



Information for Home Facilitators

Curricular Competencies - Questioning and Predicting, Planning and Conducting, Processing and Analysing, Evaluating, Applying, Communicating

Key Elements -

- identify the steps of the scientific method
- conduct background research on a topic
- Write a hypothesis
- Write a procedure in detail
- Conduct an experiment, record all data, share the results

Information for Students

In this project, you will be learning about the scientific method.

Do you like to bake? Let's pretend you do. You made cookies but decide they can be better. You go ahead and make another batch. Did you know you were using a not so formal form of the scientific method? Let us lay it out for you!

- "These cookies are good, but I bet they could taste better" (Observation)
- "Hmm, what ingredients could make them taste better?" (Question)
- "I bet *everyone* in my family will like these cookies better if I added butter instead of margarine and add some vanilla." (Formed a hypothesis)
- You make a second batch of cookies and keep all of the ingredients the same except the butter and vanilla. (Testing hypothesis)
- Put both sets of cookies out and ask your family to try them and tell you what cookie they preferred. (Analyze the results; was the hypothesis confirmed?)

We are using the scientific method quite a bit in our everyday lives without realizing it!

We all have questions about the world. What questions do you have? The scientific method is a process used by scientists to study the world around them. We will break down the scientific method into six steps.

1. Ask a question
2. Do some background research
3. Create a hypothesis
4. Conduct experiments or make observations to test the hypothesis
5. Gather and analyze the data
6. Draw a conclusion

Let's watch a video explaining each of these steps during an experiment

https://www.youtube.com/watch?v=qAJ8IF4HI20&feature=emb_logo

Let's look at the first step. One thing we need to make sure is that the question is scientific and testable. Can we collect data and answer this question? If so, it is a scientific question.

Step 2 is pretty straightforward. Take time to gather information about your question. Are there any keywords that need to be defined? Carefully read and collect information. Make sure you keep track of where you get your information from!

Step 3 is writing a hypothesis. A hypothesis is a possible solution to our question or problem. Hypotheses are based on the background information collected in step two. It's basically an educated guess on what the outcome will be. We will watch a video now to learn how to formulate a hypothesis.

https://www.youtube.com/watch?v=iMVuPjc1waY&feature=emb_logo

In step four we conduct experiments or make observations. This step is sometimes broken down into two different steps. Before we can actually conduct our experiment, we must write down the steps for how we will test the hypothesis.

- If we are doing an experiment, we must list the materials we will need. We must include the exact amount of items we will be using.
- We must make a list of each thing we will do. This is called a procedure. The reason we do this is that if someone were to ask how we conducted the experiment we can show the steps or if we wanted to re-do the experiment. Maybe something went wrong. You can go back and change a step and re-do the experiment. The best thing to do is write everything

down in detail so another scientist can come in and do the experiment without asking any questions.

- Once it is in writing, go ahead and conduct your experiment! Make sure you are following safety rules and recording every observation.

In step five, you gather and analyze your data

- While you are conducting the experiment, write down all important data that will help with your conclusion.
- In high school you will have to show your data in charts and tables; don't worry about that right now

In our final step, we draw our conclusions.

- What happened? Was it what you expected? Why or why not?
- In the conclusion, scientists answer the questions that the experiment asked. At this point, you look at your data and decide what it tells about your hypothesis. Is there anything that you could have done to make the experiment better? Share your results with others.

Here is another video that highlights the steps of the scientific method.

https://www.youtube.com/watch?v=ig7GNipg0ml&feature=emb_logo

You now have the opportunity to design your own scientific experiment. What interests *you*?

Are you stuck? Can't think of a topic? Here are some ideas below:

- Popcorn: Which pops better, fluffier or tastes better? (Pick one of those and a few brands)
- TV: Which channels have fewer commercials?
- Laundry soap: Test on stains soaking in jars of solution
- Ice: does ice melt faster in water or _____? (pop, juice, milk, etc)
- Paper towels: What brands soak the most water? How accurate are the sizes on the paper towel packaging?
- Gummy bears in different temperatures of water for 12 hours; which gummy bear will be the "biggest"? (this one will take a little longer)

Consider sticking to an experiment that can be done in a short time-frame. Although it is interesting to see how a plant will grow with certain liquids, it is hard to conduct this because plants take time to grow.

