

## Designing Effective Projects: Analysis Critical Thinking

### Searching for the Truth

When educators discuss helping students develop their thinking skills, they often refer to critical thinking as their goal. This term which is used frequently in educational circles generally means forming opinions by seeking out relevant information, thoughtfully and objectively evaluating the quality of the information, and changing our minds when new credible information comes to our attention.

Critical thinkers are always asking “Why?” or “How?” and are always on the lookout for relevant information. In addition to the ability to analyze and evaluate what they find out, critical thinkers also exhibit an inquisitive open-mindedness that drives them to seek the truth and the flexibility to change their minds when confronted with good reasons to do so.

The most persuasive argument for the teaching of critical thinking, however, is a picture of what the world looks like when people do not think critically. A non-critical way of looking at the world around us consists of blind acceptance of advertising, political statements, textbooks, print resources, and the positions of organizations and institutions (Messina and Messina 2005). Although critical thinking is often thought of as negative, as in the refusal to believe what is false, it also refers to the acceptance of what is true. Refusing to believe anything is no better than believing everything.

### Cognitive Skills

In 1990, a group of experts on critical thinking put together the *Delphi Report* which examined the concept of critical thinking and made recommendations for teaching it. Read more about their conclusions in the [Executive Summary](#)\*. (PDF; 20 pages)

The report lists the following skills and sub-skills involved in critical thinking:

#### Interpretation

- Categorization
- Decoding Significance
- Clarifying Meaning

#### Analysis

- Examining Ideas
- Identifying Arguments
- Analyzing Arguments

#### Evaluation

- Assessing Claims
- Assessing Arguments

#### Inference

- Querying Evidence
- Conjecturing Alternatives
- Drawing Conclusions

#### Explanation

- Stating Results
- Justifying Procedures
- Presenting Arguments

#### Self-Regulation

- Self-examination
- Self-correction

### Teaching Critical Thinking in Grade 6

In the Unit Plan, [Don't Trash the Earth](#), sixth graders exercise their critical-thinking abilities to make decisions about the environment. Their task is to evaluate the school's recycling and waste management practices. After analyzing current methods, teams develop a new recycling plan complete with cost analysis and supporting data, and present their proposals to the principal. In a final show of social responsibility, student entrepreneurs turn trash into treasure as they divert materials from the waste stream and turn it into attractive merchandise they sell at a holiday business fair.

To complete this project successfully, the students interpret the information they hear and read about recycling and waste management. They categorize the different methods of recycling to find those that are appropriate for their specific situation. They also decide which information is important to consider, and they get clarification for terms and concepts they do not understand.

As the students listen to speakers and find information in print and online resources, they analyze what they have found. They think about the arguments made for different types of recycling and think about their claims, the evidence that supports them, and the conclusions they draw. Based on what they see in the arguments, the students evaluate their resources, making judgments about which claims are reasonable, which evidence is credible, and which conclusions are logical. See the [Showing Evidence Tool](#) for a way to have students think about evaluating arguments and points of view.

As students become familiar with the content related to recycling and waste management, they exercise their inference skills by combining the knowledge they have acquired with their personal experiences to ask questions about the evidence they are reading. They also think creatively by putting what they know together and drawing conclusions about the consequences of the use of particular methods in their school. They can also develop new alternatives based on what they have learned.

Finally, students communicate their conclusions in a presentation to the principal. For this presentation, they explain the sources of their information and why they made the decisions they made.

### References

Facione, P. A. (1998). *Critical Thinking: What It is and Why it Counts*. Santa Clara, CA: OERI. [www.insightassessment.com/pdf\\_files/what&why98.pdf](http://www.insightassessment.com/pdf_files/what&why98.pdf)\*

Facione, P. A. (1990). *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction: Executive summary*. Millbrae, CA: California Academic Press. [www.insightassessment.com/pdf\\_files/DEXadobe.PDF](http://www.insightassessment.com/pdf_files/DEXadobe.PDF)\*

Messina, J. J. and C. M. Messina. (2005). *Overview of critical thinking*. Tampa Bay, FL: Coping.org