffeinated beverage projects
- Some absorption through the skin projects
- Some exercise projects

If your project involves collecting data about persons, you must adhere to the Participations of Humans in Research Policy available at www.wmsf.com/humanparticipation, including completing any applicable consent forms and approval requests. If you have any questions about this please contact us at 204-727-4700 or info@wmsf.com.

Judging

Judging will be based on standards and official forms set by the Western Manitoba Science Fair Committee to ensure all projects are assessed critically and fairly. All projects are judged based on the four criteria detailed on the Judging Forms included at the end of this guide. These criteria are Scientific Thought and Understanding, Originality and Creativity, Communication, and Mentorship. To get a full understanding of what the judges will be looking for, students, teachers, parents and mentors should read the Judging Booklet on our website www.wmsf.com/judging.

Regular awards (gold, silver, and bronze medals) are assigned by the judges to the best eligible projects on the basis of ranking projects relative to others in the same level at the Western Manitoba Science Fair.

Special Awards, or Self-Nominated Awards are only open to projects within specific scientific focus areas. Entrants must have selected the awards that their project may be eligible for on the self-nominated awards list and submitted it with their Official Entry Form. These awards are for outstanding projects that meet specific criteria within a particular aspect of science and often reflect the special interests and criteria of the sponsoring foundations, companies and professional associations.

Participant Responsibilities During the Fair

Project setup is from 6:30 pm to 7:30 pm on April 6th (evening before the fair) or 7:30 am to 8:30 am April 7th. Projects **MUST** be set up by no later than 8:30 am. T-Shirts will be given out at this time.

Exhibitors are required to remain with their projects during judging, and will also be responsible for the supervision and demonstration of their projects during public viewing, as the Western Manitoba Science Fair is not responsible for lost, stolen or damaged articles.

The display area will be closed between 12:00 p.m. and 1:00 p.m. for lunch. Participants should bring a bag lunch, as there is no canteen available at the HLC. There will be entertainment during the lunch hour. Do not leave valuable personal items unattended at any time during the fair.

Exhibitors are advised that projects should not be removed before the time indicated on the Schedule of Events. The Western Manitoba Science Fair Committee will dispose of unclaimed projects after the designated project removal time.

All students should attend the awards ceremony. The grades 1-4 awards ceremony will start at 4:30 PM, and the grades 5-12 awards ceremony will start at 6:30 PM. Both ceremonies will be in the main gym at the HLC, with seating on the bleachers.

All participants are required to show respect and courtesy to all other students, judges, security, and any other fair attendees. Disrespectful or bad behavior will not be tolerated.

Mentorship Guidelines

Science fair projects from time to time will be mentored, or receive outside assistance. Mentors may be scientists, teachers, parents or, sometimes, other students. It is important to understand that mentorship is not at all discouraged; it can be a useful way for students to conduct research and gain knowledge pertaining to their project. Mentorship will not be considered an 'unfair advantage' as long as the following guidelines are strictly followed:

- Always keep in mind that the project is the student's and not the mentor's. It is the student's role, and not the mentor's, to conceive the project's specific topic.
- All data taking and analysis of the data must be the student's own, unless the student does not present it as his or her own and credits the actual data taker properly. When mentors take over these responsibilities, they deprive students of valuable learning experiences.
- If a project has been mentored, it should be declared in the references and or bibliography in the accompanying project report/abstract
- The student must be knowledgeable in the subject/project, and can answer all questions about information they've presented in the project.



Part A: Scientific Thought			Judging Notes
	Level (1-4)	Rating (0-9)	
Part B: Originality & Creativity			
	Level (1-4)	Rating (0-9)	
Part C: Communication			
	Level (1-4)	Rating (0-9)	
Part D: Mentorship			
	Level (1-4)		
Feedback for the Finalist(s) - It is VERY important to leave adequate and constructive feedback for EVERY project. A copy of the Project Summary Form will be sent to each student.			
Strengths			
Recommendations			
Judge's Name (Please Print)		Judge's Signature	

PART A: SCIENTIFIC THOUGHT - First choose which ONE of the following three categories the project falls under, then work down that column to determine the level:

Experiment Undertake an investigation to test a scientific hypothesis by the experimental method. At least one independent variable is manipulated; other variables are controlled.	Innovation Develop and evaluate new devices, models, theorems, physical theories, techniques, or methods in technology, engineering, computing, natural science, or social science.	Study 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	LEVEL 1	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	LEVEL 2	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	LEVEL 3	LEVEL 3
Devise and carry out an original experiment. Identify the significant variables and attempt to control them. Analyze 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 variables) 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 analyze the data (e.g. interviewing, observational fieldwork, constant comparative method, content analysis).
LEVEL 4	LEVEL 4	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.

PART D: MENTORSHIP

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
The project is mentored. The student has limited knowledge of the material presented in the project.	The project is mentored. The student has moderate knowledge of the material, but gaps in knowledge of the project exist.	The project is mentored. The student knows most of the material however minimal gaps in knowledge of the project exist.	The project is not mentored, or The project is mentored however the student is very knowledgeable in the subject, and can answer all questions about information presented in the project.