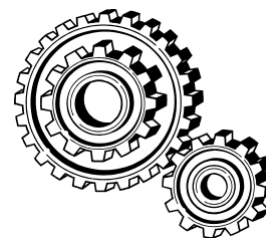
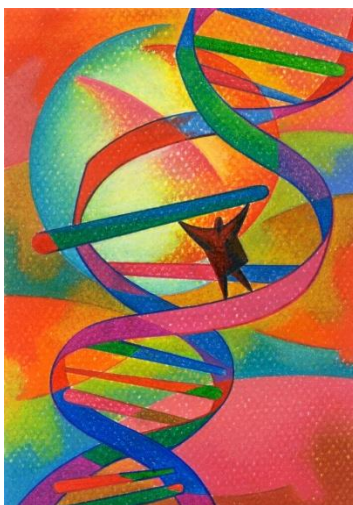
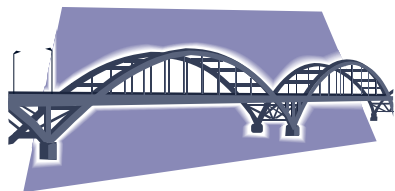




# Innovation Expo

## Middle School Competition Student/Parent Handbook

2019



# Purpose

The Innovation Expo grew out of a realization that many kinds of learning experiences, both in and beyond the classroom, contribute significantly to the education of students. The Innovation Expo provides a valuable opportunity for young people to be creative, develop scientific understanding through research or hands-on learning, and build 21<sup>st</sup> Century Skills. The goal of having a middle school competition at the Innovation Expo is to help students become more proficient in their scientific questioning, problem solving and communication skills, so that in later grades, students are adept at generating ideas and solving highly challenging problems with original experimentation. In addition to the middle school STEM competition, the Innovation Expo will showcase the progression of PreK-12 STEM and Innovative learning in Everett Public Schools and spotlight STEM careers through interactive hands-on exhibits by Everett students and members of the STEM community.

## Student Competition Goals

1. To emphasize and support state science standards through meaningful applications of science and mathematics.
2. To provide a focus for students to apply skills and concepts learned in science, mathematics, reading, writing, technology and art.
3. To help students develop self-reliance, organizational skills, and productive work habits.
4. To provide our schools and community with the opportunity to recognize and encourage student interest in STEM.



# Innovation Expo - Parent Letter

Dear Parents/Guardians,

Everett Public Schools is excited to invite you and your family to this year's Innovation Expo. The Innovation Expo provides a valuable opportunity for young people to be creative, develop STEM understanding through research or hands-on learning, and build 21<sup>st</sup> Century Skills. Specific details and updates about the Innovation Expo will be distributed to schools as well as communicated via Everett Newslinks, Peachjar and on the district website.

**Event:** Innovation Expo  
**Date:** Wednesday, June 5th, 2019  
**Location:** Angel of the Winds Arena in Everett  
**Time:** 5:00 – 8:00 PM (Student project Check-in anytime between 3:30-5:00 PM)

A major part of the Innovation expo is the **Student STEM Competition**. This competition provides a unique setting where selected student projects from across the district will be displayed and viewed in a common public area. To participate, students will first submit their projects to their science teacher. From there, teachers will work together to select up to 18 middle school projects to move on to the Innovation Expo. Projects selected for the Innovation Expo will then be reviewed at the Expo by Everett teachers using the rubrics provided for each project entry type. All students selected for the Innovation Expo will receive recognition for their work. The Student STEM Competition at the Innovation Expo will showcase and celebrate the very best STEM projects from across the district. This will be an exciting experience for your child!

There are three project types that students can choose from for consideration into the Student STEM Competition at the Innovation Expo. Project types vary in the amount of materials needed and the time commitments outside of school. Students should choose a project type that best fit their interests, resource availability and time constraints.

*\*Rubrics for each project type are included at the end of this packet.*

## **Project Entry Types:**

- **Experiment** – Dive into the world of science by investigating original, student-driven scientific questions! Students will conduct an experiment to investigate a scientific question/problem. Using the **steps of the inquiry process**, students will ask a testable question, do preliminary research, make a prediction, plan and conduct an experiment, and analyze their results in order to make a conclusion that answers their question.
- **Research Project** – Have you ever had an interesting science or math question that you didn't know the answer to? Do you love to read informational texts to learn new information and enjoy teaching what you've learned to others? Now you can do both at the same time!! **Students will come up with an interesting science or math question/problem to research and will look for the answer/solution** by reading books, talking to experts, and gathering information from other sources such as schools and public libraries. Students can use independent reading time to research their questions using informational texts. Examples: How does a solar cell work? How do clouds form? How are fractals mathematical? How are tessellations mathematical? The research projects students do will become their presentations.

