FINDING INTERESTING STEM PROJECT IDEAS

STEM projects usually begin as a question.

- Why does something happen?
- What effect does one object have on another object?
- How can a different design make something work better?
- Who is most likely to recycle? Or watch football games? Or have red as a favorite color?
- When a dog hears different styles of music, how does she react?
- Which method of washing hands removes the most germs?
- Where should an athlete strike a soccer ball to achieve the most power?

Look around you. What do you have questions about?

STEM projects can be discovered just about anywhere: in your classroom, on the internet, through the news, or from family and friends. You can find a STEM project idea while participating in a sport, playing a musical instrument, cooking a meal, listening to a podcast, taking a photograph, taking care of a pet, enjoying a video game, or even riding in a car.

You can also find a STEM project idea when you wish someone would invent a new product or process that makes everyone's lives better. Bathroom cleaning robot? Virus-removing air filter? The longest lasting battery ever? Maybe that inventor is you!

What interests you? Let's make a list of three to five things that raise your curiosity.

1.

2.

3.

4.

5.

Here is our example!

1. Animals
2. Ice skating
3. Solar Panels
4. Trees
5. The International Space Station

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Now you have a list of potential topics for your STEM project!

But how do you take something that interests you and turn it something that you can play around with through testing and experimentation? One way to start is to take one of your interests and think of as many questions as can.

Here's our example!

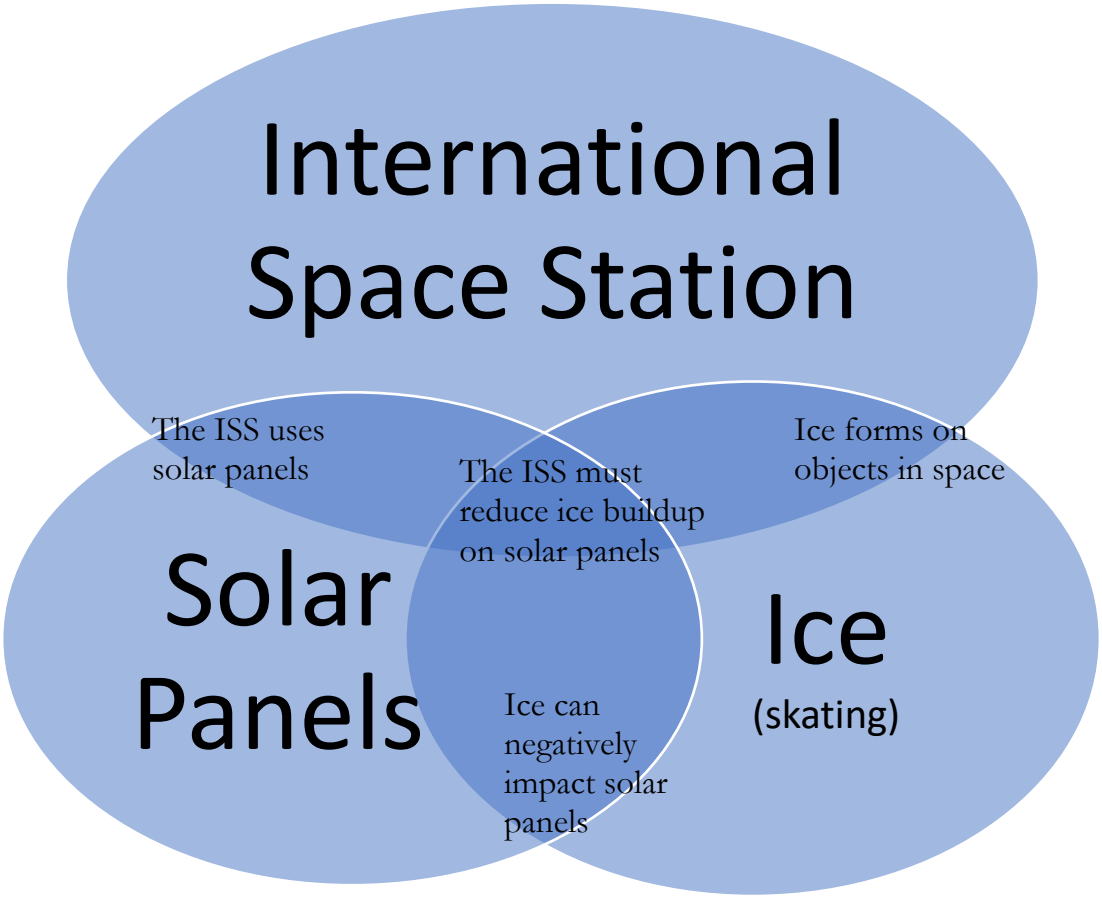
Let's brainstorm a set of questions about one item on your list.

