

7-11-06:

We need to stop teaching students about the world in ways that make it seem as if everything is all right, in ways that make it seem as if everything has been decided already. Our students are complacent when WE are complacent. Now that the world and our environment are changing faster than ever, we have a choice: we can keep teaching intellectual pursuits as if they are mechanical, and risk students who engineer nuclear armament or poverty or genocide when it is part of their "job"...or we can teach empathy in everything we do, for the sake of our humanity, for the sake of the humanity of our students, or simply so we will be able to look at ourselves in the mirror. Our role should be to facilitate empathy, because empathy itself is not "biased" or "slanted" or "anti-intellectual." Empathy is the highest use of the human intellect, because it expands the mind to transcend one's own experience. It is the irreducible reason we ever go beyond our own interests in any way. We can encourage empathy through teaching students what changes in our disciplines and in the world, and how these changes happen, and to allow them to evaluate why they happen. And we can help students see ways that things might still change, and to judge what they might wish to see change. Students look up to us. So, if we have even a slight leaning toward ethics in our life's work, let's use what we do to model empathy.

7-11-06:

Two ideas come immediately to mind as general ones. First is an idea initially from meteorology: teleconnections. The original work on ENSO related events measured in one place on the globe (here sea surface temps in north Australia) to happenings (in this case, anchovies or no anchovies on Peru's coast). There are many fascinating historical examples at introductory level (such as the sudden collapse of the international indigo market in the 1840s), but the point is that our interconnectedness as humans on this endangered planet needs to be understood in fresh ways. Perhaps I'm just trying to wonder how we actually teach a truly global perspective to all our efforts and inquiries.

Second, I wonder about the differences between disciplinary approaches to learning versus interdisciplinary ones. Most of us were trained in a discipline, and in trying to teach interdisciplinary perspective may either confuse or stimulate undergraduates. So I think that students do not think critically about what they obtain through an intellectual discipline. What are the values and limitations of pursuing any particular disciplinary path? (most students I meet think here only in the context of job prospects) Perhaps here I'm trying to puzzle out how we teach mental flexibility and openness without having all the learning bits in a gravity-free mental space.

7-11-06:

Just some thoughts off the top of my head: I am a developmental clinical psychologist. Most of my students do seem to care about social issues to some degree. So, although we address a lot of "value-free" scientific questions, like what are the developmental processes leading to positive versus negative adaptations, everything is done in an implicit frame of social relevance. One more explicit issue that I have had some fun with is the issue of whether adults are more valuable than kids. It appears that we spend a lot more of our resources on dealing with the psychological problems of adults than we do with the problems of kids. Why is this, and should it be so?

7-11-06:

How science operates as a discourse, and the implications of that discourse. Clearly scientists bring certain biases to their research, regardless of their intentions (as does everyone). However, that's not quite what I'm at getting here. "Science" and "scientific" operate and circulate as godly terms which supposedly dispel "Truth" on the claim. Students should have a better understanding of implications of the discourse of science in culture, including how it has been used to justify things such as genocide, racism, colonialism, and sexism. Students need to learn to examine "scientific"

findings themselves, rather than accepting claims presented in the media and politicians without critical thought. An understanding of the discourse of science is especially critical for students as global citizens, since knowledge of science has been constructed as allowing particular nations to act on behalf of and act aggressively towards other nations, particularly developing ones.

Race. Students need a much stronger critical understanding of what race is and how it operates. They need to understand various perspectives on race, and how many of them materialize in racist discourse. In addition, they need a stronger understanding of whiteness as an ethnicity, focusing on the implications of the invisibility of whiteness.

7-11-06:

As a recipient of your recent e-mail about questions pertinent to a liberal arts education that are worth pursuing, I'll offer three, which bear on one another, as well as fundamentally on critical thinking (which always needs definition):

1. What is fiction, and how is it related to imagination, to hypothesis, and to models?
2. How does language shape, and not only express, thinking?
3. What IS critical thinking? Of what does it consist? What are its objects and methods?

