Primary Literature in the Science Classroom
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Background
Frenchtown High School is a small rural high school outside of Missoula, MT. There are 400 students who attend the high school. The demographics at the high school are about 87% White, 3% American Indian or Alaskan Native, and 3% Asian. Frenchtown has rigorous graduation requirements for math and science, every student must take three years of math and science. Because of this requirement, there are many students who sign up to take Chemistry their junior year. There are three sections of Chemistry at Frenchtown with about 15 students in each section. In the Chemistry classes there are 8 seniors, 40 juniors, and 1 sophomore. There are also more girls in the class than boys.

Introduction
In recent years there has been a lot of attention on the state of science education in the United States. The attention to science education has been raised due to student performance on such tests as the international PISA and ACT Science. These assessments show that students in the United States are performing at decreased levels in the sciences, demonstrating a lack of preparation for STEM degrees and careers. This decreased performance reveals the need for students to be exposed to authentic scientific inquiry practices in the classroom. One of these practices should be teaching students to read scientific articles, since scientists spend a majority of their time reading.

Research Questions
Focus Question: How will the incorporation of scientific texts and implementation of reading strategies to comprehend these texts affect students’ understanding of the scientific practices and how scientists employ these practices.

Sub-Question: How will the incorporation of scientific articles affect students’ cognitive development level?

Table 1: Triangulation Matrix

<table>
<thead>
<tr>
<th>Questions</th>
<th>Data Source 1</th>
<th>Data Source 2</th>
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<tbody>
<tr>
<td>Focus Question: How will the incorporation of scientific texts and implementation of reading strategies to comprehend these texts affect students’ understanding of the scientific practices and how scientists employ these practices.</td>
<td>Views About Scientific Inquiry (VASI)</td>
<td>Concept Maps</td>
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<tr>
<td>Sub-question: How will the incorporation of scientific articles affect students’ cognitive development level?</td>
<td>Classroom Test for Scientific Reasoning (CTSR)</td>
<td>Views About Scientific Reasoning (VASI)</td>
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Results
Students took CTSR and VASI pretest
Students were given adapted article, read introduction, and created a concept map
Next students elucidated a hypothesis for the various experiments in the article.
Students were provided with data section, analyzed the data, and determined conclusions using the data.
Finally students thought of the next experiment based on the conclusions, and created a final concept map
Students took VASI and CTSR posttest

Discussion

- There was a 0.5 point increase in the median score from pre to posttest scores on the Classroom Test for Scientific Reasoning for the treatment group.
- The number of informed responses for Question 2, 4, and 5 on the Views About Scientific Inquiry assessment increased.
- Various aspects of reading comprehension measured using concept mapping, increased from the first to second article.
- These three different data sources demonstrate a positive correlation between increased ability in scientific reasoning, understanding of scientific inquiry, and comprehension of complex scientific texts by incorporating primary literature texts into the classroom.