Everything You Know is Wrong 2: Beliefs and Behavior

Summary

Good reasoning doesn’t come naturally. In fact, humans are instinctively terrible reasoners — most of the time, the way our brains work isn’t rational at all. Even with exceptional training in reasoning skills, we still have to overcome instincts to think simplistically and non-analytically. This is the second of two lessons focusing on the instincts and habits of mind that keep us from thinking logically. In the first one, we looked at how people define themselves, alone and in groups, and how this affects behavior. This time around, we will focus on how people reconcile their beliefs with the world around them, even when the evidence doesn’t seem to agree with those beliefs.

Objectives

In this activity students will:

- Examine the self-protective thought processes that can lead to errors of reasoning.
- Learn techniques for recognizing and resisting these habits.
- Examine their own superstitious behavior.
- Learn how to distinguish science from pseudoscience.

Key Terms

- Rationalization: Justification of behaviors to make them accord with beliefs.
- Wishful thinking: Believing what one wants to be true, regardless of evidence.
- Superstition: An irrational belief, often a folk belief, that is resistant to evidence.
- Pseudoscience: A nonscientific discipline that presents itself as science.
- Cognitive dissonance: An unpleasant psychological effect, caused when evidence fails to match up to expectations.

Background

Good reasoning requires that we withhold judgment until we have all the facts, collect evidence from neutral sources, and make sure that we understand all sides of an issue. Unfortunately, the human brain is programmed to simplify. Unless we are vigilant, there are certain instinctual thought patterns that will derail our attempts at good analytical reasoning.

Superstitious thinking and self-deception are protective measures. Both can give us the impression of understanding situations that might otherwise be beyond us. Superstition makes confusing events comprehensible, and self-deception allows us to hold to our beliefs in the face of new evidence that might cause cognitive dissonance. Analytical thinking can allow us to let go of these security blankets and construct a more accurate picture of the world.
Procedure

Make enough copies of student handout #1 so that when you divide the class into groups of 3 to 5 students, each group can have one. Make enough copies of student handout #2 so that each student can have one.

Materials

1. Student handout #1: “Beliefs and Behavior.”
2. Student handout #2: “Recognizing Pseudoscience.”
   (Warning to the teacher: This video contains the word “bulls**t” twice, once two seconds from the start and once three seconds before the end; if this is a concern, you can preview it and cue it up for the class to avoid the language. No teaching content will be lost.)
4. CBC Sports, “Top Ten Superstitious Athletes.”
5. Pseudoscience Web sites:
   Q-Ray
   What is Orgone Energy?
   Tachyon Field Theory
   Johann Bessler’s Gravity Wheel
   Higher Power Technologies
   CTBusters
6. Onion article, “Revolutionary New Insoles Combine Five Forms of Pseudoscience.”

Exercises

Exercise #1 – Rationalization

Separate the class into small groups, and tell students that the lesson will be focusing on the effects of belief. Pass out copies of handout #1, explaining that this handout provides several scenarios combining a belief and an action. They are to imagine themselves in the scenario and provide an explanation for how belief and action go together.

Once the majority of the groups have completed the worksheet, solicit several sample answers, particularly for scenarios 5, 6 and 7.

Tell students that they may have left out several possible answers. On the board, write the following:

- You were wrong about what you believe.
- You don’t hold your belief as strongly as you thought.
- You don’t understand your belief and what it entails.
- You acted hypocritically.

The students very likely didn’t come up with many of these. There’s a reason for that: They were being asked to imagine themselves in the scenarios, and it’s very difficult to believe these things
about oneself. Instead, they offered rationalizations for each behavior. Rationalization is a form of self-deception, which is a powerful psychological impediment to good reasoning. When we rationalize, we justify our behaviors and convince ourselves that they are self-consistent, so that we don’t have to face up to uncomfortable possibilities like the ones on the board.

Most self-deception is brought on by cognitive dissonance, which occurs when you can’t reconcile your beliefs with the evidence in front of you. In this case, the students were asked to imagine that they had beliefs that did not accord with their own actions. They came up with rationalizations in order to ease the cognitive dissonance caused by this inconsistency.

Exercise #2 – The Placebo Effect

Show students the Penn and Teller video, “The Placebo Effect.”

Lead the class in discussion of the following questions:

- Why do people say they feel better after using these treatments?
- What do you think is going through their minds when they answer these questions?
- How do you think they reacted when they were told that these treatments were junk?

The placebo effect is another form of self-deception. It’s the product of wishful thinking — people want to feel better, so they feel better. This keeps them from rationally evaluating the real worth of the treatments.

The effect is reinforced by the fact that the placebo patients are being told by an apparent authority figure (a doctor) that the treatments will make them feel better. If they underwent the treatment and did not feel better, they would experience cognitive dissonance. So, rather than deal with the dissonance, their unconscious deceives them into thinking they feel better.

Exercise #3 – Superstition

Have students read the Top Ten Superstitious Athletes list from CBC Sports.

Ask students whether they think these methods work. Does Wade Boggs’ team always win? If they lose, is it because he didn’t eat enough chicken? If he doesn’t win, does he stop eating chicken before games? Why not? Ask them about some of their own rituals for making sure their teams win or that they do well in an event or on a test. Do they think the rituals work?

Explain to students that people remember the times their superstitions held true — when they observed the ritual and the team won — and explain away the times when they’re shown to be false.

