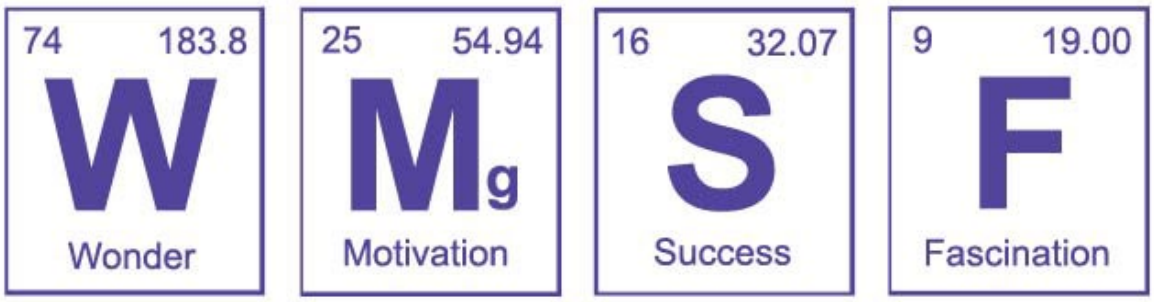
Western Manitoba Science Fair



Educator's Guide to Planning a Classroom or School Science Fair

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.

Students qualify for the Western Manitoba Science Fair by winning at their school science fair.

Purpose of this Guide

Planning a Science Fair in your own classroom or school can feel overwhelming so we wanted to provide you with information and resources to help you feel confident in doing so. Science Fair is beneficial to students in so many ways; we want to ensure that the opportunity to participate is available for as many students in our region as possible.

ZOOM Session on Planning a Classroom or School Fair

In 2023 our judging chair Robyn Forsman hosted a ZOOM session on this topic. Robyn has started science fairs at multiple schools and has organized school science fairs for the past 14 years. This session was aimed at simplifying starting a school or classroom fair and providing you with all of the information and resources that you will need. You can watch the replay here, and you can email Robyn at rforsman@bpsd.mb.ca or info@wmsf.com with any questions.

What You'll Find in this Guide

- ✓ Curriculum Connections
- ✓ Two Types of Fairs
- ✓ Timeline
- ✓ Introducing STEM projects to Students
- ✓ Mentorship
- ✓ Fair Day
- ✓ Judging
- ✓ WMSF Eligibility Checklist
- ✓ Summary of Important Dates
- ✓ Appendix A: Sample parent letter with school fair details
- ✓ Appendix B: Science Fair Planning Guide
- ✓ Appendix C: STEM project Planning Package for Students
- ✓ Appendix D: WMSF Judging Rubric and Workflow
- ✓ Appendix E: Judges' Summary Form
- ✓ Appendix F: Sample Feedback Form
- ✓ Appendix G: Sample letter to send home with students advancing to WMSF
- ✓ Appendix H: Sample Assessment if projects are part of science mark

Curricular Connections

One of the most common questions we get from educators is 'How can I fit another extra activity like science fair into my year?'
It is important to understand just how many skills science fair helps students learn and practise, as well as how many curricular outcomes can be met through doing STEM (Science, Technology, Engineering, Math) projects. Here are just a few:

Science:

Overall Skills and Attitudes which includes: initiating, researching, planning, implementing a plan, observing, measuring, recording, analyzing, interpreting, concluding and applying. These skills are present at all grade levels. The following links to the MB Curriculums Documents can provide more details:

- Grade 1-4: https://www.edu.gov.mb.ca/k12/cur/science/outcomes/k-4/topic_charts.pdf
- Grade 5-8: https://www.edu.gov.mb.ca/k12/cur/science/outcomes/5-8/topic_charts.pdf
- Grade 9: https://www.edu.gov.mb.ca/k12/cur/science/outcomes/s1/topic_charts.pdf
- Grade 10: https://www.edu.gov.mb.ca/k12/cur/science/outcomes/s2/cluster0.pdf
- Grade 11-12 Manitoba Foundations for Scientific Literacy: https://www.edu.gov.mb.ca/k12/cur/science/found/gr11_bio/gr11_bio_sec1.pdf

Mathematics:

Measurement and Statistics and Probability (Data Analysis). In completing STEM projects students make measurements using a variety of tools, collect data, create charts and graphs, and analyze data. In senior grades students can use statistical analysis to prove the significance of their results. The following links to the Manitoba Curriculum Documents can provide more details.

