

FIGURE 2.1

Sample Arguments	Counterarguments	Relevant Questions
Issue 1: Self-esteem is essential to learning. High self-esteem increases academic achievement; low self-esteem decreases academic achievement. Certain educational practices tend to lower self-esteem—for example, criticizing students' thought and expression on essay questions and withholding credit for wrong answers on math questions. Therefore, such practices should be abandoned. Issue 2: Spanking is a form of violence. Its consequences are always negative. It teaches children that aggression is a legitimate response and that might makes right. Anyone who is spanked in childhood is more likely than others to be an abusive spouse and parent in adulthood. Therefore, parents who spank their children are guilty of child abuse and should be so charged. Issue 3: In all forms of athletic competition, injuries can occur. But in boxing alone, injuring the opponent is the very purpose of the contest. Furthermore, no amount of training and no protective gear can control the risk of serious injury. Therefore, boxing is not a sport but a form of brutality, and it should be outlawed.	Issue 1: Self-esteem is not essential to learning. The level of self-esteem, whether high or low, has no significant effect on academic achievement. Practices such as criticizing students' thought and expression on essay questions and withholding credit for wrong answers on math questions help students correct their mistakes and learn. Therefore, such practices should be encouraged. Issue 2: Spanking is not a form of violence. If done without anger when children are young, it can have a positive influence. It teaches that actions have consequences and that we must take responsibility for what we say and do. Children who are spanked in a context of love and caring are likely to be more respectful of rules and others' rights in adulthood. Their parents deserve our appreciation. Issue 3: Boxing is one of the most ancient forms of athletic competition. Like other forms, it demands coordination, quick reflexes, and high levels of strategy. Before boxers are permitted to compete, they must undergo rigorous training and be cleared by medical doctors. To outlaw boxing would be a disservice to the many poor people for whom it has provided a livelihood.	Issue 1: Is self-esteem essential to learning? Does high self-esteem increase achievement? Does low self-esteem decrease it? Do criticism of essay answers and losing credit for wrong answers lower self-esteem? Are such practices harmful or helpful? Should they be abandoned or encouraged? Issue 2: Is spanking a form of violence? Are its consequences positive or negative? Do the circumstances matter? Does it teach children that aggression is legitimate and might makes right or that they are responsible for their behavior? Are those who are spanked more likely to be better or worse in adulthood for the experience? Is spanking equivalent to child abuse? Should it be discouraged or encouraged? Issue 3: Is boxing an ancient form of competition? Does it demand coordination, quick reflexes, and high levels of strategy? Are boxers rigorously trained and examined medically? Do more injuries occur in boxing than in other competitions? Is injuring one's opponent the boxer's aim? Do training and gear offer sufficient protection? Is boxing properly classified as a sport? Would outlawing boxing be a disservice to the poor? Should boxing be outlawed?

For **statistical evidence**, consider: Is the source of the data reliable? How long ago were the statistics compiled? Have conditions changed since then?

For a **survey** or **opinion poll**, consider: Was the sample representative of the larger group? Were the questions clear and objective? For mail surveys, did too few people respond for the survey results to be trusted?

For **expert opinion**, consider: Does the person have specific expertise in the subject in question? (It is not uncommon these days for experts to offer opinions far outside their areas of expertise.) Does the expert's view represent the majority or minority view among experts in the field? In other words, do other experts agree with the person in question?

For a **research review**, consider: Were any important studies omitted?

When the evidence supporting an assertion is both sufficient and credible, you should accept it. (It is not uncommon to find that each side of the dispute has some correct and some mistaken assertions.) When you have finished checking all the assertions and identified those that are true to the facts, your final step is to determine what conclusion they best support—in other words, the most worthy viewpoint on the issue.

If at this point the W.I.S.E. approach seems formidable, it is only because of the explanatory material necessary to introduce it and answer the most obvious questions. As with any other new process, once you become familiar with it, you will appreciate how easy it is to use.

EXAMPLES OF PROBLEM SOLVING

Any number of examples could be offered to show the relevance of the W.I.S.E. approach to problem solving, but space limitations permit only two.⁶

The uncooperative page markers

Art Fry was a chemical engineer employed in the product development department of 3M Corporation. However, his best-known breakthrough idea didn't occur in the workplace but in his church choir.

