MONROE SCIENCE FAIR!

2020 Monroe Science Fair Guidelines

Science Fair Contacts

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Newsbytes and PTO Website

Look for Science Fair reminders and other information in the weekly PTO Newsbytes and on the Monroe PTO website (www.monroeschoolpto.com).

Register your child for Science Fair and place an order for a Science Fair t-shirt at https://monroeschoolpto.com/science-fair/ .

Science Night

Science Night will be Tuesday, March 10, 2020 from 6 p.m. to 7 p.m.

New this year!

Science Night will be entirely in the gym this year! Boards will be put on display on tables and grouped by grade level. Prior to Science Night, boards will be hung in the school hallways from February 18th to March 10th. This will give students and judges the opportunity to view everyone's boards. Then, the boards will be moved to the gym on Science Night.

Science Fair Instructions for STUDENTS

Everyone at Monroe School is very excited that you're participating in the 23rd Annual Science Fair & Science Night! You can choose to do a project in one of three categories:

EXPERIMENTAL
NON-EXPERIMENTAL or
INVENTION!

You may work alone or in a group of up to 3 people.

As part of your project, you will need to create a project board. You may handwrite or type the content on your project board. **You must bring your completed project board to the MRC on Tuesday, February 18th between 8:30am-9:00am.** *All students who complete their project will receive a cool locker magnet and backpack tag!*

Things to include on your project board:

- Project title.
- Charts, graphs, photos, and/or drawings showing the procedure and/or results of the project.
- For experiments, be sure to include the question, hypothesis, equipment and procedures used, variables, results, and conclusions.
- Any information that will help to "tell the story" of your project.
- On the board **label**: name(s) and grade(s) of student(s) who worked on the project

MAKE YOUR PROJECT BOARD FUN, COLORFUL AND EYE CATCHING!

Please remember that science projects often don't work exactly as planned. This is fine! You should explain what happened, why you think things turned out like they did, and what you would do differently next time. This is a completely valid Science Fair project.

As you do your Science Fair project, keep in mind that it should be FUN! Also remember, it's your project. It's okay for family members to help, but you're the one in charge.
SAFETY FIRST!

The following safety rules will be strictly enforced.

- Any experiments involving animals must be approved **before starting your experiment**. ANIMALS MAY NOT BE ON DISPLAY AT MONROE SCHOOL AT ANY TIME.
- No dangerous chemicals, open flames, explosives, or compressed air are allowed as part of any experiment.
- WEAR SAFETY GOGGLES for anything involving wires, small flying objects, or anything else that could possibly injure your eyes!

Science Fair Instructions for PARENTS

In keeping with the spirit of an elementary school science fair, our primary goal is to enable the children to explore science and to have fun in the process. This year the science fair allows the children to do an Experimental, a Non-experimental or Invention project. We are not looking for perfection on the project. We want to see young minds at work. You can help your children by allowing them to explore, make a mess, make mistakes and enjoy being perfectly imperfect scientists! Our young scientists should come away from this experience knowing more about:

- Observing the world around them.
- Determining how to find out more about their ideas.
- Developing a hypothesis.
- Testing their hypothesis or idea though an experiment, research or invention.
- Drawing conclusions.
- Presenting their ideas in a poster format.

In order to achieve these goals, we ask that parents:

- Help your child focus on a topic of interest.
- Help your child to research and gather supplies, as needed.
- Allow your child to get dirty, make a mess and explore his/her topic.
- Help with questions when needed.
- Help with typing and writing if you have a younger scientist.
- Encourage your child to make a fun, unique and eye-popping science fair project board.

PLEASE NOTE THAT PROJECTS OFTEN DON'T WORK EXACTLY AS PLANNED! If things go wrong, encourage your child to complete his/her project by thinking about and explaining what went wrong and why. This type of experience is a completely valid science fair project and usually the most interesting.