- Grade 1-9: https://www.edu.gov.mb.ca/k12/cur/math/framework_k-8/stats_prob.pdf
  https://www.edu.gov.mb.ca/k12/cur/math/framework_k-8/shape_space.pdf
- Grade 10-12: Specifically Grade 10 Introduction to Applied and Precalculus Mathematics and Grade 11 and 12 Applied Mathematics in the areas of measurement, functions and statistics. https://www.edu.gov.mb.ca/k12/cur/math/framework_9-12/index.html

ELA:

In completing and presenting STEM projects, students work on reading (researching), summarizing information, writing for a specific audience, presenting ideas, communicating, and working with others. The following links to Manitoba Curriculum Documents can provide more information.

- General Outcome 3: Manage Ideas and Information https://www.edu.gov.mb.ca/k12/cur/ela/docs/outcomes/outcome3.pdf
- General Outcome 4: Enhance the Clarity and Artistry of Communication https://www.edu.gov.mb.ca/k12/cur/ela/docs/outcomes/outcome4.pdf
- General Outcome 5: Celebrate and Build Community https://www.edu.gov.mb.ca/k12/cur/ela/docs/outcomes/outcome5.pdf

IEPs:

For students with IEPs, STEM projects can be targeted to work on or meet IEP goals.

Two Types of Science Fairs

1) A Classroom Science Fair

If science fair is not a school event in your school, this is a great place for you to start. This type of fair can be used when you are the only classroom in your school doing science fair.

- ✓ Students will work on projects in class.
- ✓ Staff or outside judges can choose the top projects to move on to the Western Manitoba Science Fair.
- ✓ You can decide if you want to have projects displayed for parents or community members to view or if you want to keep it just to a classroom activity.

2) A Science Fair Involving Multiple Classes, Grades, or Even a Full School

If you are having a science fair involving multiple classes and multiple teachers here are a few tips:

- ✓ Be sure to have everyone on board well ahead of time (this includes admin, custodial staff, teachers, and EAs). This is a great topic to discuss at the first staff meeting of the school year, or to address later in September.
- ✓ A larger fair with more projects requires more judges. Reach out to the community and bring in volunteer judges.
- ✓ If you have the resources and volunteers, providing a simple lunch or snack for judges is great to keep them coming back year after year!
- ✓ Well ahead of time figure out how many tables you will need and where they will be set up. Book a space for this if needed (ex. Gymnasium, or multipurpose room). Community Centers are a great resource for extra tables or chairs if needed, or ask your school division office if they have a reserve.
- ✓ Set science fair work periods ahead of time. If scheduling allows, have work periods at the same time for multiple classes, this can allow staff to circulate and assist groups where needed.
- ✓ With holding a larger fair like this you may wish to schedule a specific window of time when families or community members can come to view projects. Having the viewing time separate from judging time is ideal for students' presenting their projects.
- ✓ Projects moving on to the Western Manitoba Science Fair can be announced at a school assembly, or at an awards ceremony if you wish to have one.

Timeline for Holding a Classroom or School Science Fair

September:

- ✓ Make your admin aware of your plans, to ensure you have support including a space, release time if needed, and so that everyone is on the same page. You may even be able to set a date at this time. **If you are planning on sending your school fair finalists to WMSF, please email info@wmsf.com to let the WMSF committee know.** This will also put you on the email list for communications and updates regarding WMSF.

September – February:

- ✓ As you work through the Science clusters, model the steps of the scientific method. This will make it easier when you get to science fair time.
- ✓ For middle and senior years students they may need to start working on projects early in the school year to allow time for data collection from experiments.

November:

- ✓ Make students and parents aware that science fair will be happening. You will be starting work on projects in the new year, however some students (especially in older grades) may wish to start thinking about ideas before then. Do this before the rush of the Christmas season.

January:

- ✓ Start looking for volunteers that you may need for your school fair (ex. judges if you are using outside judges, parent volunteers to help set up tables/chairs). You can use the Planning Guide in **Appendix B** for this.

