The Story of Your Invention

Invention Log

What is an invention?

An invention is something new that enables us to solve a problem or do something better or easier.

The purpose of this Invention Log

All stories have an ending. In this case, the ending of what you are doing is your invention. But all stories also have a beginning and middle. The purpose of this Invention Log is to tell the entire story of your invention. In it, during every step you take in making your invention, you will record what you did, why you did it, and how you did it. This Invention Log is an important part of the invention process and is a complete and accurate record of the ideas, plans, and processes by which the invention was created. Invention Logs can be used by students to prove they came up with the idea and invention. Oftentimes, they are used as part of the patenting process.

How to use this Invention Log

The Invention Log is not a book report that is created after you are done. Rather, it is a diary that is continuously filled in as you work on your invention. Follow the steps of the invention process and fill out the various pages as you work on them. When you are done with a page, print your name and the date at the bottom. If you need extra space for any section, make copies of the Blank Page (Page 17) and use that for any purpose. Once you are done, put the pages in the order in which you did them and staple them to make a complete Invention Log. This log will also be used as part of the final presentation and needs to be filled in using complete sentences (except for things like a list of materials). Teams share one Invention Log and should attach signatures of all inventors.

The name of the invention: Habit Builder 2020 (HB 20)

The problem that it solves: People forgeting to do daily routine actions like cleaning your desk, turning off the lights, taking your home-school folder, etc.

INVENTION CONVENTION

Statement of Originality

I promise that the ideas in this Invention Log are my own. (If a team, all should complete.)

Inventor Name(s): Sreeansh Kurane

Abhidha Hosting

Signature(s): Sree

Date: 02/20/2020

Grade: 4th

School: Bentley Elementry

Town: Canton, MI

INVENTION CONVENTION

Explaining the Problem and Identifying a Solution (Identifying and Understanding)

1. What problem are you trying to solve? The more specific you are in describing the problem, the better your solution will be. How did you come up with the problem?

From our experience, we know that most of the kids forget to perform routine actions in their daily life. Like - Turning off the lights, cleaning up the desk, folding the blankets, avoiding unattended food on the desk, etc.

2. What is the result you are trying to achieve? The more specific you are in describing the result you want, the better your solution will be.

Scope was to come up with something which will remind kids to perform routine actions on right time. This in turn will help kids to build healthy habits.

3. What are some possible solutions? Which one did you choose to pursue? How did you decide which solution to try? The more specific you are in describing the solution you will create, the better your invention will be. How did you come up with the solution?

1. We can put reminder notes along the entry and exit wall.
2. We can use a special switch which will turn on/off lights automatically.
3. We can develop a sensor system such that will sense the user's motion and provide remiders on performing the required action.

We picked number three option because no. 1 does not look attractive and for no.2 idea, there it is availible in the store. No.3 looks unique because of its interation with user.

INVENTION CONVENTION

4. Has this solution been done before? If it exists, how is your approach different and better? What research did you do to see if this invention had been done before? Who did you talk to? Where did you look? What website did you search? You should show 4 pieces of evidence of different types of research – talking with experts, searching the internet, interviewing friends and family as to how useful this would be, etc.

   Where I looked to see if my idea is new:

   A. Used internet to find out existing ideas which helps kids perform daily actions in right ways.

   B. We looked into www.uspto.gov website to see if there is already a patent related to our invention.

   C. We read few technical magzines and books to gain more knowledge and ideas related to our invention.

   D. We discussed our problem and ideas with our parents & friends which helped to find out possibilitys and limitations

Document any similar inventions you found, describing how yours will be different:

- We found switches with sensors which turn on/off light auttomatically
- We found people use signboards to remind kids.

We are planning to come up with something more attractive, interactive, user friendly, and also cost effective.

Teacher Signature - REQUIRED FOR ALL PARTICIPANTS

I approve of the solution/invention my student has chosen to pursue and agree that it not only meets the guidelines shown on the Restrictions and Requirements page, but that it is also safe.

