



Challenge Resource

Challenge Project Template

Step 1: Making Observations

Look around you; think about problems you see in the newspaper, on social media, or TV. **Action:** Make a list of observations.

Things to think about:

- What kinds of problems are in the news or on social media?
- What kinds of problems do you see in your community every day?
- What kinds of problems do you hear your family members or friends discussing?

Step 2: Identify the Problem

Now that you have made observations, identify the main problem that could be the cause for the observation.

For example: Parents traveling though security have a lot to pay attention to and small children can often walk away when they are not looking. **Action:** Identify a problem for each of your observations.

Things to think about: (For each observation)

- Why does the problem exist?
- What are some of the circumstances that could have led to the problem?
- Who is involved in causing the problem? Is this a problem that affects your community? Other communities?

Step 3: Narrow Down Your Problem

Most problems have solutions, but some can be solved easier than others. Take a look at your list and choose your top three ideas. You might want to do some research to determine which of your problems would have the best possibilities for a solution. Which interests you the most? **Action:** Narrow your list of problems down to 3.

Things to think about: (For each problem) Which problem...

- most interests you?
- seems the most important to help solve?
- provided you with the most facts during your research?
- provides you with the best opportunity to use science to solve the problem?

Step 4: Brainstorming Solutions

Now that you have narrowed down your options, you have to give some serious thought to possible solutions. For each of the problems try to develop at least two workable solutions. Keep in mind that we are looking for NEW, innovative solutions. Action: Brainstorm ideas/solutions that will impact your problem.

Things to think about: (For each problem)

What is a possible solution that...

- best uses science/innovation?
- best involves something NEW?

Other questions may include:

- Does your possible solution rely on getting the cooperation of others?
- What types of materials might you need to develop your solution?

Step 5: Focus on One Idea

Now it is time to decide. Take a look at all of your ideas. Which one would have the greatest impact on people around you? Which seems the most interesting to work on? Which has the most promise for innovation and creative ideas? Which lends itself the most to the scientific process? Action: Pick one idea for solution.

Things to think about:

- Which are you most interested in?
- Which seems to be the most feasible?
- Which solution is best suited to be scientifically explored?
- Which solution involves the most creative idea for an invention?

Step 6: Elaborate on Your Idea

Action: Describe in detail your solution to the problem.

Step 7: Research

Gather as much information as you can about the problem. Has anyone else tried to solve this problem? What are some other solutions that have been tried? Have they worked? Why or why not?

Action: Keep notes about your research.

Things to think about:

- What other solutions to this problem have been tried (if any)?
- Why do you think your solution will work?

- How will the solution you propose help solve the problem?
- What challenges or problems might exist with your solution? How might you overcome them?

Step 8: Your Plan

This is the part of your scientific process that is very important. You have no way of knowing for sure if your idea will work. You must come up with a plan to test it.

Things to think about:

- What does it mean to have a “testable” solution?
- What are the variables involved?
- What are the logical steps to our tests?
- Why is it important to plan?

Your Hypothesis: (A testable solution to a problem)

Experimental Procedure: (What steps would you take to test your hypothesis)

Materials needed: (Make a list of all of the physical things you might need to gather)

Step 9: Conclusions

What do your observations help you to understand about your solution? Many times our conclusion is that we need to go back and try again. This is an important part of the scientific process. If you need to, go back to step 8 and start again. Fill in another planner for each test.

Things to think about:

- What do your results tell you?
- Do you have to refine your solution and test again?
- What changes do you need to make to your plan (if any)?
- How well does your solution affect the problem?

Step 10: Write out a script for your Young Scientist Challenge Submission Video

- Consider using a storyboard to help you plan what you will include in your video.
- Check out challenge video tips from previous winners.
- Don't forget that your video needs to be 1-2 minutes long and can only include you.

Step 11: Submit your video at [YoungScientistLab.com!](https://www.YoungScientistLab.com)