February:

- ✓ Send an information letter to families (optional). A sample letter can be found in **Appendix A.** This letter contains an example schedule for a fair day, this can be adjusted to fit your needs.
- ✓ At the beginning of February do an example project as a class (this will take about an hour of class time).
- ✓ February is the month to finalize projects. It is helpful to give students and families a list of the dates that you will be working on projects to ensure students have any necessary supplies at school on those days. A block of time 1 or 2 days per week is a good starting point but this can be adjusted to fit your group.
- ✓ At the end of the month, finalize any volunteers, print judging forms, judging summaries, and feedback forms (**See Appendixes D, E and F) .**
- ✓ Print certificates for your fair if you are using them.

March:

- ✓ Hold your fair at the end of February or beginning of March before the WMSF deadline to hold a school fair; **deadline date is listed at www.wmsf.com.**
- ✓ As soon as your winners are chosen have parents/guardians fill out the WMSF registration form and submit all registration forms along with payment to WMSF. Take special care to submit before WMSF entries deadlin; **deadline date is listed at www.wmsf.com.**
- ✓ Provide support for students wishing to step up their projects before the Western Manitoba Science Fair, or connect them with a mentor who can help them.

April:

- ✓ Students participate in the Western Manitoba Science Fair. WMSF fair date is listed at www.wmsf.com.

Please Note: This is just a sample guideline; this can be adjusted to fit your specific school or classroom. For example, in semestered classes students could complete their projects in the first semester and then keep them to present at WMSF.

Introducing STEM Projects to Students

- ✓ Before giving students time to work on their STEM projects, here are a few ways to introduce the process. We suggest doing this at the very **beginning of February.**

- ✓ Go over the steps of the scientific method:
  - Purpose
  - Hypothesis
  - Materials
  - Method
  - Observations and Data Collection
  - Conclusions and Analysis

- ✓ Carry out a sample experiment in front of students. Pretending to work with another staff member to model teamwork is a fun way to do this. Use the sample template provided in **Appendix C** to record your steps. Here are some simple examples of projects to do in front of the class that can be completed in an hour long session:
  - Testing how high various balls will bounce
  - Testing different emulsifiers for making salad dressing

- ✓ Between doing the example and the first work period we suggest giving students a few days to decide if they will work on their own or with a partner, and to think about project ideas.

- ✓ Here are some websites that are useful for generating project ideas. Idea generators are especially helpful for students who are new to STEM projects.
  - **My STEM Space: Spark** https://mystemspace.ca/spark/?_hsenc=p2ANqtz-9xfOoneSrgdurdrj32JM4pBPlVOucGQAvIJg00kOhF-I8-N7QuXBFs0Q70k1sYjswYfuy5&__hstc=42787117.21fc6d9256720b880f40004b72121d4b.1681085285564.1681085285564.1693016013027.2&__hssc=42787117.5.1693016013027&__hsfp=4114776590
  - **Science Buddies** https://www.sciencebuddies.org/

- ✓ Provide students with the planning package in **Appendix C.** Have them work through their project. Plan work periods ahead so they know when they will be working on projects and can be prepared.

- ✓ Set a due date for projects a few days before your fair so that students can practice their presentations with each other.

Mentorship

While completing STEM projects it can be beneficial, especially in middle and senior years, for students to work with a mentor to:

- ✓ Learn new processes
- ✓ Ensure they are completing experiments safely
- ✓ Have access to testing equipment needed to complete their experiment/project
- ✓ Be exposed to new skills for analyzing their results

It is important that mentors provide support but do not do the project for the student. The student must do the work and understand all aspects of their project.

Some examples of mentors may include, but are not limited to:

- ✓ A teacher or staff member
- ✓ A parent or guardian
- ✓ A university professor
- ✓ A professional working in the field
- ✓ A science fair alumni

Science Fair Day

- ✓ The day before your fair, ensure set up is done (have students set up their own projects once tables are ready). If you are doing a classroom fair set up may just be at student desks.
- ✓ During judging time it works best if parents/community members are not present.
- ✓ Have a space set aside for your judges to discuss projects.
- ✓ You may want to have a scheduled time for parents and community members to view projects. It works well to schedule this right after judging is over while the judges are tabulating their results.
- ✓ Judges can use the WMSF forms in **Appendix D** to evaluate projects. It is beneficial to schedule time to go over the rubric with the judges and give them time to familiarize themselves with it.
- ✓ A summary sheet can be found in **Appendix E** for judges to summarize their results.
- ✓ It is great if judges can provide some feedback for students. A sample feedback form can be found in **Appendix F.**
- ✓ Judges will choose the top 25% - 30% of projects to move on to the Western Manitoba Science Fair.
- ✓ The winners could be announced in an awards ceremony or simply in the classroom or at a school assembly.
- ✓ A sample letter to send home to families of those moving on to the Western Manitoba Science Fair can be found in **Appendix G.**
- ✓ You may also wish to mark the projects to use as a part of the science mark. A sample assessment has been included in **Appendix H.** This may be what you use to determine who moves on to WMSF if you are doing a fair just in your own classroom without outside judges.