You can brainstorm on your own, with a group of classmates or friends, or with members of your family. Remember there are no bad questions--write them all down! We can figure out which questions might make a good STEM project later.

If you have several interests that have overlap, you can create a Ven Diagram to help you find ways a project could include several things that you have questions about.

Inside each circle, you can create a list of questions about the topic or a list of things you already know about the topic. You can also list the characteristics of each item. You might be surprised how your interests relate to each other. If something you are writing down applies to more than one interest, you write it in a portion of the diagram that overlaps.

Here's our example!



Pick two or three items from your interest list. Write them here:

_____.

On a blank sheet of paper, fill in a Ven Diagram about your selected topics.

Does where the items overlap (or where they'd don't overlap) help you think of a potential STEM project? Notice that a strong question for a STEM project is a question that allows you to gather results you can observe and measure.

NARROWING YOUR QUESTION

Sometimes we have more questions than we can answer with one STEM project.

How do you go about narrowing your project to one question that you can answer with a bit of time and effort? Let's go back and think about a project involving trees, because trees are pretty much all around us. Picking a project that has materials you can easily access is a great idea for a first-time STEM project.

Each general question in our example could lead to many possible STEM projects, and many of our questions can be interrelated.

- Questions like "How do trees grow?" and "What do trees need to survive?" could lead to a project that:
    - measures the growth of sapling trees (or some other plant) based on soil types,
    - determines a range for how much water a sapling tree needs for strong growth,
    - looks for the impact of hazy skies, which decrease sunlight, on tree growth.
- Questions like "How do trees impact their surroundings," "Where do you find trees," and "what types of trees are there" could lead to a project that:
    - surveys the number of trees on one block of your neighborhood compared to the number of trees on another block in another neighborhood,
    - measures the estimated age of trees in your neighborhood and compares that age with another area in our community,
    - determines what sorts of trees are planted annually by our Parks and Recreation department and discovers which of those trees survive beyond a set number of years,
    - analyzes maps of our community to see where more trees are needed to provide shade and avoid heat islands.

Pick one or two questions from your brainstorming session that interest you the most. How many different types of projects could you do that would help you learn something new?

Notice in our example above, we try to take a general question and narrow it to one aspect that can be tested. Don't forget that STEM projects can focus on general sciences (e.g. biology, chemistry, physics), engineering, computer programming, mathematics, mechanics, robotics, and much more.

1.

2.

3.

4.

5.

NARROWING YOUR QUESTION

Can you write a short description of your STEM project?

Before you begin your project, think about what sorts of information you need to collect to end up with a good set of results.

- What factor(s) will stay the same as you complete your project?
- What factor(s) will change?
- Is your project something that will take a lot of time?
- Will it need materials you don't have at school or at home?
- What information will you need to look up before you can begin your project?

Here's our Example!

I will measure the impact that smoke in the sky has on marigold growth over the course of one month. I will grow six marigolds from seed and put them on a sunny table. Five marigolds will be placed under containers I'll make of tinted plastic. Each will have a different level of opacity, which will mimic levels of smoke in Minnesota skies this summer. I will make a chart, note what date each marigold sprouts, and measure marigold growth at the end of each day.

Here's some space for you to write a description on your project:

Finally, run your project by a friend, someone at home, or a teacher.

Having someone else look at your ideas can often help you make your project even better. A friend might ask you a question about your project you hadn't thought of. Someone at home can help you know what sorts of materials you have on hand to complete your project. A teacher can suggest changes to your project to make it even better. Teachers can also help you find additional information, from books, magazines, or the internet, that you might need to complete your project.

Watch these short videos from NASA on doing a STEM project for even more inspiration!

https://www.jpl.nasa.gov/edu/teach/activity/how-to-do-a-science-fair-project/