- **Engineering Design** – Everyone is an engineer! Students will use science, math, and creativity to redesign an object or a process to solve a real-life problem. Using the **Engineering Design Process**, students will ask a question, imagine or brainstorm possible solutions, plan and create their chosen solution, test if their solution works and redesign the chosen solution to make it even better.

#### **Student Participation Requirements:**

***Students who would like to submit a project to their teacher, so they may be considered for participation in the Innovation Expo Student STEM Competition will need to:***

- Have a completed **project presentation board** that is based on the criteria outlined in the Project Presentation Board Guidelines sheets.
- Have completed and returned a **signed safety contract** prior to starting project.
- Students who attend or have their work shown at the district Innovation Expo may have their work, names and photos appear in district publications and on the district website and district social media channels.

Support and encouragement are essential to your child's success. A general rule of thumb to go by is:

- Students should be doing the entire STEM project by themselves. However, they may need encouragement to follow the format given and to get their project completed on time.

The STEM project allows children to use critical thinking and problem-solving skills learned in science, math and literacy.

Attached is a **STEM Project Proposal Form** and a **Safety Contract**. Please complete both forms with your child and have your child return them to his/her science teacher.

Sincerely,

Shannon Lacey  
Secondary Science/Engineering Instructional Facilitator

# Innovation Expo

## Helpful Hints for Parents

Welcome to the Innovation Expo!

This should be a fun project! Success is when your child asks their own question, completes their project with a smile, and knows more than when they started. Enjoy this time of discovery and fun for you and your child!

- ☐ The goal is that your child learns the steps of the inquiry process, research skills, or the engineering design process through direct experience.
- ☐ For their daily reading, recommend they choose a science book that can be a research resource for their project.
- ☐ A **Project Presentation Board** is part of the process.
  - o It needs to be put together by the student, to be considered for the Expo.
  - o Use the attached **Project Presentation Board guidelines sheets** as a guide to create the presentation board.
- ☐ It is best to guide and answer your child's questions with questions. You may know the answer but help them discover it themselves.
- ☐ Encourage your child's artistic side with the display. For example, you can show how the use of color, shapes, and graphics can be used to draw attention to important parts of the display.
- ☐ If you allow your child to use web sites for research; verify the site is "correct" and then let them use the research found there. *Remember:*
  - o Anyone can create a web site; this does not mean its information is correct!
  - o Make sure the web site is run by a large, recognized group such as a college or organization.
  - o DOT "org", "gov" or "edu" are generally trustworthy for accuracy of content.
- ☐ What is an acceptable STEM Competition project?
  - o Something that answers a question to which they do not know the answer
  - o Something, they can figure out through experimentation or design
  - o Something, they can change somehow, add another variable, and then predict the outcome  
That's an experiment!
- ☐ What is NOT an acceptable STEM Competition project?
  - o Reproducing results found on the web is *not* an experiment; it's a reproduction.
  - o A demonstration is not an experiment (i.e., volcano).

# STEM Project Proposal Form (page 1 of 2)

Student Name: \_\_\_\_\_

Entry Type: \_\_\_\_\_

(Examples: Experiment, Research, Engineering Design)

Teacher's Name: \_\_\_\_\_

See descriptions below)

Grade: \_\_\_\_\_ Room #: \_\_\_\_\_

The question I plan to investigate in my experiment, research or engineering design project is:

Examples of entry type question formats:

- **Experiment:** *How does \_\_\_\_\_ (manipulated variable) affect \_\_\_\_\_ (responding variable)?*
- **Research:** *Why do bears hibernate? How are fractals mathematical?*
- **Engineering Design:** *How can I design/redesign \_\_\_\_\_ to make it solve a problem/work better?*

Question:

## Entry Type Descriptions:

- **EXPERIMENT**– Dive into the world of science by investigating your own scientific question! You will conduct an experiment to find the answer to your question/problem, using the **steps of the Inquiry Process** (asking a question, doing preliminary research, making a prediction, planning and conducting an experiment, and analyzing results).
- **RESEARCH PROJECT**- Have you ever had an interesting science question that you didn't know the answer to? Do you love to read informational texts to learn new information and enjoy teaching what you've learned to others? Now you can do both at the same time!! Someone has already found the answer to your question/problem, and you will look for their answer/solution by reading books, talking to experts, and gathering information from other sources such as schools and public libraries. Your display board will have drawings, photographs, charts, graphs, dioramas, etc. Examples: How does a solar cell work? How is music mathematical? How do clouds form?
- **ENGINEERING DESIGN**- Everyone is an engineer! You will use science, math, and creativity to dream up or redesign an object or a process to solve a real-life problem. Using the **Engineering Design Process** to take you through all the necessary steps (asking a question, imagining or brainstorming possible solutions, planning, creating, testing, and redesigning the chosen solution to make it even better).

## STEM Project Proposal Form (page 2 of 2)

### Project Checklist:

Is your experiment, research or engineering design project safe to perform?	Yes / No
My parent/guardian and I have read, signed and agree to follow the STEM Competition Safety Contract.	Yes / No
Do you have all the materials and tools you need for your project, or will you be able to get them quickly and for under a few dollars?	Yes / No
Do you have enough time to do your experiment, research or engineering design project before the report and board is due?	Yes / No
(For a "3"): Can you find at least two sources of written information on this topic?	Yes / No

Please check the box below and sign your name.

☐ I have agreed to my child's STEM project choice and can provide the material and support to complete this assignment.

Parent Signature \_\_\_\_\_ Date \_\_\_\_\_

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\*\* This part to be completed by the teacher!!

- Teachers, please double check that the category the student is entering a project in matches the content of their project.

TO: Student Name  
\_\_\_\_\_

## Innovation Expo Project Approval Form

Your STEM Project has been approved! It looks like you are on the right track to answer your question (problem). Good luck finding out the answer and have fun!

The type of project you have chosen is: EXPERIMENT    RESEARCH    ENGINEERING DESIGN

The safety contract has been received:      Yes / No

Reminder: Your completed project is due on \_\_\_\_\_.