Judging

You may wish to have your judges use the WMSF judging rubric to determine the students who will move on to WMSF. It is attached in **Appendix D** along with a workflow to help you work through it. This is optional and you may want to create your own judging methods and forms, but if you would like to follow a similar format to WMSF, you can give your judges the following instructions along with the forms in **Appendix D**.

There are four sections of the rubric:

Part A: Scientific Thought – 40% approximate overall weighting for judging the project

This is the most important criterion for judging a project. There are two categories; **Discovery** and **Innovation.** Each project will fit into one of these categories. Once you have determined the category you can use the sections of the rubric to determine a rating.

Part B: Originality and Creativity – 20% approximate overall weighting for judging the project

Some aspects of originality/creativity include:

- ✓ An original problem or an original approach to an old problem.
- ✓ A creative approach to the design of the experiment, the innovation or the project overall.
- ✓ An ingenious use of materials and equipment.
- ✓ Creative or original thinking in the application and the interpretation of any data obtained.

Part C: Communication – 20% approximate overall weighting for judging the project

Communication is composed of three components: the visual display, the oral presentation and the project report. At the regional level the report is mandatory for grades 7 - 12, and encouraged for grades 5 and 6.

Part D: Mentorship – 20% approximate overall weighting for judging the project

A judge only needs to concern themself with mentorship if it is clear that the student does not completely understand their project. As long as the student is very knowledgeable in the subject, and can answer all questions about information presented in the project, then it is considered Level 4 - the same level as a non-mentored project.

Feedback from judges for students – If judges are able to give students some written feedback after judging is over, this can be very beneficial to students. Those who are chosen to move on to WMSF may be able to use this feedback to step up their projects for WMSF. Or, it can also provide the student some insight into what they might do differently for their next STEM project. You may use the sample feedback form in **Appendix F.**

If you would like more information on the judging process, including examples of good feedback by grade level, you can refer to the **WMSF Judging Booklet** available at www.wmsf.com/judging. You can adapt the WMSF judging processes outlined in this booklet to your school science fair.

WMSF Eligibility Checklist

To ensure that any projects that you select to move on to WMSF meet the requirements please review this checklist before beginning work on your science fair.

- ✓ Top finalists (gold and silver medal winners) at any school science 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.
- ✓ Students in grades 3 to 12 must work as either individuals or a pair. More than two students in a group **ARE NOT** permitted at WMSF, and we encourage school fairs to keep the same format.
- ✓ Students in grades 1-2 may work with a larger group and this is entered as a Class Project at WMSF (Class Projects are only allowed in grade 1 and 2). Grades 1 -2 may also work as individuals or pairs.
- ✓ The judging levels at WMSF are 1-2, 3-4, 5-6, 7-8, 9-10, and 11-12. In situations where both students are not in the same grade levels the project **WILL** be judged at the higher level (for example if a grade 8 and grade 9 student work together they would be judged in the grade 9-10 category. We do not recommend having students more than two grades apart work together.
- ✓ Projects involving human participants **MUST** comply with ethics guidelines. Please review Human Participation on our website: https://www.wmsf.com/humanparticipation
- ✓ Supervision at WMSF is your responsibility. If students are attending WMSF there must be adult supervision provided by teachers/parents. Please adhere to your school or division's policies regarding ratios for supervision of offsite activities. Students that move on to WMSF are expected to be on their best behaviour.
- ✓ Between your school fair and WMSF, students can add to their projects, complete additional tests, or work with a mentor to help improve their projects.
- ✓ If you are holding a school science fair and will be sending your finalists on to the WMSF, please be sure to read the **WMSF Guide** available on our website at www.wsmf.com/resources. That document is a comprehensive source of information and should answer any questions you have about entering students in the WMSF.