7-11-06:

What interests me falls somewhere among a number of phrases I'm playing with lately which all have to do with how we respond to an over-mediated world in which we aren't just consumers, but also producers:

- new media for social change
- citizen media
- public interest entertainment

I also think you need to expand your concept from just 'what to think about' to 'how to think about,' particularly in a world where games, simulations and immersion are a very powerful way to think 'about' anything, more so than linear media such as text and video.

7-11-06:

Professors have a finite time and have a contract with the students to cover the advertised content of the course. However, I also believe that virtually every course could lend itself to examples that speak to current issues.

Quick Examples: When I taught intro chem years ago during a period of atomic weapons testing I used the similarities between Ca and Sr to explain concerns about Sr-90 fallout. It's easy in science courses to throw in factoids and puzzles about alternative energy sources, global warming, astrobiology, stem cells

Finite math obviously lends itself to all sorts of relevant examples about the misuse of probability and statistics. Higher math could take on puzzles in dynamic processes. Computer science/informatics already is applied.

Philosophy, political science, social science, psychology can easily touch on topical matters.

In all of these areas one need not sacrifice the syllabus to speak (briefly) to items of current interest.

Obviously, although a political agenda may guide the selection of topics to bring in, the treatment in the classroom should be scrupulously fair and evidence-based. (The hotter the topic, the more care to

be taken!)

Two sources of concern:

Sometimes when students ask for relevance they are really looking for professor-approved bull- sessions on the meaning of life. The occasional example suggested by my remarks above seems like thin gruel.

The other concerns the humanities and so-called cultural studies programs. Many of these classes are already dedicated to saving the world and may need to be reined in.

So I would be happy to see your project encourage science-types to think about the needs of today's citizens. But I hope it doesn't provide cover for extremists in the non-sciences.

7-12-06:

First let me say thank you for your work. I think what you are attempting to do with this study is very important and, in fact, critical, to the way we think about education in the years to come. Your study asks us, as instructors, professors, teachers, to be aware of the possible far reaching implications of what we do in the class room. As an instructor without a permanent position here at Indiana University, I spend a good deal of time considering what I do and whether I am achieving anything toward what I might term, the "greater good." I believe in teaching as a form of activism and try many creative techniques to get my students to think critically and engage with the world around them, while at the same time recognizing that for many of them, their universe begins with and does not extend far beyond, themselves. Given that, I would say that one topic I would suggest for this project is the role of the individual in society/culture/community. I see my students struggling with this issue on many different levels as they often seem to feel very hopeless that their own personal action could have any consequence in the world around them. I'm not sure how to label this issue-- as I teach Folklore I often am dealing with the way that individuals actively create and negotiate culture and meaning and have the ability to change the way things tend to be through their own individual creativity and action. Since my students are very concerned with the "I", the role of the individual seems a place to begin in getting them to think critically. What I have noticed with some of my students is the spark that is ignited when they are able to see how they can begin at a small level and make change within themselves to benefit society. The idea of personal transformation seems a bit less overwhelming to them than societal change, but they seem to see the connection nonetheless.

7-12-06:

A topic I have asked my students to read, think, and write about in the past, and will continue to have them pursue in my future courses, is what it means for a person to encounter a culture different from her own, or to encounter another person from a different culture. Without wishing to get political, I think that misunderstanding, fearing, or distrusting other cultures and the people from them often stems from not knowing anything about other cultures and people. So thinking about what happens when someone is put in such a position helps prepare us for the benefits and difficulties that may arise when we encounter other people and cultures, which is likely to happen to most of us on one level or another during our lives.

I believe that this topic is relevant to students today, especially to freshman at a large university like IU. It is also a topic that I myself am very interested in -- I don't think it is a bad thing to allow ourselves to teach what interests us deeply, so long as we believe it to be relevant to the students and we don't force a personal opinion on them. I try to stick to exploring cultural encounters as a topic in my classes instead of taking a position on it.

