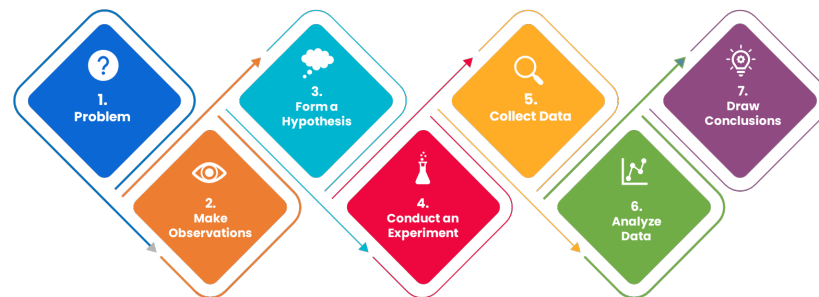


A Walk Through the Lab Report



Scientific Method Step	Description	Teacher Action	Student Action	Example
I. Problem	The teacher will pose a question that relates to the current content in the form of a problem that must be solved.	Record the question on the lab reports or instruct the students to record it.	Write down the question or think about the question.	How can you determine the difference between a chemical and a physical change?
II. Make Observations	Students use resources provided by the teacher that are aligned to the question to gain background information. This may be websites to visit, an article to read, a demonstration to watch, etc.	- Ask questions . - Provide resources and ideas to students. - Perform a demonstration. - Prompt students to describe their observations.	- Ask questions . - Utilize the resources provided to learn more about the problem. - Participate in small group discussions. - Watch a demonstration, if applicable.	Students are given a list of pictures labeled either chemical or physical change. They are asked to observe the pictures and share their thoughts within their group before recording them.
III. Form a Hypothesis	Students will individually record their hypothesis on their lab report. They may be different than their group members.	- Provide ideas and assistance as needed to help students form their hypotheses. - Facilitate students sharing their hypotheses out loud with the class.	Based on previous observations, students will individually predict the answer via their hypothesis and record it on their lab report.	One student writes, "The difference between a chemical and physical change is that chemical changes create something new." Another student writes, "The difference between a chemical and physical change is that physical changes only change how something looks."
IV. Conduct an Experiment	Students will design steps for their experiments so they can investigate their hypotheses. Depending on their age and ability, materials will be provided or the teacher may assist students in designing the experiment.	- Provide age-appropriate guidance on experiment set-up. - Set up necessary materials and supplies on each lab table. - Monitors behavior and appropriate use of materials. - Asks probing/guiding questions to each small group.	- Using observations and equipment provided, students will design their own series of steps, and then perform those steps. They will record these steps on the lab report. - If using a pre-designed lab, they can either copy the steps onto their lab report, or staple them to the report itself.	The teacher has chosen a lab from the internet that aligns appropriately with the question. Because the lab is relatively straightforward and because her students already had experience conducting their own experiments in the past, she asked them to set up the experiment themselves and test their hypothesis.

Scientific Method Step	Description	Teacher Action	Student Action	Example
V. Collect Data	Students will create graphs, tables or record observations from their investigation	Based on age or ability, the teacher may provide the graph/table template, or they may depend on students to know which graph/table to use.	- Students will fill in data as they collect it. - If age-appropriate, they will design their own graph/table. - Record their data on the lab report.	The teacher suggested that students construct a table to quickly identify the properties of their vinegar solutions before and after the experiment. As students work, she also provides them with criteria to consider, such as color, temperature, phase change, or volume change.
VI. Analyze Data	Once data is collected, students are given the opportunity to analyze it in various ways. Analysis questions can help guide them to relevant conclusions, while small and large group discussions can help students collaborate on their ideas.	- Provide analysis questions on the lab report for students to discuss as a small group. - Facilitate conversations and ask probing questions during small group and large group discussions.	- Evaluate their data to answer questions provided by the teacher. - Defend or support their ideas with group members.	Students answer the following questions: - In your first experiment, how did the vinegar change after you added the food coloring? - In your second experiment, how did the vinegar change after you added the baking soda? - Was something new made in your experiments? Why or why not? - What characteristics indicate to you that a chemical change occurred? In what experiment did this change occur?
VII. Draw Conclusions	Students will use their claims and evidence to write an appropriate conclusion. Their conclusion should answer the problem posed by the teacher, address if their hypothesis was correct/incorrect, and include	- Provide rubrics for a successful conclusion if necessary. - Work 1:1 with students who struggle to reach a valid conclusion. - Re-teach individually as necessary.	- Students will use their hypothesis and data to answer the question posed in the problem from their lab reports. - They will individually write their own conclusion on their lab reports.	Sentence stems are provided to guide students to include all elements of a valid final conclusion. Students individually wrote their conclusions, then discussed them as a group. The teacher made a point to praise their thorough investigation during the whole group discussion and continue the conversation about the characteristics of chemical changes.