Summary of Important Dates

Thursday March 6th, 2025	Last day to hold a school or classroom fair
Friday March 14th, 2025	Registration deadline for WMSF
Tuesday April 8th, 2025	Western Manitoba Science Fair

Appendix A – *Sample parent letter with school fair details*

_____ School Science Fair

We will be hosting a science fair on **_____** for students in grades **____.** Science fair allows students to use inquiry to carry out investigations and solve real life problems. Science fair is also a great opportunity for students to practice writing, mathematics, problem solving and communication skills.

Students have started working on their projects and will continue to work on them until the fair day. They will have some class time, but may also need to do some of the work at home. Projects will be due on **_____**

Schedule of Events for Science Fair Day

10:00-11:30 **Project Viewing** (parents, guardians, and community members are invited to come and view student projects

12:00-1:00 **Lunch and Recess**

1:00-3:00 **Judging** (during this time only students/teachers/judges will be permitted in the gym)

3:10 **Awards Ceremony** (Judges will be choosing projects to represent our School at the Western Manitoba Science Fair which will be held on _____ in Brandon at the Brandon University Healthy Living Centre)

In planning and completing your STEM project, please keep in mind this important information on academic integrity from the Regional Science Fair Committee:

"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. This includes using Artificial Intelligence applications and tools. 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, and includes the usage of text, images, and/or other media developed by generative artificial intelligence tools.

Fabricating or falsifying data

Forging signatures

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."

Appendix B – *Science fair planning guide*

Science Fair Planning Guide

Confirmed Judges and Emails

Judge Name	Email

Grades	Judges	Number of Projects
Grade 1-2		
Grade 3-4		
Grade 5-6		
Grade 7-8		
Grade 9-12		

Each judge should have approximately 15 minutes with each project. It is preferable to have 2 judges judge the same project at different times if this is possible.

5-6 projects is an ideal number for each judge to judge.

This is just a guideline, you can adjust this to fit your situation.

Other Volunteers:

These may be needed for setting up tables ahead of time, or preparing food for judges if you are providing it.

Appendix C –*STEM project Planning Package for Students (3 pages)*

STEM project Planning Package

Project Title: _____

Student(s) (No more than 2 for grades 3-12)**:_____**

Purpose (What are you trying to find out?)

Hypothesis (What do you think will happen and why?)

Background Research (This could include vocabulary, research about materials being used, what is already known about this topic etc.)

Materials (What items do you need to complete your project?)

Materials (What are your steps for doing your experiment)

Variables:

Independent (What will you change?)

Dependent (What will you measure?)

Controls (What will you keep the same to make it a fair test?)

Data and Observations (Use charts, or tables to record your results)

Conclusion (Summarize what happened. Was your hypothesis correct?)

Applications (How is this information helpful? Who would benefit from knowing this?)

Appendix D *– WMSF judging rubric and workflow*

The following two pages are the WMSF Judging Rubric, and an explanatory workflow for the rubric. Please refer to the Judging section on page 8 for more information.