Teacher Signature: \_\_\_\_\_

## Experimental Project Rubric (Middle School)

	Basic - 1 point	Attempted - 2 point	Proficient - 3 points	Advanced Proficient - 4 points
<b>Problem based on Preliminary Research</b>	<ul style="list-style-type: none"> <li>Does not state the problem as a question OR problem is not stated</li> <li>Does not cite sources</li> <li>Research doesn't connect to the problem</li> <li>Research not written in own words</li> </ul>	<ul style="list-style-type: none"> <li>States the problem as a question that cannot be tested <b>OR</b> does not state the problem as a question</li> <li>Cites only one source</li> <li>Research doesn't connect to the problem</li> <li>Research not written in own words</li> </ul>	<ul style="list-style-type: none"> <li>States problem as a question that can be tested</li> <li>Cites at least two sources from one or more types of resources</li> <li>Research connects to the problem</li> <li>Written in own words</li> </ul>	<ul style="list-style-type: none"> <li>States problem as a unique question that can be tested</li> <li>States changed and measured variables in the question</li> <li>Cites three or more sources using several types of resources</li> <li>The student clearly connects the research to the problem in their own words</li> </ul>
<b>Prediction</b>	<ul style="list-style-type: none"> <li>Does not make a prediction.</li> </ul>	<ul style="list-style-type: none"> <li>Makes a prediction that does not connect to the problem</li> </ul>	<ul style="list-style-type: none"> <li>Makes a prediction that connects to the problem</li> </ul>	<ul style="list-style-type: none"> <li>Makes a prediction that connects to the problem and to the research</li> </ul>
<b>Materials &amp; Procedure</b>	<ul style="list-style-type: none"> <li>Materials list is missing.</li> <li>Procedure is missing two or more of the following: <ul style="list-style-type: none"> <li>steps to do the experiment</li> <li>one changed or one measured variable</li> <li>how often measurements should be taken and recorded</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Materials list is incomplete</li> <li>Procedure is missing one or more of the following: <ul style="list-style-type: none"> <li>steps to do the experiment</li> <li>one changed or measured variable</li> <li>how often measurements should be taken and recorded</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Major materials are listed</li> <li>Procedure includes: <ul style="list-style-type: none"> <li>relevant steps to do the experiment</li> <li>one changed variable</li> <li>one measured variable</li> <li>how often measurements should be taken and recorded</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>All relevant materials are listed with details such as amounts, types and sizes.</li> <li>Procedure includes: <ul style="list-style-type: none"> <li>Logical, relevant steps to do the experiment</li> <li>one changed variable</li> <li>one measured variable</li> <li>how often measurements should be taken and recorded</li> </ul> </li> </ul>
<b>Results</b>	<ul style="list-style-type: none"> <li>Data is missing or very incomplete</li> </ul>	<ul style="list-style-type: none"> <li>Only performed one trial of experiment</li> <li>Data is missing or incomplete</li> </ul>	<ul style="list-style-type: none"> <li>Performed more than one trial of experiment</li> <li>Data is organized in a data table with appropriate units of measurement.</li> </ul>	<ul style="list-style-type: none"> <li>Performed experiment several times</li> <li>Data is organized in a clearly labeled table with appropriate units of measurement, changed and measured variables identified</li> </ul>
<b>Conclusions</b>	<ul style="list-style-type: none"> <li>Does not answer the experimental question.</li> <li>Supporting data not used OR is only spoken of with general terms</li> </ul>	<ul style="list-style-type: none"> <li>Answers the question</li> <li>Includes little supporting data</li> <li>Does not explain how data supports your conclusion</li> </ul>	<ul style="list-style-type: none"> <li>Answers the question</li> <li>Includes supporting data from the data table</li> <li>Explains how data supports your conclusion</li> </ul>	<ul style="list-style-type: none"> <li>Answers the question</li> <li>Includes relevant supporting high and low data from data table</li> <li>Clearly explains how data supports your conclusion</li> </ul>
<b>Visual Display</b>	<ul style="list-style-type: none"> <li>Project is not easy to read</li> <li>Display is missing two or more of the following parts: Guiding Question, Prediction, Materials, Procedure, Data Table, Conclusion, Visual Display</li> <li>Display is missing pictures or visuals</li> </ul>	<ul style="list-style-type: none"> <li>Project is not easy to read</li> <li>Display is missing one of the following parts: Problem, Research, Prediction, Materials, Procedure, Results, Conclusion, Visual Display</li> </ul>	<ul style="list-style-type: none"> <li>Project is easy to read</li> <li>Display is organized and includes all the following parts: Problem, Research, Prediction, Materials, Procedure, Results, Conclusion and visuals</li> </ul>	<ul style="list-style-type: none"> <li>Project is easy to read and organized neatly</li> <li>Information is written with correct grammar, spelling and punctuation</li> <li>Display includes all parts listed in "Proficient" as well as data with appropriate units of measure and/or models that support the research in an inventive/creative way</li> </ul>
<b>Presentation</b>	<ul style="list-style-type: none"> <li>No student presentation</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is incomplete</li> <li>Very few questions answered OR are answered incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is complete and answers some questions</li> <li>Answers to questions are backed up with facts</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of project is complete and provides clear answer to all questions</li> <li>Answers to questions are sequenced logically, using appropriate facts</li> </ul>



