

Scientific Method, Skills, and Safety

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Scientific Method, Skills, and Safety 5E Lesson

Grades 7-10	Scientific Method, Skills, and Safety	Ongoing Less
Lesson Objective: Students will learn about: - Scientific literacy - Lab safety - The scientific method - Significant digits - Scientific notation - Metric conversions		
Possible Student Misconceptions: - Science is complete. - Science is a collection of facts. - There is no creativity in science. - Scientific ideas are absolute and unchanging. - Because scientific ideas are tentative and subject to change, they can't - Science proves ideas. - Good scientists are the ones who are right most often.		
Materials: 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 - A means of projecting a PowerPoint presentation - Internet access - General classroom objects		
Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve the icon while in slideshow mode and it will automatically open for you. If it reason, right-click on the image and click Edit Hyperlink or something I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I don't believe in long lessons. If you feel your students are losing their Stop the PowerPoint and give them a 5-minute break. If you'd like to recommend my video collection here - http://www.teachwithfergy.com/ are tons of brain-break videos to choose from all grouped by category.		

Scientific Method, Skills, and Safety – 5E

Engagement Phase Your students will watch the video 'Scientific Literacy – Neil deGrasse Tyson' and complete the following. - Watch the video and answer the questions. The video can be found here - https://www.youtube.com/watch?v=gFLYe_YAQYQ Teacher Notes: - The video is about 3 minutes long - You may need to show the video more than once or pause when an answer is given to one of the questions.	Du Te lea un
Exploration Phase Exploration – Lab Station Activity - In groups of 2-3, have your students complete <i>Exploration – Lab Station Activity</i>. Once they're done, they will submit their passport to you. Teacher Notes: - The complete instructions for my Lab Station activity can be found in the <i>START HERE – Instructions</i> file.	Du Te lea un
Explanation Phase PowerPoint Lessons - The lesson is found in the folder – <i>Explanation – Scientific Method and Skills Lesson</i> - This lesson is designed to be completed over two days - There are multiple embedded videos, activities/worksheets, and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson - The lesson covers the following topics: - Scientific Literacy - Science Lab Safety - WHMIS, MSDS, HHPS - Observations vs. Inferences - Significant Digits/Figures - Scientific Notation - The Scientific Method - Metric Conversions Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ	Du Te lea un pre

- I have also enclosed a .PDF version of both the teacher and student versions.

Elaborate Phase Elaborate – Lab Activity Your students will complete – <i>Elaborate – Scientific Method Lab Activity</i> . This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.	Duration: 1 hour Teacher Role – Facilitate learning and keep students focused Goal ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Teacher Notes: - Students will work individually or in small groups - Students will need one device per group.	
Evaluate Phase Quiz Have your students complete - <i>Evaluate – Scientific Method and Skills Quiz</i>	Duration: 30 min Teacher Role – Distribute and collect evaluation Goal ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress
Teacher Notes: - It's sometimes best to have the students peer evaluate - Placing students in small groups and having them exchange papers to mark will accomplish two things 1) Provide immediate feedback on the questions they just completed 2) Significantly reduce your marking time - Peer evaluation is not needed, only suggested when appropriate	

Each phase is clearly described

A Complete Lesson

Scientific Literacy

- Scientific literacy helps people to understand and evaluate information relating to science and technology in the world so that they make better decisions
- A general understanding of science is necessary to be an informed citizen
 - Why?
- Specific scientific knowledge and skills are necessary for a wide range of careers
 - Like?

← Make sure your students are on track

Student copies with blanks

Videos embedded right into your slideshow

Conversions (1st Way)

- How many cm are in 2.45 m?

• _____

$\frac{? \text{ cm}}{2.45 \text{ m}} = \frac{100 \text{ cm}}{1 \text{ m}}$ multiply both sides by 2.45m

$\frac{? \text{ cm} \cancel{(2.45 \text{ m})}}{\cancel{2.45 \text{ m}}} = \frac{100 \text{ cm} (2.45 \text{ m})}{1 \text{ m}} \rightarrow ? = 245 \text{ cm}$



Safety Video

Interactive and Engaging Activities

Paper Airplane Scientific Method Lab Activity

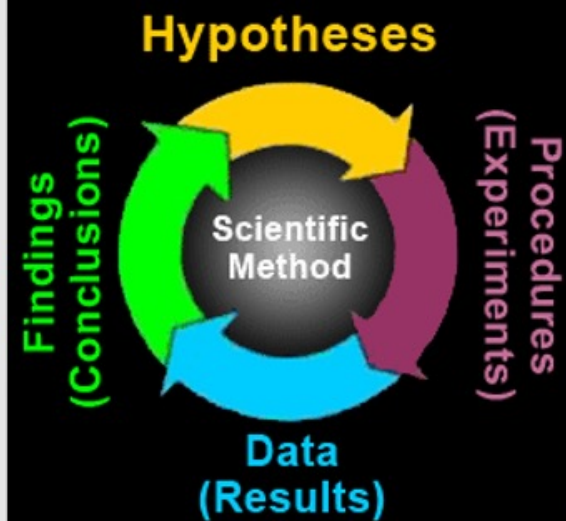
Includes:

- An overview of each lab component
- Complete Marking Rubric



A fun introduction/review
of the Scientific Method

Scientific Methods and Skills Lab Station Activity

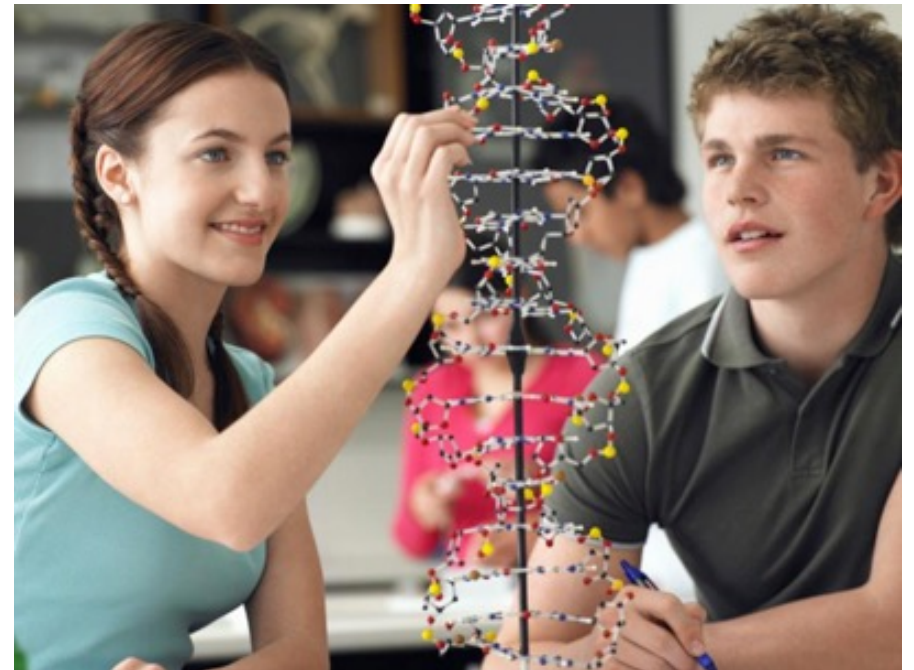


7 Lab Station Activities to get your kids
out of their seats and engaged in their
learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