Western Manitoba Science Fair

Project Judging Rubric Form

Youth Science Canada
Sciences jeunesse Canada

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

Discovery	Innovation
The project seeks to add to human knowledge by carrying out original research, or by synthesizing and analyzing data from a variety of sources.	The project seeks to solve a practical problem by developing and evaluating a new device, studying a model of a real-world system, or devising a new technique or method to address shortcomings of existing techniques or methods.
LEVEL 1	**LEVEL 1**
Replicate a known experiment to confirm previous findings, or collate data from a variety of existing sources without further analysis. Statements about the significance of the work may be exaggerated and show little awareness of context. For projects incorporating Indigenous Traditional Knowledge, the project has little importance to the land and community	Build a model or device to duplicate existing technology or to demonstrate a well-known theory or social/behavioural intervention. For projects incorporating Indigenous Traditional Knowledge, the project has little importance to the land and community.
LEVEL 2	**LEVEL 2**
Extend a known experiment with modest improvements to the procedures, data gathering and possible applications, or synthesize data from a variety of sources to confirm existing conclusions. Statements about the significance of the work are somewhat supported by the information presented and show a little awareness of context. For projects incorporating Indigenous Traditional Knowledge, the project may have importance to the land and community and is somewhat holistic in its approach.	Improve or demonstrate new applications for existing technological systems, social or behavioural interventions, existing theories or equipment, and justify them. For projects incorporating Indigenous Traditional Knowledge, the project may have importance to the land and community and is somewhat holistic in its approach.
LEVEL 3	**LEVEL 3**
Devise and carry out an original experiment. Identify the significant variables and attempt to control them, or synthesize data from a variety of sources to strengthen or extend existing conclusions. Analyse the results using appropriate arithmetic, graphical or statistical methods. Statements about the significance of the work are mostly supported by the information presented and show awareness of context. For projects incorporating Indigenous Traditional Knowledge, the project has demonstrable importance to the land and community and takes a holistic approach to knowledge creation.	Design and build innovative technology; or provide adaptations to existing technology or to social or behavioural interventions; or extend or create new theory. Human benefit, advancement of knowledge, and/or economic applications should be evident. For projects incorporating Indigenous Traditional Knowledge, the project has demonstrable importance to the land and community and takes a holistic approach to knowledge creation.
LEVEL 4	**LEVEL 4**
Devise and carry out original experimental research in which most significant variables are identified and controlled, or synthesize data from a variety of significant sources to develop new insight and draw new conclusions. The data analysis is thorough and complete. Conclusions are clearly described/presented and connected back to the data that justifies them.	Integrate several technologies, inventions, social/behavioural interventions, or design and construct an innovative application, or propose a new theory that will have human and/or commercial benefit. Performance of the prototype, method or theory is evaluated completely and realistically. Honest comparisons are made to alternative or previous solutions where possible.

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.

Workflow for Project Judging Rubric Form

Please read the instructions in the arrows and colour blocks as you work your way through the judging rubric.

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

Choose the category (Discovery or Innovation) that best fits the project, then work down that category column.

Work down the chosen category until you arrive at the level that best fits the project.

Expected Range for Grade 1 – 2

Expected Range for Grade 3 - 4

Expected Range for Grade 5 - 6

Expected Range for Grade 7 - 8

Expected Range for Grade 9 - 12

Discovery	Innovation
The project seeks to add to [illegible] synthesizing a	[illegible] by developing and evaluating a new [illegible] devising a new technique or method [illegible] techniques or methods.
LEVEL 1	**LEVEL 1**
Replicate a known experiment to confirm previous findings, or collate data from a variety [illegible] ces without further analysis. Statements about the significance of the work [illegible] be [illegible] erated and show little awareness of context. For projects incorporating [illegible] enc [illegible] ditional Knowledge, the project has little importance [illegible] and community	Build a model or device to duplicate existing technology or to demonstrate a well-known theory or social/behavioural intervention. For projects incorporating Indigenous Traditional Knowledge, the project has little importance to the land and community.
LEVEL 2	**LEVEL 2**
[illegible] nd a [illegible] n ex [illegible] ent [illegible] odest improvements to the proce [illegible] gathering [illegible] bos [illegible] ppli [illegible], or [illegible] esize data from a variety of sour [illegible] existing [illegible] lusi [illegible] ate [illegible] abo [illegible] significance of the work are so [illegible] ported by [illegible] nfor [illegible] pre [illegible] l an [illegible] y a l [illegible] vareness of context. F [illegible] corporat- [illegible] ndig [illegible] Tra [illegible] l K [illegible] ge, [illegible] oject may have impor [illegible] land and commun [illegible] is [illegible] hat [illegible] in i [illegible] roach.	Improve or demonstrate new applications for existing technological systems, social or behavioural interventions, existing theories or equipment, and justify them. For projects incorporating Indigenous Traditional Knowledge, the project may have importance to the land and community and is somewhat holistic in its approach.
LEVEL 3	**LEVEL 3**
Devise a [illegible] carry o [illegible] orig [illegible] beri [illegible] identify the significant [illegible] d attempt to control them, c [illegible] hesi [illegible] a fr [illegible] variety of sources to [illegible] or extend existing conclusion [illegible] lyse [illegible] sult [illegible] g appropriate arithmeti [illegible] or statistical methods. Statements abo [illegible] sig [illegible] ce of the work are mo [illegible] ed by the information presented and sh [illegible] vare [illegible] of context. For projects [illegible] g Indigenous Traditional Knowledge [illegible] proje [illegible] demonstrable import [illegible] land and community and takes a holistic approac [illegible] nowledge creatio	Design and build innovative technology; or provide adaptations to existing technology or to social or behavioural interventions; or extend or create new theory. Human benefit, advancement of knowledge, and/or economic applications should be evident. For projects incorporating Indigenous Traditional Knowledge, the project has demonstrable importance to the land and community and takes a holistic approach to knowledge creation.
LEVEL 4	**LEVEL 4**
Devise and carry out original experimen [illegible] search in which most sig [illegible] riables are identified and controlled, or synthes [illegible] a from a variety of signific [illegible] ources to develop new insight and draw new conc [illegible] s. The data analysis is thorough and complete. Conclusions are clearly described/presented and connected back to the data that justifies them.	Integrate several technologies, inventions, social/behavioural interventions, or design and construct an innovative application, or propose a new theory that will have human and/or commercial benefit. Performance of the prototype, method or theory is evaluated completely and realistically. Honest comparisons are made to alternative or previous solutions where possible.