7-12-06:

At my undergrad, University of Richmond, there is a project that seems similar to what you are proposing. This project, Richmond Quest, begins with the posing of a very general yet thought-provoking question that can be addressed from a number of disciplines, perspectives, and opinions. Every two years, students are asked to submit their question with a supporting essay, and one question is selected. Several courses and course assignments are designed around this question, with the intent that students apply their knowledge and think critically about how society and information co-mingle. Some of the questions in the past were:

1. Is truth in the eye of the beholder?
2. What moves us?

I know this is a long shot, but perhaps if we could pose one question, which may superficially seem simple, but can invoke considerable discussion from a variety of perspectives, and can allow application to many if not all COAS fields, this would give our undergraduates practice in critical thinking and encourage them to think differently, more completely, and cohesively about society.

There is a website for the project at University of Richmond. I have written it below:  
<http://quest.richmond.edu/>

I hope this message was clear to you. Essentially, the idea is the proposal of a single question that allows for discussion and response based on multiple perspectives and disciplines. Allow the students to come up with the question, and incorporate this question into certain courses of all COAS disciplines.

7-12-06:

I confront these issues all the time.

What kinds of powers does the government have?

Where do these powers come from?

Is your government the same thing as your country?

Is your country different from other countries? If so, how? If not, why does it have any special expectation of your loyalty?

What kinds of issues are appropriate for criminal laws, for civil laws, or no laws at all?

What is the relationship between law and morality?

7-12-06:

As I read your invitation, there are several issues that come to mind, one of which isn't really a critical thinking issue but more of an issue I have struggled with in my own teaching.

1. Language skills and vocabulary. I have found myself using what I think are basic English words and discovering that students have no clue about what they mean. This then impedes their learning (unless they are motivated to ask to look it up). And I am talking about words like \*inhibit\*. Also, much of language is contextual with a word like inhibit being used slightly differently in different contexts. Someone with an inhibited personality might be different than an enzyme with an inhibited active site. (Yes, I realize that enzyme and active site are scientific terms but I never thought that inhibition was). Likewise, I have heard words used in various contexts where I don't understand the intent of the sentence.

2. I think students need to know where and how to find accurate scientific information. As a scientist, I know where I would go but I am not sure that non-scientists know where to go to find

accurate information that is presented in an appropriate manner. A student also needs to know the importance of finding this information when they need it. We need more critical thinking about how best to present the information so it is interesting and not too overwhelming in detail. But part of that also requires some basic sense of fundamentals in science so one doesn't have to explain over and over again what molecules are or what genes are, etc. Overall, what I am saying is that we really need some detailed information and a way to process it or remember it before we really can think critical about the topic.

3. Along with critical thinking (and as a part of critical thinking) we need QUANTITATIVE thinking. This does not mean that everyone has to take calculus and be able to do partial derivatives. It does mean that we ought to understand portions, amounts, orders of magnitude, linearity versus logarithmic increases and decreases. This quantitative thinking is important in any business, in politics, and in extrapolating into the future (or into the past- see below).

4. If anyone is up for it, there is the schism between science and religion with respect to evolution (and probably other issues). Though I am a biologist and not a religious person, I do wish at times that scientists would at least acknowledge that there is a religious viewpoint with respect to the origins of life. I have seen some (thankfully not most) scientists view anyone with religious beliefs as some sort of illogical. We need to use critical thinking skills to explore grey areas and find areas of comfort for those with religious beliefs. It would take some non-dogmatic individuals from "both sides" to really explore this and enter into the grey areas. Some of this stems from issues with respect to how scientists define hypothesis and theory versus how others define hypothesis and theory. (See first comment above)

5. I think another area for student discussion is: How do we learn or how do we think? This would address differences in style between different disciplines, language issues discussed above, quantitative thinking issues also discussed above and most importantly could be used to get the students to study more effectively and be more productive. That is, how can they learn and interpret the language, find the detailed information, think quantitatively without needing to learn equations, and assimilate it all into answering a question. If you can do that, then you can think about ways to eventually deal with problems that will benefit society.

