

# Writing T-Chart Cubing

## CIP 15.9999 Engineering Technologies/Technician

**Draw evidence from reading to support writing.**

Program Tasks:	PA Core Standard: CC.3.6.11-12.H
301: Analyze current professional engineering codes of ethics. 302: Analyze ethical engineering issues. 303: Analyze and explain ethical and technical issues contributing to an engineering disaster.	Description: Draw evidence from informational texts to support analysis, reflection, and research.

Program Associated Vocabulary:	Reading Associated Vocabulary:
National Society of Professional Engineers (NSPE) NSPE Code of Ethics Competitive bidding Antitrust laws Engineers' Creed	Describe Compare Associate Analyze Apply Argue Argument Explanatory Informative

Program Strategy:	Literacy Strategy:
<p>Use the cubing strategy to have students examine a topic from multiple perspectives before writing.</p> <p>After introducing the cubing strategy and before starting the project, present the following prompt to students.</p> <p><i>You are a team member of the New Wave Engineering Consulting Team. Your company provides consulting services to engineering companies that have had lawsuits filed against them. Last year, your company had its first consulting contract with a company that was sued due to a bridge collapsing. The CEO of that company has asked for additional trainings.</i></p> <p><i>As engineering technicians, your team has been asked to create a follow-up presentation on the</i></p>	<p><i>Whole Group</i></p> <p>Introduce the concept of cubing. Divide the class into small groups or pairs. Identify one topic to use for the exercise. This may be a major earlier concept related to the class or something about which all students would have some knowledge (e.g., college, democracy, family, comedy). Assign each team one of the six sides of the cube. Walk through questions for each of the six verbs to help students get started.</p> <ul style="list-style-type: none"> <li>• Describe it: How would you describe this topic/issue/event/person? Describe key characteristics/points/and/or attributes including size, shape, and colors.</li> <li>• Compare it: What is it similar to?</li> <li>• Associate it: What does it make you think of? How does the topic connect to other topics/issues/subjects?</li> </ul>

## Program Strategy:

*unethical practices of engineering. You have been advised to use this [online resource](#).*

*The presentation should focus on an inadequate bridge plan and the NSPE Code of Ethics. Your manager wants to make sure this presentation makes an impact and has highly recommended including multimedia in your presentation.*

After students have read identified texts or conducted independent research, have them participate in a cubing strategy to review what they have learned and prepare for writing.

Provide students with a cube with the prompts: describe, compare, associate, analyze, apply and argue. Have pairs or teams of students complete a cubing exercise for bridge plans and NSPE Code of Ethics.

Lead a discussion of possible answers by having each team roll their cube and respond to the perspective that lands on top. In some cases, that will mean that the same prompt appears more than once. Push students to think of different responses if that happens.

If students are not clear on any aspect, direct them to do further research before developing their presentations.

Have students use this analysis to develop an outline of their presentations.

## Literacy Strategy:

- Analyze it: Tell how it is made or what it is composed of. How would you break the topic/problem/issue/event/decision into smaller parts?
- Apply it: What can you do with it? How is it used? How does it help you understand other topics/issues/decisions/events?
- Argue for or against it: Take a stand and list reasons for supporting or not supporting it.

Have groups discuss their answers. Use this discussion to clarify whether students are addressing the specific prompt.

### *Guided Practice*

Provide a reading passage to student teams and have them complete the cube for the passage.

Have each group report their answers. Discuss any discrepancies.

Discuss how analyzing different aspects of a topic can help with writing. Have students defend their answers; some might be useful in both purposes.

- Which aspects would be most helpful for writing an argument? (likely answers: compare, analyze, apply, argue)
- Which perspectives would be most helpful for writing an informative piece? (likely answers: describe, compare, associate, analyze, apply)

### *Application*

Provide students with a writing prompt or scenario. Have them analyze the type of information they will need to support the writing. They can then use information they have already collected or research additional information to support the points they want to make.

In debriefing, use the following questions:

- Why is it important to understand what the different perspectives mean?
- Why is it important to identify different perspectives for a topic?
- How does considering the different perspectives help to plan writing?

Listen for:

- Understanding of what each perspective means
- Recognizing the importance of understanding a topic from many perspectives
- Understanding that the different perspectives help in developing important ideas in writing

## Instructor’s Script – Cubing

It is critical that students understand that topics often have many perspectives. Too often, we often look at only one side. This is especially important if students are presenting information to others.

Cubing requires students to look at multiple perspectives. It helps when analyzing reading passages as well as determining potential elements before writing.

### Common Mistakes Made by Students

Students often don’t think deeply about topics before they begin to write. Especially for argumentative writing, they need to consider all perspectives before writing. Not understanding a topic in depth leads to weak or faulty reasoning.

### CTE Instructor’s Extended Discussion

Hook students’ interest in engineering ethics by having them explore failure case studies and ethics. Assign student teams the case study in “[Failure Case Studies and Ethics in Engineering Mechanics Courses](#).”

Students can use the cubing strategy as teams prepare a presentation to share with the class.

### Sample Questions

#### Career and Technical Concepts

Question	Answer
A situation in which an engineer’s loyalty and obligations may be compromised because of self-interest or other loyalties and obligations is A. Conflict of interest. B. Conceptual issue. C. Concern of interest. D. Interaction rules.	A. Conflict of interest.

#### PA Core Reading Concepts

Question	Answer
If you were asked to analyze <i>democracy</i> , which statement would be an analysis? A. It is a popular form of government. B. One component is people selecting their leaders. C. Democracies and republics are very similar. D. The United States is a democracy.	B. One component is people selecting their leaders.