Here is your project checklist:

1. Pick a topic and come up with a *testable and scientific* question
2. Do a little research on the topic online
3. Come up with a hypothesis
4. Write a procedure for your experiment. Make sure every step is listed in detail and in the proper order.
5. Gather all material needed for your experiment.
6. Make sure you have paper and a writing utensil to record observations. You may choose to record some of your observations using a digital camera.
7. Present and share the information from your experiment in a typed lab report. Please follow the guidelines in the following document. Include all sections that are laid out in this document: [Writeup Guidelines](#)

In addition to your lab report, you may choose to present your findings by making a poster or slideshow .



SOCIALS

Information for Home Facilitators

Curricular Competencies

Use Social Studies inquiry processes and skills to — ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions

Key Elements -

- research information.
- summarize information.
- explain how things changed over time.

Information for Students

History can be divided into two categories:

- Our individual past – this is unique to each of us.
- Our collective past – this includes all of the past experiences we share

Think about your individual past: who are your parents and grandparents? Where were your great-grandparents born? What language(s) did you family members speak? What kinds of jobs did they have? What were their lives like? Like today, our ancestors faced daily challenges to meet their basic needs. They too had to build homes, grow food, and care for their children. They also needed to feel challenged in their lives, to experience art and culture, and to learn to get along with their neighbours.

Part 1:

Your first challenge is for you to do a little research on your individual past.

Interview an older person (this could be done by phone or facetime)- perhaps a relative, a neighbour or a family friend - and find out what life was like when they were young.

Record the interview (with permission) or take point form notes. Some questions you might like to ask include:

- What year were you born and in what country?
- What language(s) did people speak in your family?
- What kind of work did your parents do?
- Who was the leader of your country when you were born?
- What were the most popular movies/books.musicians when you were young?
- How much did a chocolate bar/popsicle cost when you were young?
- What did you and your friends do for fun?

The following questions are a good guide to help you when reviewing the answers to your questions. Compile all of your final information into one or more paragraphs. You might also like to include a photo of this person.

- What is their full name?
- When and where were they born (approximately)?
- What do you think was the most interesting thing(s) you learned in your interview and why did you find this so interesting?
- Was there anything that surprised you about the answers to your questions and why was it surprising?

- Is there anything else you would have liked to ask them and didn't (and why you didn't)?

Part 2:

Our collective past includes important people from a specific time period who had an impact on society, important events from that time period that had an impact on society and important objects from that time period that had an impact on society.

When you think of the collective past you share with people your age ask yourself.....

- What important people would be part the collective past for someone my age?
- What important objects would be part of the collective past for someone my age?
- What important events would be part of the collective past for someone my age?

Let's take some time to consider some important objects that are part of a collective past and look at how they changed over time.

- Which of these telephones is part of your collective past?
- Which one is part of your parent's collective past?



Ask your parent or home facilitator this question: How have the changes that have taken place, with something simple like a telephone, changed our lives?

Your task is to consider an object from the collective past of either your parents or grandparents and compare it to your collective past. How has that object changed over time? Questions you might try to answer in your research might include:

- What did the technology look like for your parents or grandparents?
- What does the technology look like now?
- How is it made and has that changed over time?
- Is it just as useful/important as it originally was or has it been replaced by something else?
- How did the changes impact people's lives?

See below for examples of objects you might research:

- Sports Equipment
- Automobiles
- Cosmetics
- Fashion
- A household appliance (example: microwave, refrigerator)
- A power tool (example: lawnmower, chainsaw)

Tools and resources from the Saanich Schools BC Digital Classroom will help support your investigation:

<https://learn.saanichschools.ca/course/view.php?id=71>

Login - 63nor Password - Library

When you have completed your research. Create a poster, slideshow or well-written paragraph that describes the object and how it has changed over time. Also describe how this change has changed society as a whole.

***Note - These projects are based on ideas and resources from SIDES (South Island Distance Education)