

Writing-To-Demonstrate-Knowledge: Science

What is it?

When writing-to-demonstrate-knowledge, students show what they have learned by synthesizing information and explaining or applying their understanding of concepts and ideas. Students write for an audience with a specific purpose. Products may apply knowledge in new ways or use academic structures for research and/or formal writing.

Form/Format: Argumentation

In argumentation a claim is developed and proven using logical reasoning and examples. The writer also rebuts arguments of the potential opposition to the claim. Adapted from Karbach, J. (1990). Using Toulmin's model of argumentation. *Journal of Teaching Writing*, 81-91.

What does it do?

- Deepens students' understanding of science content.
- Promotes critical thinking, analytical skills, and logical reasoning.
- Prepares students for the ACT and postsecondary writing expectations.

How to implement:

Teacher...


- Introduces students to the vocabulary and format appropriate for argumentation.
- Provides examples and non-examples of logical thinking and argumentation (i.e. trial lawyer movies).
- Provides opportunities for students to debate and/or argue positions in a systematic, logical format (Socratic Seminar, Formal Debate).
- Models how to use a template for planning the argumentation process.

Students...

- Research both positions of a controversial science related issue (i.e. use of nuclear power).
- Use a template to preplan their arguments, identifying both pro and con points.
- Prioritize their arguments according to importance.
- Organize their piece (Title, Introduction, Body, Conclusion) and develop a draft argumentation paper.
- Use criteria provided to self-evaluate and peer-evaluate draft. The following questions can be used as a guide:
 - *What was the position or claim?*
 - *What grounds were used to convince the reader to agree with the claim (reasons why, data, evidence, and facts)?*
 - *Is a tight argument established between the grounds and claim?*
 - *Is the information provided relevant and accurate? Is a rebuttal provided for potential counter arguments?*
 - *Is the case presented logically and is it adequately summarized?*
- Revise document, moving toward publication.

Prewriting Template

Least Significant Argument



Most Significant Argument

My Main Argument(s)	The Counter Argument(s)
Argument (claim): Support (evidence):	Argument (claim): Support (evidence):
Argument (claim): Support (evidence):	Argument (claim): Support (evidence):
Argument (claim): Support (evidence):	Argument (claim): Support (evidence):
Summary Argument	Summary Argument

Example: Position Paper

As a performance assessment task for a science unit, students take a position on a controversial societal issue related to the scientific concepts addressed in the unit.

Environmental Issue Advocacy Plan

As a member of an Environmental Advocacy Committee you have been asked to evaluate a situation that endangers a given ecosystem. Different solutions to the problem have been proposed. You will take a position on which solution is best and defend your position. You and your committee must convince the community that the solution you propose is not only the best option, but is also both workable and realistic.

Your position paper will include:

- *An analysis of the ecosystem in question (i.e. shoreline).*
- *A clear definition of the scenario problem (i.e. drilling offshore, construction of a new condominium complex on the shore).*
- *A workable/realistic solution to the problem with justification for the proposed solution (i.e. regulations that should be enforced).*
- *An alternative solution that may be proposed and why this option is less desirable.*