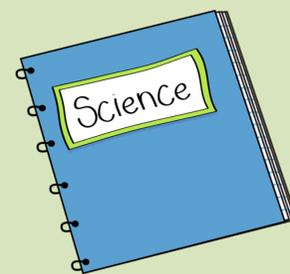


EFFECTS OF FOCUSED LITERACY TECHNIQUES ON SCIENTIFIC WRITING SKILLS IN THE CHEMISTRY CLASSROOM



Background

I conducted my capstone in my college-preparatory Chemistry classes at South Burlington High School in Vermont. The topic was chosen based on observations of students who lack the reading skills to conquer technical scientific text and therefore lack the skills to effectively write using data and evidence. As the workforce shifts to STEM careers, the ability for students to analyze data in writing and graphics, as well as effectively communicate data and ideas through writing, is ever more important. I believe that in order to produce more well-rounded, career-ready, informed citizens, high-school science teachers need to focus on literacy techniques within the science classroom.

Focus Question

Will the focused use of literacy techniques allow students to demonstrate their understanding of content specific language and data analysis through writing?

Secondary Questions

1. Will literacy techniques increase student comprehension of content specific language?
2. How do focused literacy techniques increase students' ability to argue with supporting evidence?
3. Are students better able to think like a scientist throughout the intervention?

Data Collection Tools

Research Questions	Data Source		
	Secondary Question 1	Pre-intervention writing sample (language)	Annotated student work
Secondary Question 2	Pre-intervention writing sample (data/evidence)	Tiered Questions	Post-intervention writing sample (data/evidence)
Secondary Question 3	Student survey pre-intervention	Student attitude survey and interview questions	Student survey post-intervention

Treatment

Of the six chemistry classes at South Burlington High School, three classes underwent the treatment phase. During the 'Gas Laws' and 'Solutions' units taught in Chemistry, student activities were centered around the use of scientific literature. Students were exposed to focused instruction on how to annotate articles, read scientific figures, and how authors use data and evidence to generate claims. Students in the treatment and non-treatment group partook in a writing activity and self-assessment survey for comparison.

Results

The study showed an increase throughout the treatment phase of student ability to write using content specific language and using evidence. Synthesizing information from multiple sources and using data as evidence continues to be a challenge in written work. Students responded favorably to the value of dedicating class time to learning scientific writing skills. I recognized that utilizing 15-30 minutes of class time a few times a week did not minimize the content able to be taught.

Percent of Total Responses to Student Attitude Survey Post-treatment (N=63)

	I have learned literacy skills in a science classroom before	I think all science classes should incorporate some sort of literacy-based activities.
Positive Response	47%	67%
Neutral/Not-Sure	24%	29%
Negative Response	29%	3%

Percent Change from Pre to Post-treatment (N=63)