7-12-06:

The answer to your question is, in fact, quite simple and has been tested for millennia: teach great books and works of art, philosophy, and social thought; and teach foreign languages in a way to be well learned. And, second, hire not the average teachers that "fit" but these that are talented and have something interesting and creative to say and are not afraid to say it.

7-12-06:

I don't think I have any unusually deep insights here, but I might suggest that students think about:

- how to operate ethically in a market economy (i.e., how to make money and not turn into Ken Lay)
- how to tolerate and appreciate other cultures, yet be critical (i.e., appreciate human diversity, but not let that be an excuse for relativism)
- How to grow as a person throughout your life - there's a lot of evidence that people stop reading and learning after high school or college

7-12-06:

One would hope that each student, upon completing his or her degree here at IU, will leave with

the ability to critically analyze and evaluate arguments and evidence and that each student in his or her own way will contribute something unique that will benefit society. For me, the real question is not the one that this project proposes. I do not think it wise to search out and define specific topics that will be ideal for everyone. Instead, I think what you truly should ask is, "How can every degree program provide opportunities for students to gain experience critically analyzing and evaluating arguments and evidence"?

7-13-06:

- how do we bridge the gap between academic knowledge and social practice?
- how has globalization reframed social issues like poverty, epidemics, the environment, and terror?
- in addressing these issues, how do we think beyond the customary oppositions between the individual and the social? Qualitative and quantitative research? Critical and creative? Aesthetics and politics?
- how have new media transformed our roles as agents and recipients of knowledge?
- what narratives have been / must be invented to address these issues--and, in doing so, the imagination--in diverse media?

7-13-06:

1. How do various media (advertising, news, entertainment) construct reality for us? What difference does it make in our lives?
2. How do strong interpersonal skills (emotional maturity) contribute to a person's success? What about his or her happiness? How can we teach the kinds of interpersonal skills that make for a good society?
3. What are the everyday principles of fairness?
4. When is it right to disobey?

7-13-06:

1. Education is never "values neutral" - as much as people in the sciences claim otherwise. Agendas and biases are always mixed in with our analysis. Teaching students to recognize these and to consider the ethical implications of various avenues of research is a great idea - I'm glad you are pursuing it.
2. I am afraid that your project will be complicated by the fact that you will not be able to forge any consensus as to what "ethical" is. We might agree that scientists need to employ this mode of thinking to the problems they deal with, but I am guessing we will not agree as to the proper "ethical yardstick" to use. Still, it is not a bad idea to try.
3. I think a critical area where we need to look at this is the "new medicine" of human embryonic stem cell research, human cloning, genetic enhancement, transhumanism, and related areas. Science can tell us what is possible in these areas but science is not equipped to tell us what should be done. An ethical system that exists outside of science will be required if we are to avoid the errors of pragmatism, which were manifested in Stalin's USSR and Hitler's Germany.

7-14-06:

A liberal arts education should not merely give students the *ability* to engage their culture critically, but it should make students see that they *must* engage their culture critically. In a democratic culture, "critical thinking" about public issues is not a right or a privilege -- it is an *obligation*. Getting students to feel this obligation, this duty, is the very core of a liberal arts education. It is too often left unarticulated or implicit when it should be made both explicit and compelling.

7-14-06:

(1) "The clash of civilizations": Is it really happening? Is it getting worse? What is it going to do to your life?

(2) What does it mean to be a person?

(3) Is there more wisdom in traditional societies whose ways we have largely left behind, or more in a future we do not know?