Exercise #4 – Pseudoscience
Superstitions about sports teams are generally harmless. But sometimes whole disciplines are set up around beliefs with no more bases in reality than a superstition. We call these pseudosciences, and they can be dangerous because they resist rational thinking.

Pass out student handout #2: Recognizing Pseudoscience. Walk students through the seven hallmarks of pseudoscience on the handout.

Split the class into four to six groups, depending on class size and time available for presentations. Have each group investigate one of the following Web sites and find as many examples as they can of the hallmarks of pseudoscience.

- Q-Ray
- What is Orgone Energy?
- Tachyon Field Theory
- Johann Bessler’s Gravity Wheel
- Higher Power Technologies
- CTBusters

Once they’ve had enough time to find several points, each group should give a very brief presentation to the class, describing their Web site and how one can tell that it’s promoting a pseudoscience. Stress that they won’t usually find every single item on the list, but encountering even one of the telltale signs of pseudoscience should alert them that analytical thinking is especially crucial.

Have students read the Onion article “Revolutionary New Insoles Combine Five Forms of Pseudoscience.” Discuss, in groups or as a class, how the hallmarks of pseudoscience from their handout are illustrated in the article. (This article also makes a good homework assignment, followed up with discussion or a short response essay.)

**Optional Activities**

**Optional Activity: The Magic Box**

*To the teacher: This exercise was initially developed by anthropologist Scott Atran. He uses it to make a point about religion, and the pervasiveness of religious sentiment even among professed atheists. Here we have adjusted it to make a similar point about superstition.*

*This exercise requires you to procure a box of medium size, preferably one that looks old or imposing. It is best performed by teachers with a flair for the dramatic.*

Ask the class for a few examples of superstitions, such as good-luck charms or old wives’ tales. After generating a few examples, ask who thinks these superstitions are silly. Ask a few of the nonbelievers to assist in a demonstration.

Tell students that the box is a powerful artifact: If you feel disdainful about rituals, good luck charms or superstitions, the box will destroy whatever you put inside. Ask the volunteering
students to put the following objects in the box: their pencils, their wallets or school ID cards, and their hands. Most students will hesitate before putting valuable objects in the box.

Explain to students that superstition is hard to resist — even the most skeptical of us sometimes succumb. Have students discuss the reasons why superstition is so universal.

**About the Author**

Jessica Henig earned her B.A. in history of science from Smith College, and her M.A. in English from the University of Maryland. While at Maryland, she taught digital literature and rhetorical writing. Prior to joining the Annenberg Public Policy Center in May 2007, she worked for the National Academies Press. She has also worked for the National Institutes of Health and as a freelance researcher and editor.

**Correlation to National Standards**

*National Social Studies Standards*

**I. Culture** Social studies programs should include experiences that provide for the study of culture and cultural diversity.

**IV. Individual Development and Identity** Social studies programs should include experiences that provide for the study of individual development and identity.

**V. Individuals, Groups, and Institutions** Social studies programs should include experiences that provide for the study of interactions among individuals, groups, and institutions.

**VI. Power, Authority, and Governance** Social studies programs should include experiences that provide for the study of how people create and change structures of power, authority, and governance.

**IX. Global Connections** Social studies programs should include experiences that provide for the study of global connections and interdependence.

**X. Civic Ideals and Practices** Social studies programs should include experiences that provide for the study of the ideals, principles, and practices of citizenship in a democratic republic.

**Essential Skills for Social Studies**

**Acquiring Information**

*A. Reading Skills*

1. Comprehension
2. Vocabulary

*B. Study Skills*

1. Find Information
2. Arrange Information in Usable Forms

*C. Reference & Information-Search Skills*

2. Special References

*D. Technical Skills Unique to Electronic Devices*

**Organizing & Using Information**

*A. Thinking Skills*

1. Classify Information
2. Interpret Information
3. Analyze Information
4. Summarize Information
5. Synthesize Information
6. Evaluate Information

**B. Decision-Making Skills**

**C. Metacognitive Skills**

**Interpersonal Relationships & Social Participation**

**A. Personal Skills**

**C. Social and Political Participation Skills**

**Democratic Beliefs and Values**

**A. Rights of the Individual**

**B. Freedoms of the Individual**

**C. Responsibilities of the Individual**

**National Educational Technology Standards**

**Profiles for Technology Literate Students**

**Performance Indicators**

2. Make informed choices among technology systems, resources, and services.
7. Routinely and efficiently use online information resources to meet needs for collaboration, research, publication, communication, and productivity.
8. Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning.

**Information Literacy Standards**

**Information Literacy**

*Standard 1* accesses information efficiently and effectively.

*Standard 2* evaluates information critically and competently.

*Standard 3* uses information accurately and creatively.

**Social Responsibility**

*Standard 7* recognizes the importance of information to a democratic society.

*Standard 8* practices ethical behavior in regard to information and information technology.

*Standard 9* participates effectively in groups to pursue and generate information.

**English Language Arts Standards**

**Standard 1** Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary work.

**Standard 3** Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).

**Standard 5** Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
**Standard 7** Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

**Standard 8** Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

**Standard 12** Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

National Science Standards

Science as Inquiry

Content Standard A

Science in Personal and Social Perspectives

Content Standard F

History and Nature of Science

Content Standard G