## Research Project Rubric (Middle School)

	Basic - 1 point	Attempted - 2 points	Proficient - 3 points	Advanced Proficient - 4
<b>Guiding Question</b>	<ul style="list-style-type: none"> <li>Does not state the problem as a question</li> <li>Question is not connection to a scientific concept</li> </ul>	<ul style="list-style-type: none"> <li>Question is vague</li> <li>There is minimal connection to a scientific concept</li> </ul>	<ul style="list-style-type: none"> <li>States the problem as a question</li> <li>Shows a connection to a scientific concept</li> </ul>	<ul style="list-style-type: none"> <li>States the Problem as a question</li> <li>Addresses a connection to a scientific concept</li> <li>Question applies to a current world problem or issue</li> </ul>
<b>Prediction</b>	<ul style="list-style-type: none"> <li>Does not make a prediction.</li> </ul>	<ul style="list-style-type: none"> <li>No prediction made <b>OR</b> prediction doesn't connect to the question</li> <li>Prediction appears to be completed after the research is done</li> </ul>	<ul style="list-style-type: none"> <li>Prediction connects to the question and is made before the research is done</li> <li>Prediction is made using prior knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Prediction connects to the question and is made before the research is done</li> <li>Prediction is made using prior knowledge and scientific reasoning</li> </ul>
<b>Research</b>	<ul style="list-style-type: none"> <li>Does not use sources <b>OR</b> little research is completed</li> <li>Research doesn't connect to the question</li> <li>Not written in the student's own words</li> </ul>	<ul style="list-style-type: none"> <li>Only one quality source is used</li> <li>Research is incomplete</li> <li>Little or no connection to the question or prediction</li> <li>Not written in the student's own words</li> </ul>	<ul style="list-style-type: none"> <li>Two to three quality sources are used</li> <li>One supporting quote is used</li> <li>Research demonstrates a connection to the guiding question</li> <li>Written in student's own words</li> </ul>	<ul style="list-style-type: none"> <li>Four or more quality sources are used</li> <li>Two or more supporting quotes are used</li> <li>Research demonstrates a clear, in-depth connection to the guiding question</li> <li>Research states how this affects the environment and/or people</li> <li>Written in student's own words</li> </ul>
<b>Conclusions</b>	<ul style="list-style-type: none"> <li>No conclusion or conclusion doesn't answer the question</li> </ul>	<ul style="list-style-type: none"> <li>Conclusion does not answer the question, <b>OR</b> does not refer to the prediction, <b>OR</b> contradicts the evidence found in the research</li> </ul>	<ul style="list-style-type: none"> <li>Conclusion answers the question</li> <li>States if the prediction was supported or rejected</li> <li>Quotes evidence from research</li> <li>Explains the connection between the evidence and the conclusion statement</li> </ul>	<ul style="list-style-type: none"> <li>Conclusion answers all aspects of the question,</li> <li>States if prediction was supported or rejected</li> <li>Quotes evidence from research</li> <li>Explains the connection between the evidence and the conclusion statement</li> </ul>
<b>Visual Display</b>	<ul style="list-style-type: none"> <li>Project has very little eye appeal <b>OR</b> cannot be read from 2 feet away</li> <li>Project is not organized</li> <li>Contains major language and/or spelling errors</li> <li>Display is missing pictures or visuals</li> </ul>	<ul style="list-style-type: none"> <li>Project has limited eye appeal <b>OR</b> is not easily readable from 2 feet away</li> <li>Project has limited organization</li> <li>Contains major language and/or spelling errors</li> <li>Visuals used are confusing <b>OR</b> don't relate to research</li> </ul>	<ul style="list-style-type: none"> <li>Project is appealing and readable from 2 feet away</li> <li>Organized and clear</li> <li>Contains few language and spelling errors</li> <li>Uses understandable visuals and/or models</li> </ul>	<ul style="list-style-type: none"> <li>Project is appealing, neat, and readable from 2 feet away</li> <li>Well organized and clear</li> <li>Flawless language and spelling</li> <li>Makes striking use of inventive or amusing visuals and/or models</li> </ul>
<b>Presentation</b>	<ul style="list-style-type: none"> <li>No student presentation</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is incomplete</li> <li>Very few questions answered <b>OR</b> are answered incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is complete and answers some questions</li> <li>Answers to questions are backed up with facts</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of project is complete and provides clear answer to all questions</li> <li>Answers to questions are sequenced logically, using appropriate facts</li> </ul>
<b>Sources</b>	<ul style="list-style-type: none"> <li>No sources listed</li> </ul>	<ul style="list-style-type: none"> <li>Sources at the end of the written report are listed by title only <b>OR</b> represent an incomplete list</li> </ul>	<ul style="list-style-type: none"> <li>Two to three sources are cited with most of the information needed</li> </ul>	<ul style="list-style-type: none"> <li>Four or more sources are cited correctly with complete information, i.e., name, title, web address, date</li> </ul>