Teacher's Name (Printed)

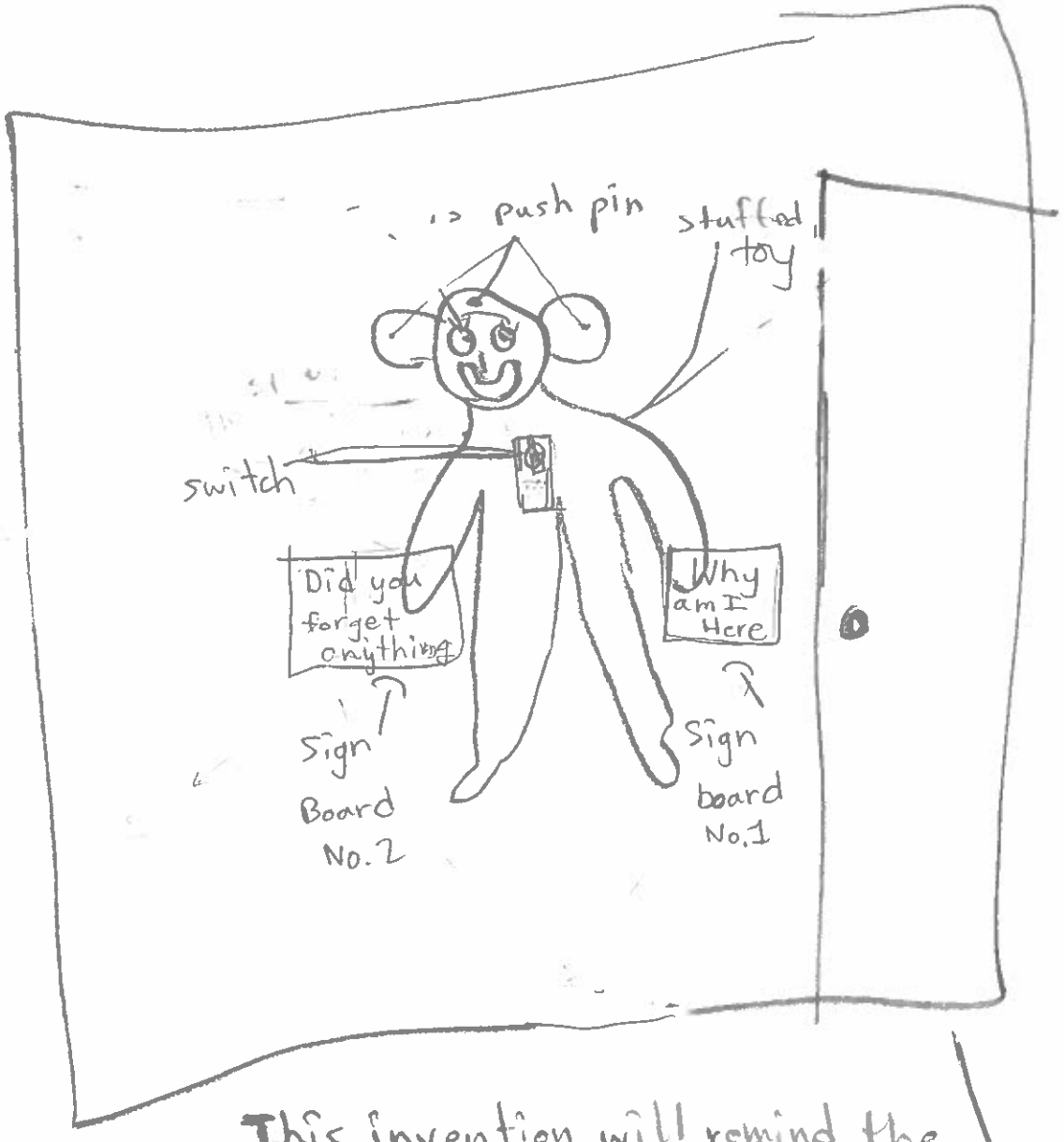
Teacher's Signature_____ Date

I approve of the solution/invention my student has chosen to pursue and agree that it not only meets the guidelines shown on the Restrictions and Requirements page, but that it is also safe.

Iteration -I

Creating and Improving the Design (Ideating and Designing)

5. Draw a model (a sketch or drawing) of the invention you are thinking about building. Label all the important parts and features. Explain how the invention will work. If you need more space, use another blank page.