Fry enjoyed singing in his church's choir and, like members of choirs everywhere, was in the habit of marking the scheduled hymns with little

⁶ I am not suggesting that the individuals in the problem and issue examples *consciously* employed the W.I.S.E. approach. (How could they have? It was developed after the achievements noted here.) I am saying, rather, that their cases *exemplify its relevance* to real life challenges.

pieces of paper. This way he could turn to the appropriate hymn quickly and be ready to sing when the choirmaster gave the signal. Unfortunately, the little pieces of paper had a way of falling out, leaving him to hurriedly flip through the pages searching for the correct hymn.

Fry wondered how he could get the slips of paper to stick to the page so that they wouldn't fall out but could be easily removed when he was through with them. He remembered a peculiar adhesive a fellow researcher had concocted a few years earlier. At that time no one had been able to think of a use for it.

Fry checked the files, got the formula, and made a batch of adhesive. It turned out to be too strong for his purposes. So he experimented with the formula and finally produced a glue that was like the little bear's porridge in the Goldilocks story—not too strong, not too weak, but just right. He took the idea to management and got approval to test-market the sample product, and the “Post-it” was born.

The librarian's lament

Imagine how difficult it would be to use a library if there were no system for shelving the books. If you wanted a particular book, you'd have no idea how to find it. It might be on the top shelf of aisle #1, the bottom shelf of aisle #40, or anywhere in between. The larger the library, the more difficult it would be to use. A large university library would be virtually *impossible* to use.

The situation was never quite that bad, but up until 1876 the system in use was inflexible and cumbersome. Each book had a designated place on the library shelves. A book on astronomy might be between a book on wood-working and another on medieval architecture. To make matters worse, each library had its own system.

Melvil Dewey, a student assistant in the Amherst College library, lamented the difficulty of reshelving books. He wondered if there were a better way, and set out to devise one. His investigation and experimentation led to the system known as the Dewey decimal system.

The Dewey system has ten main divisions: 000 is Computers, information, and general reference; 100, Philosophy and psychology; 200, Religion; 300, Social sciences; 400, Language; 500, Science; 600, Technology; 700, Arts and recreation; 800, Literature; 900 History and geography. Each division has a series of subdivisions. Dewey's system made the library much easier to use. Today Dewey's system is used in more than 135 countries and has been translated into more than 30 languages. It is also proving useful in classifying Internet resources.⁷

⁷ For more information on Melvil Dewey, see www.oclc.org/dewey/resources/biography.

EXAMPLES OF ISSUE RESOLUTION

Is venting anger healthy?

For centuries, the prevailing view was that, though it can sometimes be appropriate to express anger, as an everyday rule it is better to suppress it. But in the 1960s and 1970s a dramatically different view became popular among many psychologists and the general public—the view that suppressing anger is emotionally unhealthy. “Express your anger,” the experts said, “and it will dissipate, and with it a lot of harmful tension, stress, and even neurosis.”

Carol Tavris, a psychologist, wondered about this issue: Was the centuries old view, with its emphasis on restraint, really so mistaken? Are people who control their urges and treat others with civility really in danger of becoming neurotic?

She set out to answer these and related questions by conducting her own observational studies and by consulting others’ research into anger and its effects. She noticed that people expressing anger seem to grow angrier, not calmer. Moreover, research confirmed her observation and proved that “talking out an emotion doesn’t reduce it, [but instead] . . . rehearses it.” The research also established that overexpressed anger is more likely to contribute to disease, in particular heart disease, than is suppressed anger.

In reviewing her considerable research, Tavris concluded that the belief that expressing anger promotes health is a combination of misunderstanding, oversimplification, and myth. The appropriate use of anger, she decided, “requires an awareness of choice and an embrace of reason. It is knowing when to become angry. . . and when to make peace; when to take action and when to keep silent. . . .”⁸

What causes yellow fever?

By 1900 the United States had suffered 90 epidemics of yellow fever. One in 1793 killed 10 percent of the population of Philadelphia. Napoleon reportedly sold the Louisiana Territory to the United States because the disease claimed 90 percent of the forces he had stationed there. The disease began with chills and a headache, then progressed to severe pain, high fever, and vomiting. Next came jaundice, followed in extreme cases by internal bleeding and death.