Remember this should be FUN, not frustrating! When we say "research" we are not suggesting your child complete a thesis paper. Help them look up a few things that they find interesting. Keep things uncomplicated. Let them really explore the world around them and make a mess! Remember, the goal of this process is to give our children confidence in science and learn that it can be one of the most interesting and fun subjects they can study. Help where it is needed and stand back when your assistance is not needed. We hope your children enjoy exploring the world around them and make some fun discoveries with their own two hands!

Please do not hesitate to call or email the Science Fair Committee with any questions. Thank you for your efforts to make Monroe's Science Fair a success!

Experimental Project

An experimental project begins with a question that may be answered by conducting an experiment not by simply answering yes or no. For example, “How does salt affect the freezing point of water?” is a better question for an experimental project than “Does salt affect the freezing point of water?”

In an experimental project, you will need to change something (variable) and measure something when answering the question. You would begin by thinking of a question that interests you. Then, follow the steps below.

- Use the scientific method-LISTED BELOW
- Do a real experiment
- Base your conclusion on your data, not on what you think or want to happen
- Make your project board show that you understood what happened
- Include some of your own ideas in your project

NOW IT IS TIME FOR THE REAL FUN...JUMP IN AND GET STARTED!

1. Observe the world around, ask questions! *Example: See the wind blowing leaves off the trees, and ask: "I wonder if it will blow my hat off?"*
2. Research your question. Once you identified an interesting question, the next step in the scientific method will be to do some background research to see what has already been discovered in your area of interest. The library is a great place to start your background research. You'll find a wide variety of great resources, from books to magazines, to newspaper articles and even the Internet. Make sure to ask for help if you need it! There are many ways you can find the information you need.
3. Form your hypothesis. A hy-pot-the-what...? Sounds like something complicated, doesn't it? Well, it's really quite simple. A hypothesis is similar to an educated guess. It is a preliminary answer to the question you have asked that you will test to see if it seems to be true. All you need to do to form your hypothesis is to take your original question and turn it into an answer.
4. Conduct an experiment about what you believe will happen. This is where all the fun happens, so make sure you get really creative.
5. Document everything you did for your experiment and what you learned on your project board. It doesn’t matter if you were right or wrong, we want to hear all about it! Make sure to include pictures, colors and eye-catching decorations.

Non-Experimental Project

There are different types and many different topics for non-experimental projects including:

- Descriptive or Correlation Projects
- Collections
- Research a scientific topic

Collection Project

Your collection should be science related. The display of a collection could include an actual collection, a report, photographs, graphs and charts, or anything that shows what you learned by doing the collection.

Example: A rock or mineral collection.

Research a Scientific Topic

In this type of project, you get to choose a scientific topic that you want to learn about. After you have chosen a topic, you must become a detective seeking to uncover all the information you can about your topic and share it on your project board.

Example: Why is the number of Bengal Tigers in the wild decreasing? Maybe, you think that they are losing their natural habitat. As you conduct your research, you may discover additional reasons such as illegal hunting. After you finish your research, you would put together your project board including your topic, ideas, and the results of your research. Your project board could also include a photograph or drawing of a Bengal Tiger, a map of where they live, and a handwritten chart to show the decreasing population by year.

Descriptive or Correlation Projects

In this type of project, you examine the relationship between two or more variables as they naturally occur.

Example: What is the effect of secondhand smoke exposure on childhood asthma? You could start by looking at the results (frequency of asthma) after children have been exposed to second hand smoke in their natural environment (home). No variable is changed. After you finish your research, you would put together your project board including your question, ideas, and the results of your research. Your project board could also include photographs of children's lungs with different exposure to secondhand smoke and a chart showing the frequency of asthma.

Invention

Have you ever had an idea that could solve a problem you have seen? Have you ever looked at a gadget and thought you could make it better? Here is your chance to make your idea come to life! Follow the steps below to get started.

1. Choose a problem or come up with your own unique idea.
2. Research it: Find out what others know. Use primary sources such as your own experiences or local experts. Use secondary sources, such as books, articles from the Internet or magazines.
3. Suggest a solution to the problem and explain why it should work or explain the purpose of your unique idea.
4. Validate the design: Make sure you look at everything that needs to be done to make your project the best it can be.
5. Collect data: Inventors and engineers collect data to help them know if their solution is working. The only way to demonstrate whether your invention worked is with data.
6. Make your project board and share with everyone what you have accomplished!