## Engineering Design Rubric (Middle School)

	Basic - 1 point	Attempted - 2 points	Proficient - 3 points	Advanced Proficient - 4 points
<b>Ask</b>	<ul style="list-style-type: none"> <li>States the problem as a statement, instead of a question <b>OR</b> does not state a problem</li> <li>Doesn't share prior learning about the problem</li> </ul>	<ul style="list-style-type: none"> <li>States the problem as a statement, instead of a question</li> <li>Describes one thing learned from resources that helped find possible solutions</li> </ul>	<ul style="list-style-type: none"> <li>States the problem in the form of a question</li> <li>Describes 2-3 things learned from resources (such as books, videos, interviews) that helped find possible solutions</li> </ul>	<ul style="list-style-type: none"> <li>States the problem in the form of a question</li> <li>Describes 4 or more things learned from resources that helped find possible solutions</li> </ul>
<b>Imagine</b>	<ul style="list-style-type: none"> <li>No possible solutions listed, <b>OR</b> solutions listed without descriptions</li> </ul>	<ul style="list-style-type: none"> <li>Lists one or two solutions to the problem</li> <li>Includes limited solution descriptions</li> </ul>	<ul style="list-style-type: none"> <li>Lists at least three practical solutions to the problem.</li> <li>Includes a description of each solution</li> </ul>	<ul style="list-style-type: none"> <li>Lists four or more practical, creative solutions to the problem</li> <li>Includes a clear, detailed description of each solution</li> </ul>
<b>Plan</b>	<ul style="list-style-type: none"> <li>No chosen solution, or no description of how the solution will work <b>OR</b> solution will not work to solve problem</li> <li>Diagram not included</li> <li>Materials list missing</li> </ul>	<ul style="list-style-type: none"> <li>Description of how your chosen solution will work is limited</li> <li>Diagram is incomplete <b>OR</b> lacks labels</li> <li>Materials list is incomplete</li> </ul>	<ul style="list-style-type: none"> <li>Includes a description of how your chosen solution will work</li> <li>Includes a labeled diagram</li> <li>Major materials are listed</li> </ul>	<ul style="list-style-type: none"> <li>Includes a detailed description of how your chosen solution will work</li> <li>Includes a detailed, labeled diagram</li> <li>Major materials are listed with details</li> </ul>
<b>Create</b>	<ul style="list-style-type: none"> <li>No explanation for how solution was built</li> <li>No test of the solution</li> </ul>	<ul style="list-style-type: none"> <li>Limited explanation of how solution was built</li> <li>Performs an incomplete test of the solution</li> <li>Missing description of successes and challenges during testing</li> </ul>	<ul style="list-style-type: none"> <li>Explains how solution built</li> <li>Performs a test of your solution</li> <li>Includes description of successes and challenges during testing</li> </ul>	<ul style="list-style-type: none"> <li>Clearly explains how solution was built</li> <li>Performs a test of your solution with multiple trials</li> <li>Includes detailed description of successes and challenges during testing</li> </ul>
<b>Improve</b>	<ul style="list-style-type: none"> <li>No explanations for redesign</li> <li>No test of redesign</li> <li>No conclusion</li> <li>No explanation of real-world application</li> </ul>	<ul style="list-style-type: none"> <li>Limited explanation of how solution was redesigned to work better</li> <li>Incomplete retest of solution</li> <li>Limited conclusion to explain how redesign solved the problem</li> <li>Missing explanation of how what you learned applies to the real-world</li> </ul>	<ul style="list-style-type: none"> <li>Explains how solution was redesigned to work better</li> <li>Retests solution</li> <li>Writes a conclusion to explain how redesign solved the problem</li> <li>Some explanation of how what you learned applies to the real-world</li> </ul>	<ul style="list-style-type: none"> <li>Explains in detail how solution was redesigned to work better</li> <li>Retests solution with multiple trials</li> <li>Writes a detailed conclusion, with supporting data, to explain how your redesign solved the problem</li> <li>Clearly explains how what you learned applies to the real-world</li> </ul>
<b>Visual Display</b>	<ul style="list-style-type: none"> <li>Project is not easy to read</li> <li>Display is missing two or more of the following parts: <b>Ask, Imagine, Plan, Create, Improve</b></li> <li>Display is missing pictures or visuals</li> </ul>	<ul style="list-style-type: none"> <li>Project is not easy to read</li> <li>Display is missing one or some of the following parts: <b>Ask, Imagine, Plan, Create, Improve</b></li> </ul>	<ul style="list-style-type: none"> <li>Project is easy to read</li> <li>Display is organized and includes all the following parts: <b>Ask, Imagine, Plan, Create, Improve</b></li> </ul>	<ul style="list-style-type: none"> <li>Project is easy to read</li> <li>Display is organized and includes all the following parts: Ask, Imagine, Plan, Create, Improve</li> <li>Makes striking use of inventive or amusing visuals and/or models</li> </ul>
<b>Presentation</b>	<ul style="list-style-type: none"> <li>No student presentation</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is incomplete</li> <li>Very few questions answered <b>OR</b> are answered incorrectly</li> </ul>	<ul style="list-style-type: none"> <li>Presentation is complete and answers some questions</li> <li>Answers to questions are backed up with facts</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of project is complete and provides clear answer to all questions</li> <li>Answers to questions are sequenced logically, using appropriate facts</li> </ul>

# Innovation Expo Project Ideas

These questions are provided as examples of topics you focus on for your project or how you could format your own question. You may come up with your own idea as long as it is safe, you have the materials and you can measure the results. All proposals must be approved by your teacher.