This invention will remind the kids to turn off the lights without hurting the children with the use of the sign boards.

Iteration 1

6. What problems or issues might you encounter with this design? Is this design compatible with the principle of sustainability? Who did you talk to about this design (another student, parent, teacher, etc.)? What were their comments about your design?

- One parent said "Maybe people might not see the switch."
- The issue is the switch is not visible.

7. How can you fix those problems or address those issues?

- To make it more visible, we chose more visible stuffed toys like - a elephant face, a pony, and a lion.
- Also we identified mounting locations such a way that our concept is more attractive.

8. Repeat steps 5 to 7 until you have a design that you think will work. You may have to make multiple copies of a blank page until you have a good design.

Creating and Improving the Design (Ideating and Designing)

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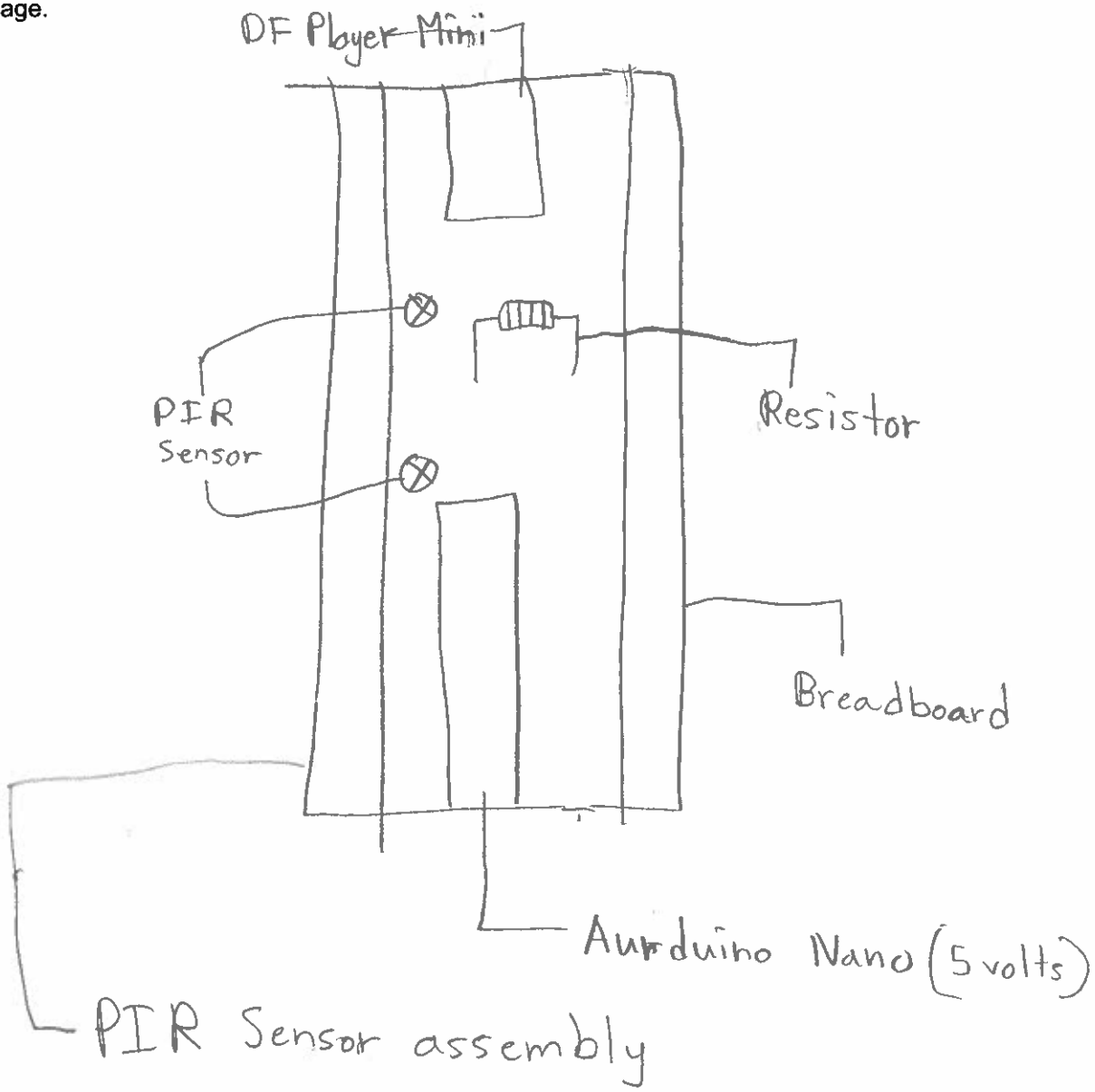