For a long time medical experts disagreed about the cause of the disease. Some said it was bacterial; others thought it was transmitted by insects. In time the former view prevailed, but outbreaks of the disease continued. Walter Reed, a young army surgeon who was also trained in bacteriology and pathology, noted that one member of a family would be stricken while

⁸ For more information on this issue, see Carol Tavris, *Anger: The Misunderstood Emotion* (New York: Simon & Schuster, 1982).

others were not. Noting that the disease was neither contagious nor air-borne, he wondered if the older, discredited view might be correct.

Reed's investigation took the form of an ingenious experiment. He had one group of army volunteers sleep on the clothing and beds of yellow fever patients in a screened room (to keep mosquitoes out). No one in this group became infected. Meanwhile, he kept another group completely apart from infected people and their belongings. But this group he exposed to mosquitoes that had been in the rooms of infected people. These volunteers became infected.

Having proved how yellow fever was transmitted, Reed had the army install mosquito nets and wipe out mosquito breeding grounds in and around Havana. These efforts were so successful in ending the scourge that the same approach was used in Panama, thus removing a major obstacle to the construction of the Panama Canal.

Walter Reed was awarded the Congressional Medal of Honor for his contribution to the eradication of yellow fever. He also became the first physician to be elected to the Hall of Fame of Great Americans at New York University. The Walter Reed Army Medical Center in Washington DC is named after him.⁹

AN IMPORTANT RELATIONSHIP

Because of the differences in dealing with problems and issues, we have separated them. But it is important to understand that we often find problems while dealing with issues, and vice versa. The following example will clarify this relationship.

Suppose that on your way to work each day you drive by a defunct low-cost apartment project. When new, it was heralded as a great step forward in meeting the needs of the poor. Now it is a monument to failure. You see graffiti on the walls, boarded-up entrances, broken windows, and garbage and other litter on the lawns. In short, it is an eyesore that cries out for demolition.

You begin to **wonder**: Why didn't it succeed? Is this project typical or atypical of government programs? You realize that this is an issue rather than a problem because it evokes conflicting responses. (You probably have heard or read some of the responses.) Intrigued, you **investigate**. First you check the origin of the housing project and find that it was part of the Great Society program of the 1960s and 1970s, a massive attempt to wipe out poverty. Digging deeper, you find that implementing the program cost hundreds of billions of dollars without having any lasting effect on poverty, and that it has supported a number of food and medical assistance programs as well as low-cost housing projects. You learn, too, that many housing projects have gone

⁹ For more information on Walter Reed, see www.wramc.amedd.army.mil/welcome/history/index1.htm.

through the same stages as this one—that is, they first became run-down, then drug- and gang-infested, and finally scheduled for demolition.

Next you *speculate* about the possible reasons for the failure of the government's efforts to help the poor. Perhaps the programs are at fault. For example, they might be insufficiently funded or poorly designed and managed, in which case they would need to be redesigned, more generously funded, or placed under different (perhaps private) management. Or perhaps the people being helped lacked certain attitudes and skills necessary for self-sufficiency and successful living. The programs might have done little if anything to remedy this deficiency or might even have aggravated the condition. For example, the programs might have contributed to a welfare mentality, characterized by the feeling among the poor that the government has an obligation to provide them with food, shelter, and clothing and that this provision is a right they need not work for or otherwise earn.

Finally, you *evaluate* by determining which explanation for the government's failure is most reasonable in light of the evidence. Is it insufficient funding, poor program design, ineffective management, the counterproductive effect of increasing poor people's dependency, or some other explanation?¹⁰

At this point, the W.I.S.E. approach will have enabled you to reach an informed opinion about the *issue* of public welfare. Moreover, in the process of doing so, it will have identified several *problems*—the difficulty of improving housing management, eliminating drug trafficking in public housing, overcoming the welfare mentality. You might be content to leave those problems to others, but if you want to solve them, you again would use the W.I.S.E. approach. Of course, there would be no need to repeat the first step because your analysis of the issue would have provided the necessary perspective. Thus, you would begin by investigating the particular problem more deeply, then speculate about possible solutions, and finally evaluate the solutions and choose the best one.

In this example, addressing the issue with the W.I.S.E. approach led to identifying (and perhaps solving) related problems. In other cases, the procedure might be reversed—that is, addressing a problem with the W.I.S.E. approach might lead you to identify issues that need to be resolved.

A CAUTION ABOUT BIAS

When you evaluate an argument, the greatest obstacle to critical thinking is not the complexity of the issue or the variety of viewpoints to be considered. It is, instead, your own biases. Here is a fairly typical example of how bias can stifle critical thinking.

