The very first time I walked in class to teach “Scientific Thinking”, I asked my students what they had heard about the course. One of the students responded that he heard that everything we learn in science turns out to be eventually false. His body language indicated that this was certainly not a good thing, and that “Scientific Thinking” may be a waste of time. Two semesters later in another class, after we had we discussed Popper’s falsification theory, (i.e. that a scientific hypothesis has to be falsifiable and that no amount of experimentation can prove a scientific theory to be “true”) another student made the remark that since science is always “changing” and that what we know today will be proven wrong tomorrow, then we have to rely on our religion to find the answers we look for (it was said, if I remember correctly, in the context of a situation where one is faced with conflicting arguments).

These are representative of the kind of thinking that Perry has classified as the “dualistic” stage. **Dualistic thinking is characterized by the certainty that there are right or wrong answers/solutions to every problem and that these answers/solutions are known to “authorities”**. The “good” instructor is seen as one of these authorities who helps them find, or provides them with, the “right” answers, even to open ended problems that do not have absolutely correct answers. He/she is the source of knowledge and is therefore expected to convey the facts.

In addition, W. Pierce (1998) recognizes in all of us hidden psychological barriers to clear thinking such as ego defenses and/or “enculturation” (i.e. “the process of acquiring the basic beliefs and values of one’s culture”). We should therefore not be surprised when students entering college feel uncomfortable when confronted with ideas or perspectives that challenge their cherished beliefs and/or their sense of identity. The student whose religious upbringing prepares him/her to think that science and religion are incompatible may be uncomfortable with the notion that “absolute” truth does not have a place in science. When push comes to shove, he/she will retreat to the security of belief be it cultural, religious, or political. When prodded to search for different perspectives, the realization that several “authorities” are in conflict adds to the uneasiness.

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‡ For a background to this newsletter please refer to A. Ellozy’s “Better Thinkers, Better Futures” (1). What Research Tells Us. New Chalk Talk, Vol.7, Issue 1 found at [http://www.aucegypt.edu/academic/clt/NewsletterV7.htm](http://www.aucegypt.edu/academic/clt/NewsletterV7.htm)
So how do we help students move away from dualistic thinking to Perry’s “multiplicity” stage?

Kloss (1994), who has found Perry’s scheme very helpful, has devised pedagogical strategies to help university students become critical thinkers. For students who think in dualistic ways his recommendations include the following:

• Provide examples that deal with conflicting points of view
• Create an environment that encourages different viewpoints and that accepts them as legitimate
• Reinforce the unlikelihood of one potential solution, approach, or viewpoint to complex problems
• Support the legitimacy of students’ point of view
• Ask for reasonable and substantive justification for assumptions and value judgments
• Challenge overgeneralizations and appeal to authority
• All the while, provide for a safe environment where students feel they can take risks.

It is useful to point out that sometimes when confronted with more complex ways of thinking, students sometimes retreat or escape to the comfort and security of authority. The transition is difficult and does not happen in a moment of illumination. In Kloss’ words, “a nudge is better than a shove in these matters”.

Sources:


Share with us your experiences by contributing to the New Chalk Talk series, or by simply sending comments/suggestions to aellozy@aucegypt.edu, pandeli@aucegypt.edu