6. What problems or issues might you encounter with this design? Is this design compatible with the principle of sustainability? Who did you talk to about this design (another student, parent, teacher, etc.)? What were their comments about your design?

In second iteration we thought to use motion sensors to detect user's motion and add some sort of voice commands to deliver reminders.

Main challenge with this improvment was how to detect two way motion of user.

7. How can you fix those problems or address those issues?

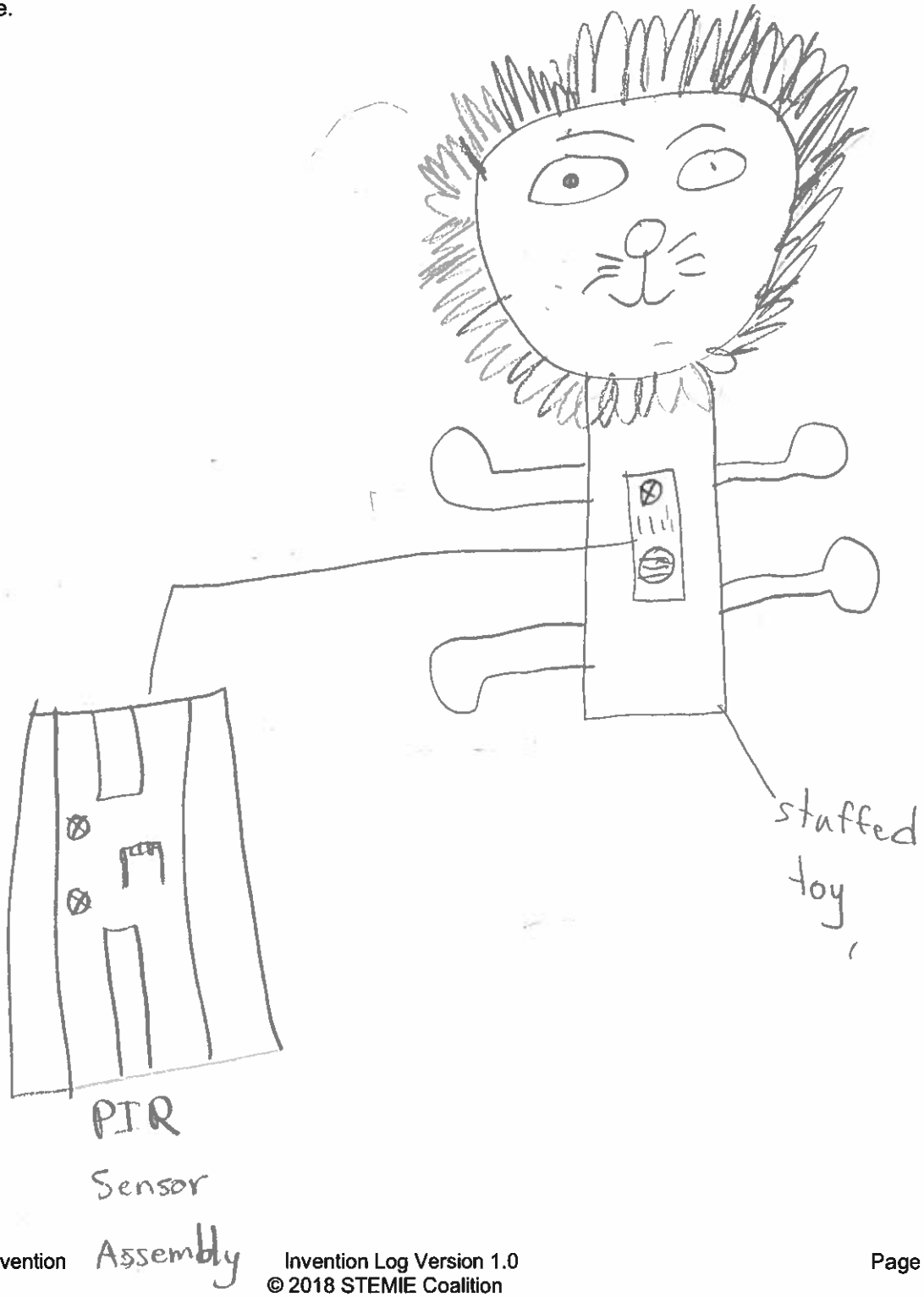
We discussed this problem with with our mentor and one of my uncle. My uncle suggested building a PIR sensor assembly with two sensors and a small speaker which will solve the problem. We took help of the internet (youtube) to find out few relative videos on how to build PIR sensor assembly.