## **Experiment Questions:**

How does the amount of salt in water affect how quickly it boils?

How does the amount of fat in ice cream affect how fast it completely melts?

How does the amount of salt in water affect the amount of time until the top freezes over?

How does the size of a parachute affect the time it takes to fall to the ground?

How does the temperature of a cup of water affect the time it takes a sugar cube to fully dissolve in it?

How does changing the shape of a wing affect how far a paper airplane will fly?

## **Research Questions:**

Why do plants need water and sunlight to stay alive?

How do caterpillars change into butterflies?

Why does erosion happen faster along bends in a river or stream?

How are fractals mathematical?

How is music mathematical?

## **Engineering Design Questions:**

How can I design/redesign \_\_\_\_\_ to make it work better?

How can we redesign packaging to keep fruit fresh for a longer period of time?

How can we design a bridge to be safer and stronger?

How can we redesign a cooler so that it keeps its contents colder for a longer period of time?

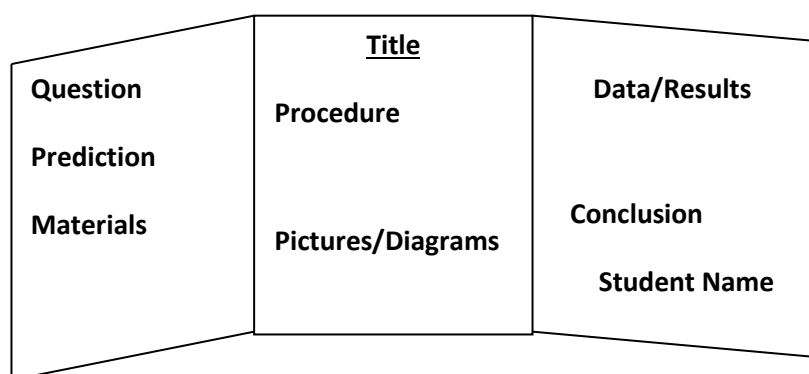
How can we redesign a container so that it protects its contents from the impact of being dropped?

How can we redesign product packaging to hold the most product with the least amount of packaging?

## **EXPERIMENT Presentation Board Guidelines**

Your project must be displayed on a tri-fold board (dimensions 36" x 48") using the layout below and should include:

<input type="checkbox"/> Title	<input type="checkbox"/> Procedure
<input type="checkbox"/> Question	<input type="checkbox"/> Data (Pictures, Charts, Graphs, etc.)
<input type="checkbox"/> Prediction	<input type="checkbox"/> Conclusion
<input type="checkbox"/> Materials	<input type="checkbox"/> Your First and Last Name (neatly, in bottom right flap)



Please follow the above poster layout as you are preparing your tri-board.

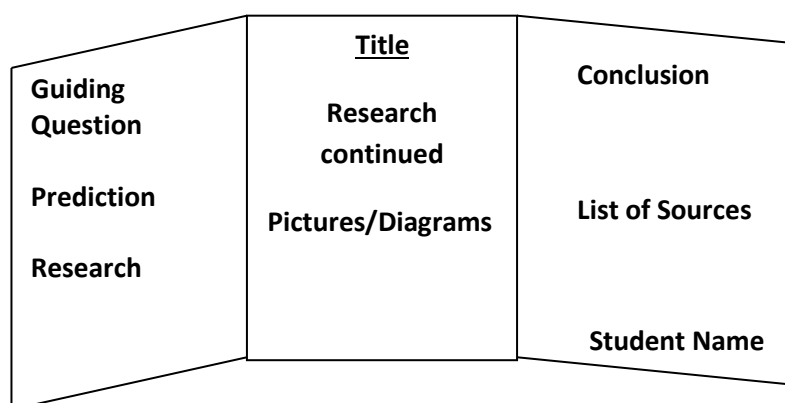
Please also consider:

- ☐ Are the sections labeled on your display board so that they are easy to follow?
- ☐ Does the title catch people's attention? Can it be read from across the room?
- ☐ Did you use pictures and diagrams to effectively show your information?
- ☐ Did you proofread your display board?
- ☐ Is your name clear and easy to find in the lower right-hand corner?