Example: It would be great to be able to see a football better when it wasn't sunny. Research on the computer or at sporting goods stores to see what types of footballs are available for sale. Refine and perfect your football design. Try different materials or colors. Design a football that glows in the dark and explain why your design is unique. Try your football in different weather and test how it works. Document your idea, research, design, materials used, data and results. Include any samples.

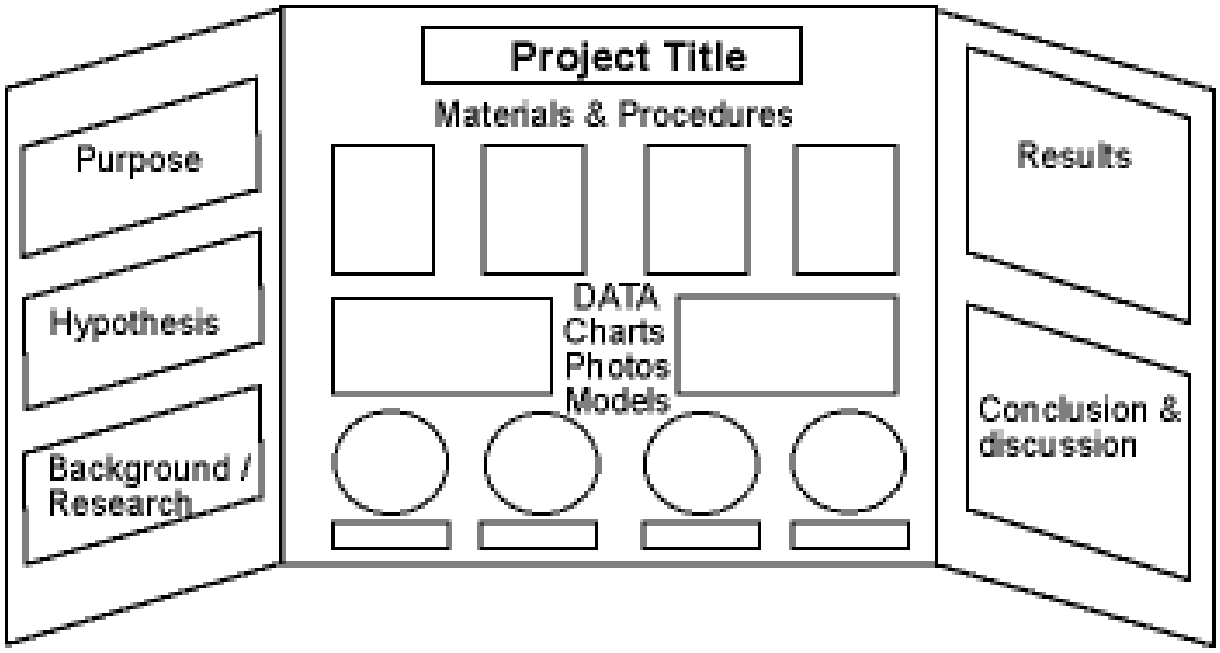
Project Board Rules & Samples

Project Boards will be displayed in a hanging format this year, attached to the walls in the school hallways. They will NOT be sitting on top of MRC shelves. With this in mind, please observe the following rules:

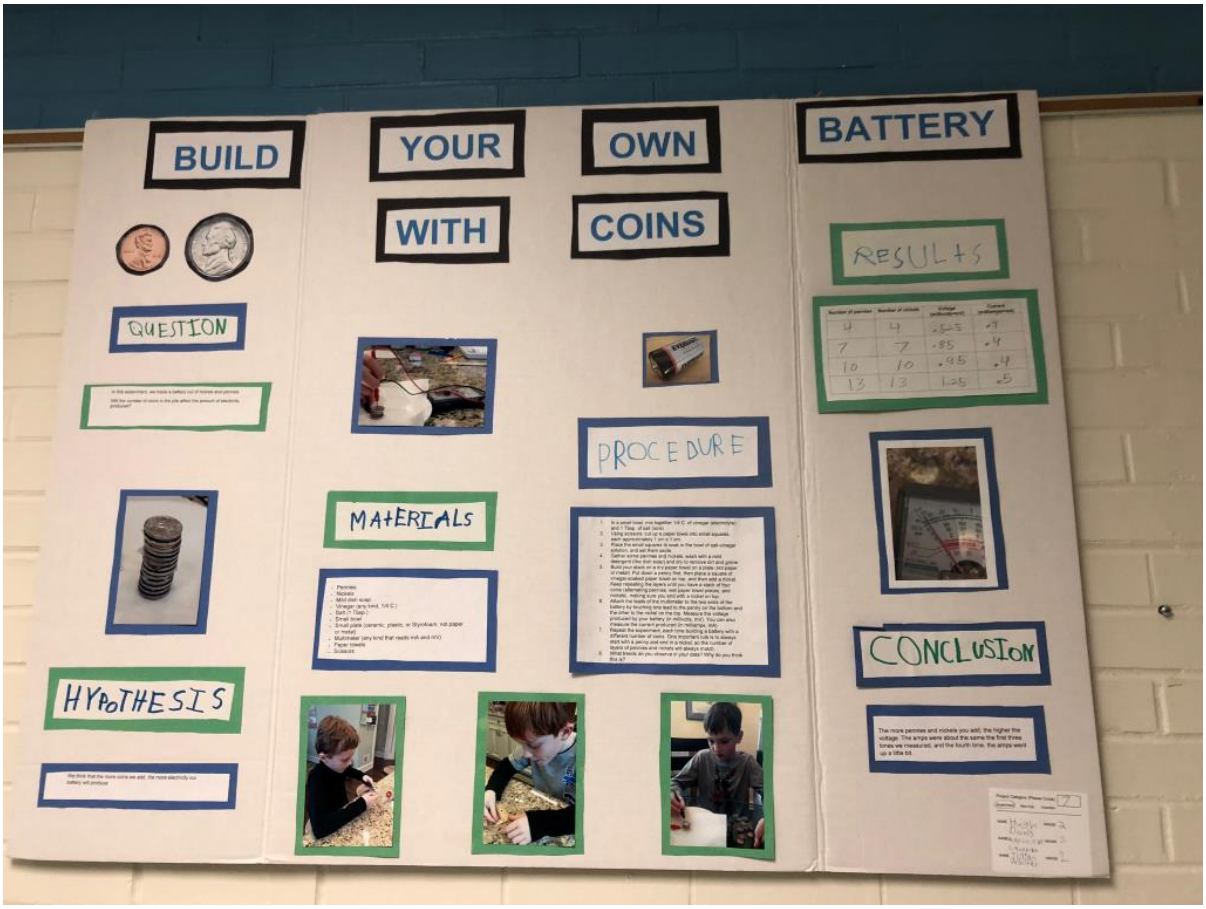
- **BOARDS WILL BE DISPLAYED FLAT.**
- **BOARD TOPPERS WILL NOT WORK AND WILL BE TAKEN OFF.**
- **NOTHING CAN EXTEND PAST THE BOARD'S EDGES (TOP, SIDES OR BOTTOM).**
- **ALL MATERIALS MUST BE SECURELY ATTACHED TO YOUR BOARD.**
- **THERE IS NO ROOM TO DISPLAY ANY "EXTRA" PARTS OF YOUR PROJECT THAT ARE NOT ATTACHED TO THE BOARD.**
- **IF YOU HAVE AN INVENTION OR EXTRA MATERIALS THAT ARE NOT ATTACHED TO YOUR BOARD, YOU MAY BRING IT IN ONLY ON SCIENCE NIGHT (MARCH 10) TO DISPLAY ON A TABLE.**
- **ONLY INCLUDE YOUR NAME(S)ON THE LABEL AFFIXED TO THE BOARD. DO NOT WRITE NAMES ELSEWHERE ON THE BOARD**.