8. Repeat steps 5 to 7 until you have a design that you think will work. You may have to make multiple copies of a blank page until you have a good design.

Iter - III

Creating and Improving the Design (Ideating and Designing)

5. Draw a model (a sketch or drawing) of the invention you are thinking about building. Label all the important parts and features. Explain how the invention will work. If you need more space, use another blank page.



6. What problems or issues might you encounter with this design? Is this design compatible with the principle of sustainability? Who did you talk to about this design (another student, parent, teacher, etc.)? What were their comments about your design?

From the Iteration 2, we could able to acheive our primary objective of sensing user's two way motion and providing reminders to pay attention of the user. But still we were facing an issue on how we can customize the reminders.

7. How can you fix those problems or address those issues?

When we did further research on the internet on this problem, we found a soulution of adding a DF Player Mini to the sensor assembly which allows to use prerecorded voice clips to use as reminders.

8. Repeat steps 5 to 7 until you have a design that you think will work. You may have to make multiple copies of a blank page until you have a good design.

Building the Invention or Prototype (Designing, Building, Testing)

9. What parts, materials, and tools will you need to make the invention and how much will they cost?

- Basic electronic kit which includes breadboards, connection cables, resistors, etc. • used soft toy
- PIR Sensor • small speaker • DF Player Mini • Arduino
- Aurduino Nano. Cost will be $15 if we used old stuffed Toy

10. Where will you get those parts and materials?

Amazon.com

11. What additional skills or abilities will you need to make the invention?

-) Need to learn basic electronic circuit building skills
-) Need to understand Function of each part/tool
-) Used in sensor building
-) Need to learn how to calculate resistor's campacity
-) Need to know internet browsing skills.

12. Who can help you build the invention?

- My Mentor
- My team members and friends
- My parents and one of my uncle
- Internet research
- Technical papers & magzines

13. Get the parts and materials and build the invention (with help).

14. Test and evaluate the invention. What did you do to test the invention?

- We conducted workshop to test our prototype with a group of 12 users
- We asked users to go in and out of a room to check sensor functionality.
- We also gathered information about appearance, cost effectiveness and user friendly featurers from the users.

15. Identify any problems with the invention. What will you change to make it better?

While developing this concept we faced several challenges like visibility, attentiveness, Two way motion sensing, and customization of reminders. We did several iterations to overcome each challenge and arrived with the final Prototype.

16. Repeat steps 5 to 15 until the invention works as planned. You may have to copy and make multiple copies of this blank page until you have an invention that works the way you want.

Naming the Invention (Communicating)

17. Naming your invention is important.

- What words describe your invention?

• Interactive, Habits, reminders, actions, attention, toy, development, motion catcher.

- Think in terms of words that will help you name your invention.

Reminder provider, attention seeker, interactive toy, habit developer.

- What is the function of your invention?

Our prototype senses user's two way motion from user's room and provides required reminders to perform right actions to fulfill their routine tasks. This in turn helps users to develop healthy habits.

- Think in terms of marketing it. How will it solve the problem? How will it help others?

→ Our concept helps to build healthy habits amongst users any age.

→ Unlike othe sensor systems, our prototype does not make user lazy.

→ We are utilizing recycled/used items to build our prototype.

- How is your invention different from others that may already be on the market? If it is similar, what did you do to make it better? How is it different?

