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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** |