Please check with the Science Fair Committee if you have any questions.

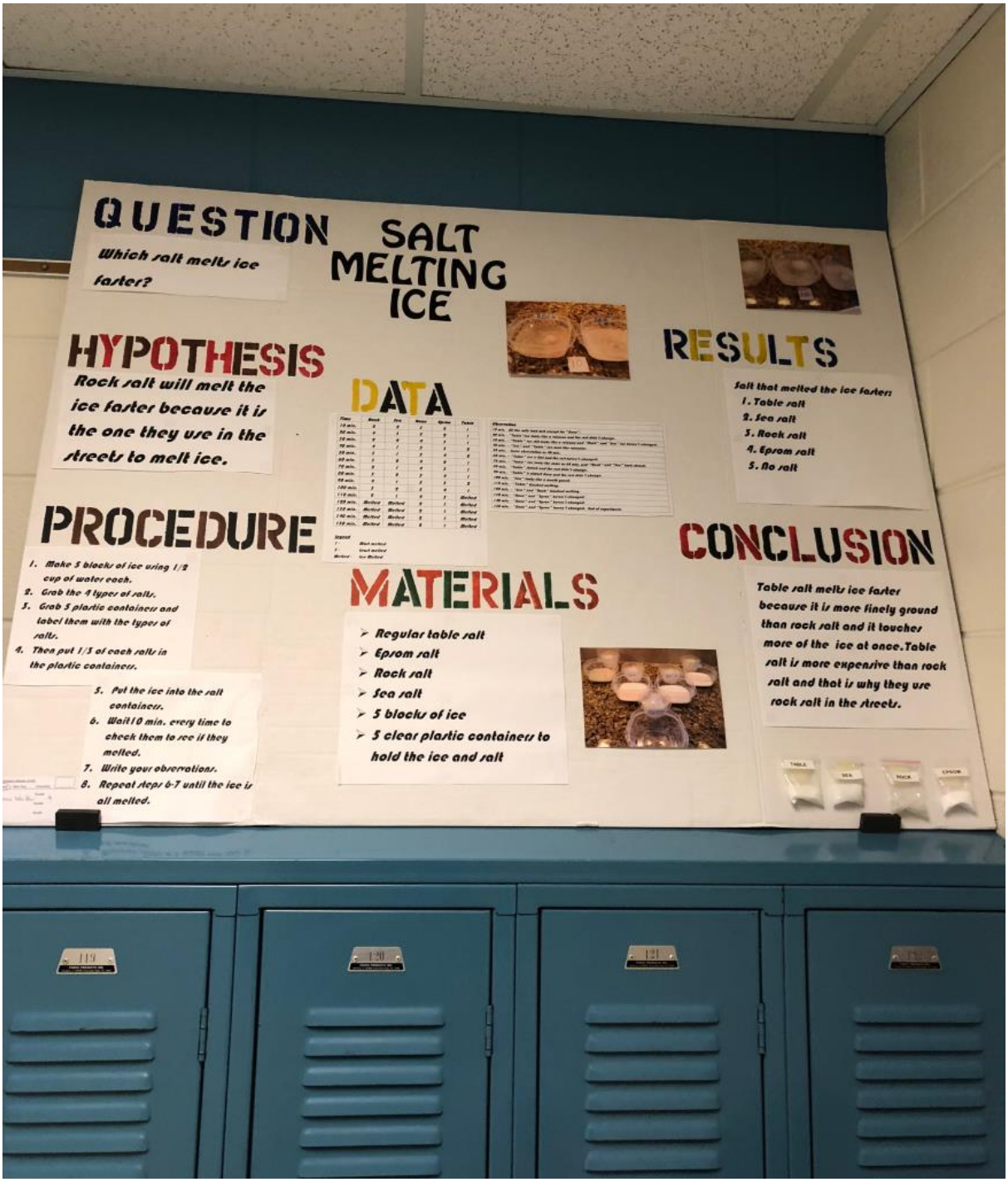
Sample Board (this is just an example of a layout)



Sample Board – Hanging on the wall, near the ceiling



Sample Board – Hanging/resting on top of lockers



Judging Guidelines & Scoring Rubrics

Each year, the students' projects are reviewed and rated by a panel of outside judges. The judges include people from the community with a scientific background. These may include doctors, nurses, dentists, scientists, physical therapists, pharmacists, engineers, etc. NO Monroe parents, teachers or staff are allowed to judge.