  - Interaction with user makes our invention kind of unique
  - Our invention does not perform any action automatically, it reminds user to perform right action which prevents users from developing laziness.
  - It is also a cost effective solution.

- Who is your target audience? Who would use your invention?

  kids – K-12 and grown-ups

Some creative attention-getting techniques you can use are:

- Alliteration (using the same first letters or sounds): "Kit Kat"
- Rhyming: "Light Bright"
- Alternative spelling: "Sno Bal"
- Using numbers in the name: "Super Clean 3000"
- Describing the function of the invention: "Hydro-Blast"

- Based on this analysis, what are some good names for your invention?
  - Attention seeker
  - Habit builder 2020
  - Action Reminder
- Which name do you like best and why?

  Habit builder 2020
  We think this name is more suitable because it reflects the main function of our invention.

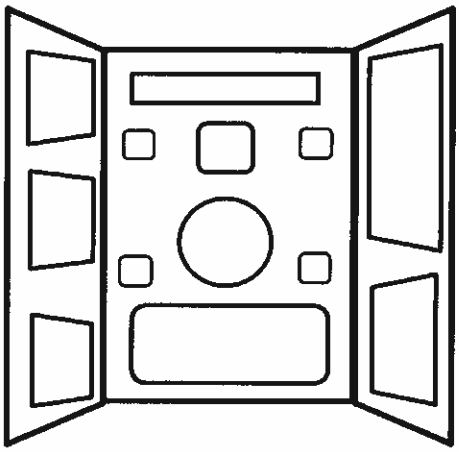
Planning and Creating the Invention Display Board (Communicating)

18. Create your display board. This is an example of what a Display Board might look like, but you can make it look however you want. This is your invention and your display, so use your creativity to tell the story of your invention the way you want.

    Be sure you use:

    - Fonts that are readable (style, size, color)
    - Colors that look good together
    - Shapes that are the right size
    - Correct grammar and spelling
    - Proper punctuation

    Maximum size: With the wings folded in, the Display Board can only take 24" of table space. However, you are allowed to open up the wings during your Judging Circle presentation.



Your Display Board MUST contain the following information in one consolidated place on the poster:

- Student(s) Name(s)
- Project Name
- Student(s) Grade(s)
- Student(s) School
- School City, State
- Preferred Industry-Focused Award Category (e.g. Telecommunications)
- Patent Status (three options: None, Under Counsel, or Patent Pending)

Students should note "Patent Pending" on their posters for Patent Status **only** if a provisional or non-provisional patent application has been officially filed with the USPTO. If you are currently represented by an attorney or patent agent (pro bono or otherwise), then mark "Under Counsel." It is possible to be both "Under Counsel" and "Patent Pending", or just "Under Counsel", or just "Patent Pending" (if you did the filing yourself).

You might also want to add this information:

- Images showing you building or testing
- How the invention was made
- How the invention is used
- The biography of the inventor
- Text which supports and explains any pictures, drawings, charts, etc.
- What scientific principles were used in your invention? (e.g. buoyancy, heat transfer)
- What engineering disciplines were used in your invention? (e.g. electronics, optics)
- Testimonials from users, research results
- Any other information about the invention that will help explain it, what it does, or why it is good

Practicing What You Will Say About Your Invention (Communicating)

19. Be prepared to answer questions. Here are some questions that you might be asked in the Judging Circle by the judges or fellow students. To help you prepare, you might want to write down some of the important parts of your answers so that you have them when you practice giving your presentation.

- How did you come up with the idea for this invention?

- What people, situations, or conditions does this problem affect?

- How did you think up your solution to the problem?

- Where did you get the materials for the invention?

- Who helped you build the invention and what did they help you do?

- Are there other, better materials you could have used that would improve the invention?

- Who has used your invention and what did they think about it?

- What changes might you want to make to your invention?

20. **Be proud of what you have done. You will use the problem-solving and communication skills you have gained here throughout your life and career. Congratulations on what you've done!**

Blank Page(s)

These blank pages are available for you to add anything to your Invention Log that will help explain what you did, how you did it, and what the results were. This could include drawings, calculations, descriptions, test results, etc. Multiple copies of this page can be inserted anywhere you want in the Invention Log.