6 Critical Thinking and Logical Fallacies

The term "critical thinking" can be confusing. The "thinking" part is okay (I mean understanding the term, not necessarily doing it!)

But that "critical" part can be confusing:

(My daughter, sobbing hysterically, to my wife: "You're always so CRITICAL of me!")

Critical thinking can be hard to define, and yet it is one of the core goals of higher education, and it's an absolute must if you are going to write effectively.

Here is one definition, from Michael Scriven & Richard Paul, presented at the 8th Annual International Conference on Critical Thinking and Education Reform, Summer 1987:

> *"Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness."*

(I know what you're thinking: what the heck does THAT mean?)

So let's try another:

> *"Critical thinking is that mode of thinking — about any subject, content, or problem — in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome our native egocentrism and sociocentrism."*

(source: http://www.criticalthinking.org/pages/our-concept-of-critical-thinking/411)

That's not much better, is it?

Again, this concept can be hard to define, but let's try:

Critical thinking is the ability to look past (1) one's own biases, opinions, preconceived notions, and pre-judgments, and (2) the illogical and emotional arguments of others, to consider the facts and logic of any topic in an unbiased, open-minded fashion before reaching a conclusion regarding that topic.

Better?

Let's break this down piece by piece:

> **Looking past one's own biases, opinions, and pre-judgments**. We all have opinions, some deeply held. We can consider these in terms of any topic, but let's look at a particularly controversial one: gay marriage.
>
> Let's say, for example, that you are a deeply religious person, and you believe with all your heart that homosexuality is a sin heavily frowned upon by Divinity. Furthermore, you believe that there will be dire spiritual and even physical consequences (think Sodom and Gomorrah) for any society that embraces the practice.
>
> Given that personal belief system, could you write an essay about gay marriage in which you "consider the facts and logic of [the] topic is an unbiased, open-minded fashion before reaching a conclusion regarding that topic"?
>
> Might be kinda tough, right? You have deeply held convictions here!
>
> Now let's look at this from the other side: let's say that you have a younger brother who is gay and who has been bullied and mistreated his entire life because of it. You love your brother, and have stood up for him many times.
>
> Given this personal history, could you write an essay about gay marriage in which you "consider the facts and logic of [the] topic is an unbiased, open-minded fashion before reaching a conclusion regarding that topic"?

See the difficulties in being a critical thinker? Consider the same type of scenario with any topic about which you already have strong personal feelings:

Gun control
Illegal immigration
Abortion
Gay rights
Obamacare

If you are going to be a critical thinker, you have to get beyond these personal feelings and look at the FACTS when writing about the topic.

> Let's go back to the first hypothetical: the religious person. Let's say that as you research gay marriage, the facts tell you that there is no societal harm that has ever been found as a result of gay marriage, and in fact, it becomes more and more apparent to you that denying gay marriage is discriminatory towards homosexuals.

On the other hand, let's say that you, the sibling of a gay brother, find in your research that there is no societal benefit of gay marriage and in fact it harms society overall. You also discover that denying marriage rights to homosexuals is not discriminatory.

Now, what do you do? You have two choices:

1. You can ignore the evidence and write an essay that conforms to your previously held beliefs. As part of this, you simply throw out the contradictory evidence and only include sources (possibly highly biased sources) that support your position.

   OR

2. You write the essay that **conforms to the evidence**, despite the fact that it runs contract to your previously held beliefs (these beliefs may or may not change because of the research you've done for this essay).

Which of these reflects a critical thinker? Right, the SECOND.

Critical thinking means approaching EVERY TOPIC with an open mind, as if you held no opinion on the topic.

Yes, it's tough, but yes, it can be done. Maybe this will help:

In academic writing, your first goal is not to win an argument. Your first goal is to FIND THE TRUTH. Once you are confident that you have found the truth, then your goal is to present that truth in a way that persuades your audience.

Does that make sense? If you are good enough at argumentation, you can win any argument. If you were really good enough, you could win an argument in which you claim that two is really three and green is really blue.

But that is not the goal of academic writing, or of the academic world at large. It's the same with scientists. A chemist doesn't say, "I believe that if I mix chemical A and chemical B, then C will happen. And you can't tell me otherwise!"

No, the chemist first makes what we might call an "educated guess,"* called a hypothesis, about what might happen, based on his or her knowledge of the two chemicals, how similar chemicals react, etc. Then the chemist mixes A and B, and watches what happens, and then says, "Wow, interesting! When I mix A and B, then C happens!"

*Just an FYI: I was once roundly criticized for calling a hypothesis an "educated guess," but it's my textbook and I'll call it what I want!

See the difference? The chemist doesn't decide first and then hold to that decision, regardless of the facts. The chemist might have an idea about what he or she *thinks* will

happen, and might even write it down as a hypothesis, but then the chemist actually performs the experiment to see what happens.