PART B: ORIGINALITY & CREATIVITY

Work across until you arrive at the level that best fits the project.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
The project design is simple with little evidence of student imagina [illegible] be found in books or magazi [illegible]	The project design is simple with some [illegible] topic is a current or common one.	This imaginative project makes cre [illegible] average.	This highly original project demonstrates a [illegible] It shows resourcefulness [illegible] 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.

Work across until you arrive at the level that best fits the project.

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 commu [illegible] tion. In a pair project, one m [illegible] may have dominated the presenta- tion.	Some of the four elements are simple, unsubstantial or incomplete, but there is evidence of student attention to communication. In a pair project, one [illegible] contribution to the presentation.	All four elements are complete and demonstrate attention to detail and substance. The communication com- [illegible] bers 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 dis [illegible] is logical and self-explanatory, and the exhibit is [illegible] presented. The project report and [illegible] written, and [illegible] 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

For Mentorship, assume projects are a level 4, and then work backward if they are mentored.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
The project is mentored. The student has limited knowledge [illegible] presented in the p [illegible]	The project is mentored. The student has [illegible]	The project is mentored. The student [illegible] exist.	The project is not mentored, or [illegible] the student [illegible] subject, and can answer all questions about information presented in the project.

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Appendix E *– Judges' Summary Form*

Judging Summary Grade Level: _____

Judge _____

Project Name & Students	Scientific Thought (40% weighting) (1-4)	Originality and Creativity (20% weighting) (1-4)	Communication (20% weighting) (1-4)	Mentorship (20% weighting) (1-4)	Comments/Considerations	Medal Awarded G/S/B/None

Appendix F *– Sample feedback form*

Science Fair

Project Feedback

Project Name _____

Student(s) _____

Strengths:

_____
_____
_____
_____
_____
_____
_____
_____

Suggestions:

_____
_____
_____
_____
_____
_____
_____
_____

Appendix G *– Sample letter to send home with students advancing to WMSF*

Congratulations!

_____ has been selected by to move on to compete at the Western Manitoba Science Fair (WMSF)!

The Western Manitoba Science Fair (WMSF) will be held on Tuesday **enter date** at the Brandon University Healthy Living Center. This event brings together approximately 400 students from across Western Manitoba.

Students will have a chance to share their work and will also be competing for medals and special awards. Grade 7-12 students will also be competing for one of 4 spots to move on to represent Western Manitoba at the Canada Wide Science Fair which is a week long event that will take place in May.

The WMSF registration form is attached and must be returned to school on _____.

As more information is available it will be posted on the WMSF website.

***Appendix H** – sample assessment form if projects are part of science mark*

STEM Project Assessment

1 2 3 4	Presentation is smooth, clear, and follows a logical order
1 2 3 4	Display is neat, follows a logical order, and contains all necessary information
1 2 3 4	Materials and Method are complete and well organized
1 2 3 4	Data and Observations are displayed and include all relevant charts & graphs
1 2 3 4	Conclusions represent the data presented & includes reference to the hypothesis
1 2 3 4	Students relate their results to real life situations and include what they could do in future projects to improve on this project or expand results
1 2 3 4	Students are able to answer questions about their project

/35	Scientific Thought (Includes following steps of the scientific method and completing a project that fits into experiment, innovation or study) (5 marks each: purpose, materials, method, observations & data, conclusions, applications and variables)
/10	Presentation (Includes project board, lab book, and oral presentation)
/45	TOTAL

Comments:

_____
_____
_____
_____