## **RESEARCH** Presentation Board Guidelines

Your project must be displayed on a tri-fold board (dimensions 36" x 48") using the layout below and should include:

<input type="checkbox"/> Title	<input type="checkbox"/> Pictures/Diagrams
<input type="checkbox"/> Guiding Question	<input type="checkbox"/> Conclusion
<input type="checkbox"/> Prediction	<input type="checkbox"/> List of Sources
<input type="checkbox"/> Research	<input type="checkbox"/> Your First and Last Name (neatly, in bottom right flap)



Please follow the above poster layout as you are preparing your tri-board.

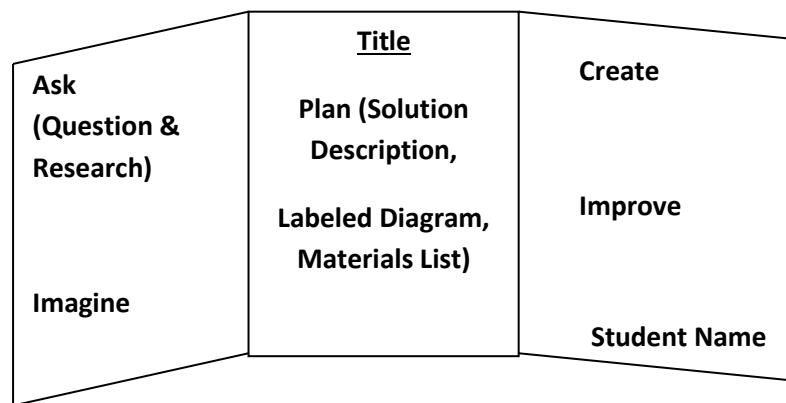
Please also consider:

- ☐ Are the sections labeled on your display board so that they are easy to follow?
- ☐ Does the title catch people's attention? Can it be read from across the room?
- ☐ Did you use pictures and diagrams to effectively show your information?
- ☐ Did you proofread your display board?
- ☐ Is your name clear and easy to find in the lower right-hand corner?

# ENGINEERING DESIGN Presentation Board Guidelines

Your project must be displayed on a tri-fold board (dimensions 36" x 48") using the layout below and should include:

<input type="checkbox"/> Title	<input type="checkbox"/> Create
<input type="checkbox"/> Ask	<input type="checkbox"/> Improve
<input type="checkbox"/> Imagine	<input type="checkbox"/> Your First and Last Name (neatly, in bottom right flap)
<input type="checkbox"/> Plan	



Please follow the above poster layout as you are preparing your tri-board.

Please also consider:

- ☐ Are the sections labeled on your display board so that they are easy to follow?
- ☐ Does the title catch people's attention? Can it be read from across the room?
- ☐ Did you use pictures and diagrams to effectively show your information?
- ☐ Did you proofread your display board?
- ☐ Is your name clear and easy to find in the lower right-hand corner?

## Everett Innovation Expo - Safety Contract

In order to have your project considered for the Student STEM Competition at the Everett Innovation Expo, students must complete and sign a Safety Contract and get approval from their parent/guardian and their classroom teacher.

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### Student Safety Agreement

#### Preparing for the Innovation Expo STEM Competition:

- I will care for science materials by handling objects carefully. I will not eat, drink, or taste any science materials.
- I will follow all safety rules.
- I will not use any toxic chemicals in my STEM Competition project. All materials must be appropriate for use in elementary schools and approved by your classroom teacher.
- I will not use fire or burning objects in my STEM Competition project.
- I will not use firearms, tobacco, drugs or alcohol in my STEM Competition project.
- I will not harm any animals in my STEM Competition project and understand that I cannot bring animals into Angel of the Winds Arena in Everett.

#### Materials I plan to use for my project are:

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#### If chosen to participate at the Innovation Expo STEM Competition:

- I will share my project with judges and the public on a presentation tri-board.
- I will only bring a display of my work if it is not breakable, valuable, potentially harmful or messy.

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#### Student Signature:

I will follow the above safety rules and complete my STEM Competition project in a safe manner.

Student Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_

#### Parent Signature:

I acknowledge that the above safety precautions will be followed and that this project will be completed in a safe manner. I also acknowledge that no animals (vertebrates or invertebrates) will be harmed in any way.

Parent Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_

#### Teacher Signature:

I received the student's signed safety agreement and approve of the student's STEM Competition project.

Teacher Print Name: \_\_\_\_\_ Signature: \_\_\_\_\_