

## APPENDIX 5: ANALYSIS

The strategies used for *analysis* are primarily directed at developing students' facility with "pulling apart" ideas and issues, drawing comparisons, employing critical thinking skills, and contrasting several sides of an issue. The *Senior Years Science Teachers' Handbook* suggests a host of opportunities for students to be involved in analytical techniques (see *SYSTH*, Chapter 10: Building a Scientific Vocabulary and Chapter 11: Developing Scientific Concepts Using Graphic Displays).

The following learning strategies can be used in the science classroom to assist students in developing skills in analysis.

### Article Analysis Frames (See *SYSTH* 11.30)

The Article Analysis Frame focuses students' questions before and during reading. Students decide whether the article deals with facts or with issues, and then choose the appropriate frame.

- **Issue-Based Article Analysis** (See *SYSTH* 11.40 for Template)  
Students use the Issue-Based Article Analysis frame when reading articles that present a certain point of view about an issue under dispute.
- **Fact-Based Article Analysis** (See *SYSTH* 11.41 for Template)  
Students use the Fact-Based Article Analysis frame when reading articles that are informative but do not raise any concerns.

### Case Studies (See *SYSTH* 4.14-4.17)

Case studies provide students with opportunities to analyze and interpret scientific data, their interaction with technology, and their impact on society and the environment. Case studies are often used in place of laboratory investigations, where conventional laboratory work is difficult. Current research information and data looking at the various sides of the issue may be presented and analyzed. Decision-making based discussion may then take place.

### Concept Relationship Frame (See *SYSTH* 11.20)

A Concept Relationship Frame is designed to help students examine particular associations between concepts, such as cause/effect, problem/solution, either/or, or compare/contrast. A sample template follows.

Concept Relationship Frame (Comparing Science and Technology)		
	Scientific Question	Technological Problem
Context		
Goal(s)		
Method(s)		
Product(s)		
Value(s)		

### **Looking for Differences**

Students compare two different presentations of similar information (such as articles, videos, posters). They observe the various techniques and devices and assess the effectiveness of each.

### **Textbook Assessment** (See *Senior 3 ELA 4-142*)

Having students assess textbooks helps them develop their critical thinking, as well as their awareness of the organization of the text. As students analyze a group of similar texts, they observe the following:

- Are the graphs, diagrams, and tables clearly captioned? Do they appear on the same page as the text that supports them?
- How is new vocabulary presented?
- Where are the questions? Are they clear and well-written? Do they require students to synthesize, criticize, and/or apply information from the text?
- Do the authors illustrate ideas with real-life examples, photographs, and illustrations to which all students can relate?
- Is the reading level of the text appropriate for the intended audience?
- Is the text engaging to the intended audience?