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| **Main Topic:** Scientific Method**Learning Objectives/Outcomes:** |
| **Topic 1:** The Scientific Method | **Topic 2:** Question, Research, and Hypothesis | **Topic 3:** Experiment | **Topic 4:** Data Analysis, Conclusion, and Communication |
| **Ideas****What is the scientific method?****Do scientists always follow the scientific method exactly as it is written?****What are the steps of the scientific method?** | **Ideas****What is the point of asking a question at the start of a scientific investigation?****Should the question be broad or specific?****What is the problem with asking a very broad question?****Why is it important to conduct background research?****What kinds of sources should be used in research?****Do all sources need to be documented?****What is a hypothesis?****What qualities should a good hypothesis have?****What are the three ways a hypothesis can be written?****Can a hypothesis be wrong?****Should a hypothesis be changed if the experimental results don’t support it?** | **Ideas****What is an experiment?****Besides describing how to perform the experiment, what important information should a procedure contain?****How detailed should an experimental procedure be?****What are variables?****What is the independent or manipulated variable?****Why do scientists generally only have one independent variable at a time?****What is a dependent or responding variable?****What does it mean if there is a direct link between an independent variable and dependent variable?****Can there be more than one dependent variable in an experiment?****What is a controlled variable?****Why is it important to have controls?** | **Ideas** **What are data?****What kind of information can be considered data?****How can data be recorded accurately?****Why should data be recorded in an organized and accurate manner?****Why do scientists analyze data?****How do scientists analyze data?****What does it mean if differences exist in the dependent variables between the control and test groups?****What does it mean if NO differences exist in the dependent variables between the control and test groups?****What is a conclusion?****What elements should a conclusion include?****Why do scientists communicate their results?****What are some ways scientists may choose to communicate their results and conclusions?** |
| **Key Vocabulary****Scientific Method:**  | **Key Vocabulary** **Hypothesis:**  | **Key Vocabulary****Experiment:** **Independent/Manipulated Variable:** **Dependent/Responding Variable:** **Controlled Variable:**  | **Key Vocabulary****Data:** **Conclusion:**  |
| **Pictures** | **Pictures**  | **Pictures** | **Pictures** |