The chemist tries to find the truth, and then reports on that truth.

It's the same with all academic thinkers. Our goal is to find the truth, even if that truth runs contrary to what we have always thought to be true.

Just for the sake of saying this, note that a problem sometimes arises here with regards to things like religion and faith. For example, if you, like the example above, are a religious person and believe that homosexuality is wrong, that is a FAITH BASED belief. And that's absolutely fine. In fact, faith is a wonderful thing. There is nothing wrong with faith, and plenty of research has demonstrated the power of faith.

But in the academic world, for academic purposes, faith doesn't work for argumentative purposes, because of its very nature. That doesn't mean that "God has no place in college." What it means is that with regards to critical, academic thinking, we are looking for concrete evidence and academic truths. Concrete evidence runs contrary to faith, because faith is, by definition, a belief in things we can't see or prove. (That's part of what makes faith so beautiful and powerful!)

So, for example, if I were that religious person who opposed gay marriage, and yet my objective evidence showed that gay marriage should be legal, I would have two options:

1. To separate my academic self from my faith-based self and write the pro-gay marriage essay, while still holding the faith-based view that homosexuality is a sin.
2. If this were too much for me, I would choose another topic about which I could be objective and I could think critically.

Does that make sense?

Critical thinking also means being "critical" (hence the term "critical thinking") about everything you read. In other words, you take nothing on faith (again, see the box above). You do everything in your power to verify every piece of evidence you discover in your research. This is true even for evidence that supports your previously-held views.

And in this internet-based world in which we live, this is more important than ever, because anybody can say just about anything online.

I once had a student say to me in class: "I believe everything I read on the Internet. They won't allow untrue stuff on there, will they?"

That's not a direct quote, but it's pretty close. And it should scare you to death!

If you want to see a good example of contradictory information found online, go to any general search engine and look for articles on any controversial topic. You will find pieces taking radically differing views on everything, and they all sound pretty convincing and fact based!

Another aspect of critical thinking is being able to identify LOGICAL FALLACIES.

Here are some logical fallacies:

> You come to class one day with a bad cold. Your classmate tells you that if you drink three glasses of orange juice per day, it will cure your cold. You drink the orange juice, and sure enough, three days later your cold is gone. Orange juice cures the common cold! (Post hoc fallacy)
>
> Ninety-seven percent of scientists believe that humans are causing global warming. Thus, humans are causing global warming. (Bandwagon fallacy)
>
> Bill Clinton says that people should support a law to force pay equality between men and women. But Bill Clinton had an affair with Monica Lewinsky while he was President, so his views cannot be trusted. (Ad hominem fallacy)
>
> I read you a story of a young boy who died. He lived in a poor neighborhood, and his mother couldn't afford to take him to the dentist. He eventually had rotten teeth to the point of their being abscessed. The abscess moved to his brain, where it caused his death. Then I tell you that in response to this terribly sad case, we must pass universal health care legislation. (Appeal to pity)

Let's look at logical counters to each of these fallacies:

> The common cold goes away in about three days anyway. There is no proof that the orange juice had anything to do with it going away.
>
> Just because a belief is held by the majority does not make it correct. In 1492, a majority believed that the earth was flat.
>
> Bill Clinton's affair with Monica Lewinsky has nothing to do with whether or not laws should be passed regarding equal pay for men and women.
>
> There is no evidence that universal health care would have changed the outcome for this young boy.

The problem with each of these is that they are not built on logical arguments, but, to many readers, they APPEAR to be, and thus they tend to be highly effective. In other words, people do not realize that the arguments are illogical, because on the surface they seem to make sense. You will notice that each one of these has a name. Logical fallacies are so common that we name them, and with practice we can spot them.

There are a BUNCH of these logical fallacies; go to any search engine and search for the term, "logical fallacies," and you can have fun all day spotting fallacious arguments (many of which you may have even fallen for).

As a critical thinker, you MUST be able to clearly judge the logic behind any argument, and you must also be able to spot when an illogical argument is being made, even if it supports your position.

Good writing uses strong, logical, OBJECTIVE thinking and arguing. It is not based on your personal opinion or beliefs or feelings. It is based on the facts and the evidence, even if these facts and evidence disagree with your own personal views

To summarize, a critical thinker is the following:

1. First and foremost seeks for the TRUTH
2. Is open minded and open to all credible evidence
3. Approaches all topics in an unbiased manner, setting aside personal opinions
4. Objectively evaluates the credibility of all sources
5. Clearly judges the strength of the arguments of others
6. Develops and defends a strong, logical argument
7. Sees through logical fallacies
8. Is willing to admit being wrong

Can you do it?