The labels on each project where students' names and teachers are written down are covered up during the judging period so that the projects are anonymous. Photos showing the student's face is also covered during judging. Judges do not know the identity of the student whose project they are reviewing, only: what grade the student is in, whether it is a group or individual project, and what category the project is in (Experimental/Non-Experimental/Invention).

Every project is reviewed by several judges, so no score is reliant on one person alone. All the judges' scores for a project are added up for a final tally. Projects are awarded points based on those numbers, and winners are chosen based on number of points (highest being best). Often there are ties, and we award ribbons to all those who tie, even if it is a multiple-way tie.

Following are the scoring rubrics that are used to review and rate projects in each category: Experimental; Non-Experimental; and Invention. These will help you understand how the judges look at the projects.

If you have any questions, please contact the Science Fair Committee.

MONROE SCIENCE FAIR JUDGING RUBRIC

THE EXPERIMENT

(5 = Outstanding, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Sufficient, 0 = Insufficient)

IDEA/HYPOTHESIS

Has the student(s) posed a reasonable and testable question? Is the hypothsis stated clearly?

PROCEDURE

Has the student(s) followed a systematic procedure? Could the experiment be replicated from the given information?

RESULTS/CONCLUSIONS

Were the results presented clearly? Were conclusions and summary remarks based on experimental data and related to the problem/hypothesis?

THE DISPLAY

(Please note the children were not required to type their poster and we encouraged them to work on their own)
(5 = Completely, 4 = Relatively, 3 = Enough, 2 = Somewhat, 1 = Minimal, 0 = Not at all)

QUALITY

Does the project appear to be understood by the student(s)? Is the project organized, clear and well thought out?

EFFORT

Did the student(s) put forth effort to provide a creative, unique and imaginative project?

NON-EXPERIMENT

(5 = Outstanding, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Sufficient, 0 = Insufficient)

RESEARCH
Has the student(s) gone beyond merely explaining the topic? Are there a variety of research resources? Is there a new idea about the topic?
PROCEDURE
Has the student(s) followed a systematic procedure in researching topic? Did student(s) show how they went about gathering information for project?
RESULTS/CONCLUSIONS
Were the results presented clearly? Were conclusions and summary remarks based on research and data?

THE DISPLAY

(Please note the children were not required to type their poster and we encouraged them to work on their own) (5 = Completely, 4 = Relatively, 3 = Enough, 2 = Somewhat, 1 = Minimal, 0 = Not at all)

QUALITY
Does the project appear to be understood by the student(s)? Is the project organized, clear and well thought out?
EFFORT
Did the student(s) put forth effort to provide a creative, unique and imaginative project?

THE INVENTION

(5 = Outstanding, 4 = Very Good, 3 = Good, 2 = Fair, 1 = Sufficient, 0 = Insufficient)

IDEA & PLANNING
Has the student(s) strategically mapped out a plan for their invention? Student(s) has sucessfully listed steps which show organization of their procedure. Materials used were clearly listed.
FUNCTION
Is inventions purpose clearly stated and explained? Does it serve a need to themselves, school or society?
RESULTS/CONCLUSIONS
Were the results presented clearly and thoroughly?

THE DISPLAY

(Please note that students were not required to type their poster and we encouraged them to work on their own) (5 = Completely, 4 = Relatively, 3 = Enough, 2 = Somewhat, 1 = Minimal, 0 = Not at all)

QUALITY
Does the project/invention appear to be understood by the student(s)? Is the project organized, clear and well thought out?
EFFORT
Did the student(s) put forth effort to provide a creative, unique and imaginative project?