Baloney Detection: Suggestions for Teaching Critical Thinking in Museums

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Formal education has been increasingly concerned with teaching critical thinking skills. More and more universities are teaching courses and more and more courses (and textbooks) are incorporating critical thinking into their content. Critical thinking is basic to all types of education. It provides the learner with the skills for assessing the worthiness of voluminous amounts of information that bombards us daily. Critical thinking also allows us to assess the validity of others' arguments and persuasive messages. In an increasingly complex world, critical thinking is becoming one of the most basic survival skills! Factual information may be forgotten, but the ability to sort out credible information from baloney is a skill that can be applied through one's lifetime.

In exhibit design, the temptation is often to oversimplify in order to increase visitor reading. The danger is that the learner may fail to recognize the actual complexity of the subject matter. I think it is possible to deliver a complex message that encourages critical thinking and get visitors to read. Because of space limitations, I will focus only on critical thinking in this article. Here are a few suggestions for incorporating critical thinking into exhibit design:

1. *Provoke the audience to ask themselves questions.* Critical thinking requires questioning. A provocative question as a label heading may provide both the hook to spark interest in the topic and the mental stimulation to think critically.

2. *Confront misconceptions.* Exhibitions that incorporate front-end evaluation have a mechanism for identifying misconceptions. Confronting a misconception should lead to more ciritical thinking.

3. *Provide a model of scientific thinking.* Exhibitions that explain how a scientific explanation was developed can provide a model of critical thinking. How were alternative hypotheses ruled out? How was the evidence pieced together?

4. *Present alternative theories and viewpoints and encourage the learner to critique each one.* An example might be to discuss the evidence for each of the theories that attempt to explain the extinction of dinosaurs. What is the evidence for and against each theory?

5. *Point out the flaws in everyday thinking.* Common logical fallacies can often be incorporated into text when appropriate. Common fallacies include: attacking the person instead of the argument; appeal to authority; appeal to ignornace; begging the question; generalizing from one or a few cases; slippery slope; and creating a straw man.

6. *An individual's (or group's) opinion or theory should not be considered the ultimate authority.* Exhibit text should maintain skepticism with regard to arguments from authority figures.

7. *Critique examples of discarded explanations.* Why were these explanations not acceptable? What are the strengths and weaknesses of each argument? Is the theory testable?

8. *Caution the learner not to get overly attached to a particular explanation.* When we believe too strongly in a theory, we tend to find only evidence that confirms it, we are overly accepting of arguments that support it, and we are overly critical of arguments that disagree with it.

9. *Help the reader distinguish science from pseudoscience.* For example, you can point out how scientific explanations must be supported by careful observation. In addition, pseudoscience often uses fuzzy definitions that are difficult to quantify.

10. *Make publications available that encourage critical thinking.* Ask your museum shops to include books such as Carl Sagan's *The Demon-Haunted World: Science as a Candle in the Dark.*

Fortunately, many exhibitions do incorporate one or more of these suggestions into their development. We know that visitors won't remember much factual information. But, with careful planning, we could instill the ability to detect baloney.

Suggested Readings on Critical Thinking:

Feder, Kenneth (1990). *Frauds, Myths, and Mysteries: Science and Pseudoscience in Archeaology.* Mountain View, CA: Mayfield.

Gilovich, Thomas (1991). *How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life.* New York: The Free Press.

Piattelli-Palmarini, Massimo (1994). *Inevitable Illusions: How Mistakes of Reason Rule Our Minds.* New York: Wiley and Sons.

Sagan, Carl (1996). *The Demon-Haunted World: Science as a Candle in the Dark.* New York: Ballantine.

Shermer, Michael (1997). *Why People Believe Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time.* New York: Freeman & Co.