¹⁰ The best explanation could be a *combination* of these deficiencies.

Let's say you just read an article pointing out the deficiencies of homeschooling. Most parents who homeschool, the author says, are not trained teachers, and some have not even graduated from college. In addition, the author points out that even if the parent is a certified teacher, he or she is not likely to be skilled in art, music, *and* foreign languages, and will be unable to provide lab experience at home. Finally, the author argues that children who are homeschooled are deprived of opportunities for socializing with peers. Thus, in his view, they are woefully unprepared to relate to people of other religions and cultures.

Now suppose that you know little about homeschooling other than what you just read. Suppose, too, that you have graduated from public school, believe your experience there was positive, and therefore support traditional classroom education. Given these facts, your bias would be almost imperceptible—nothing more than a slight leaning. Not enough to put you on alert, yet enough to cause you to accept the author's assessment at face value *without bothering to investigate the opposing viewpoint*.

If even a slight, subtle bias can keep you from thinking critically, imagine what a more substantial bias will do.

Incidentally, in the homeschooling issue (as in all controversial issues), there *is* another side to be considered. Creative homeschoolers have discovered ways to overcome or compensate for the lack of laboratories and other limitations. Homeschooled students often score as well as, and in some cases better than, public and private school graduates and are as respectful of other people as traditional graduates are.

No one has yet formulated an antibias serum, so inoculation is not a choice. The best you can do is to recognize bias when it arises and develop ways of resisting it. The sections that follow present the most common types of bias and suggestions for dealing with them.

Bias toward what confirms your personal view

We all tend to be protective of our opinions. This is true whether we reason them out or borrow them from others. Whenever we encounter information that confirms one of our opinions, our automatic reaction is to accept it. Similarly, we tend to reject information that challenges our opinions. *Suggestion:* Keep in mind that we all make mistakes now and then. The sooner we find out we've made a mistake, the better off we are. And the best way to find a mistake early is to be open to ideas that challenge our own.

Bias toward familiar ideas

Suppose you walked into a cafeteria and had the choice of sitting with people you know or with strangers. Which would you choose? No doubt you would choose people you know because you'd feel more relaxed and comfortable with them. It's the same way with ideas. All of us tend to be more accepting

of ideas we've heard before than we are of new ideas. *Suggestion:* Remember that familiarity has little significance—the order in which we hear ideas and the frequency of our hearing them are matters of chance. The fact that we've heard something repeated a dozen times doesn't mean it is any more reliable than something we are hearing for the first time.

Bias toward your likes and against your dislikes

We all have our personal preferences. There's nothing wrong with that. The problem arises only when we let them interfere with our judgment. If someone shares your taste in television programming, you may see her as a person of great wisdom and taste. In contrast, anyone who speaks critically of your favorite programming may seem unintelligent and perhaps intentionally offensive. *Suggestion:* Even strongly held views can be mistaken, so carry your preferences lightly and be ready to question them in light of new evidence.

EXERCISES

- 2.1. A classmate says to you, "I'm not too clear about the difference between a problem and an issue." Write a brief clarification for her.
- 2.2. Do this exercise in wondering over a period of hours or even a day. Be alert for problems and issues—not just those that affect you personally but those that you hear being discussed or reported in the news. (*Tip:* Problems are revealed in the annoyance or frustration you or others experience with things or situations; issues are revealed in clashing points of view.) Keep a list of your findings and have them ready to share with others in class.
- 2.3. The history of writing instruments includes many breakthrough ideas. Visit the following website: www.ringpen.com/history.html. Select five inventions, and express the "How can . . . ?" question that led to each.
- 2.4. Visit the following website, which gives timelines of great achievements in the twentieth century: www.greatachievements.org. Choose a subject—telephone or airplane, for example. Then look over the achievements and reconstruct the specific "How can . . . ?" question that would have led to that achievement.
- 2.5. Each of the following statements describes a problem. Think of as many "How can . . . ?" expressions as you can for each. (Remember that each expression opens a different line of thought, so the more you can think of, the more possible solutions will result.) Then list as many possible solutions as you can for each expression.
 - a) The downtown area of your city has become dangerous after dusk. The number of assaults and muggings has risen dramatically in recent years. Particularly vulnerable are people whose work requires them to be there in the evening.