7-14-06:

1- woman's role in society - within this, issues of sexual assault and domestic violence come to mind

2- cultural imperialism

3- social class disparities and American perceptions about the poor (and why they are poor)

4- language policies (official government policies)

5- language and education

6- disparities in access to quality education

7-16-06:

I thank you for your quest to begin, yet again, the conversation (albeit via e-mail) about the aims of (higher) education. The ability to reason (and when called for to be rational-as Stephen Toulmin has pointed out they are not the same thing), to be literate and numerate, and to have some knowledge in common about persons and societies, that is, about the world in which we live, are all important in an education, both formal and that which continues for a lifetime. From the standpoint of a collegiate education (as part of what Clark Kerr has designated the "multiversity") the collection of syllabi must comprise a curriculum that addresses these aims and goals. Unfortunately, these goals are rarely met, especially in most large research universities. The curriculum comprises a series of compromises among disciplines, departments, and "interests," that stretch back over many decades. One only has to look at the "general education" requirements at Indiana University - Bloomington as the palimpsest of competing demands that have shaped them into near incoherence over the last 50 years.

There have been many contributions to the conversation about general and higher education over the last century. Certainly John Henry Newman is invoked (usually incorrectly); Jaroslav Pelikan brought his thought into the later 20th Century ("The Idea of a University: A Reexamination," Yale, 1992). There was the College of the University of Chicago curriculum, which went far beyond the so-called "Great Books Orientation." There was the Harvard "Red Book" of 1945 ("General Education in a Free Society") and the subsequent history of these recommendations by Phyllis Keller in "Getting at the Core: Curricular Reform at Harvard" (Harvard University Press, 1982). The latest contribution to the conversation about the aims of a common education comes from Harry R. Lewis, former Dean of Harvard College, in his book "Excellence Without a Soul" (Public Affairs, 2006) who concludes that the latest effort to renew the badly deteriorated "Red Book" curriculum at Harvard demonstrated "...that a great curriculum does not crystallize out of scribbling by bureaucrats or squabbling among professors if the leaders cannot breathe into it direction and purpose (p. 61). Serial

compromise does not even approximate leadership.

One might argue - and many have - that there is no longer a common knowledge, no common core, only competing demands and badly shattered knowledge(s). Certainly Bill Readings, whose mortal remains rest in a corn field on northern Indiana, made that point in his book "University in Ruins" (Harvard University Press, 1996). A partial answer to this particular pessimism is implicit in the way you have posed your two questions (allowing for a bit of rephrasing): What constitutes an education that leads a student to reflect critically on knowledge of the several arts and sciences and that are important to living a life as a member of various overlapping groups and in society as a whole? What obligations does one have as a member of a democratic society to its preservation and improvement? And, finally, as Kant famously asked: What does it mean to be human?

The several arts, humanities, and sciences attempt to address these goals, but the results of their research, in and of itself, does not constitute a curriculum. Study and understanding of the ways in which they contribute to knowledge - their organization, methods, and principles and the ways in which they form judgments -- in addition to what they present as knowledge can contribute to a coherent curriculum for undergraduates. In brief, I would argue strongly that we do not teach "critical thought" except as embodied the broader process of questions and their answers that comprise the scholarly and research process. These "processes" should be on offer in any undergraduate curriculum. Moreover, they should be integrated within this curriculum.

However, there are at least two quite different standards for judgment (there is a third, an aesthetic, which I cannot fit into this part of the conversation). Jerome Bruner, the great psychologist and cognitive scientist, argues in his book "Actual Minds; Possible Worlds" (Harvard University Press, 1986) that "There are two modes of cognitive functioning, two modes of thought, each providing distinctive ways of ordering experience, of constructing reality. The two, though complementary, are irreducible to one another" (p.11). Each has its own standard of judgment. The one, the logico-scientific, which he calls paradigmatic, is assessed in terms of how well it is formed, and the standard of judgment is the match of its conclusions with the empirical world. In a word, it relies on Tarski's kind of truth with a little "t". The second, which he designates as the narrative, is judged in terms of its "verisimilitude," its lifelikeness. "The imaginative application of the narrative mode leads instead to good stories, gripping drama, believable (though not necessarily "true") historical accounts. It deals in human or human-like intention and action and the vicissitudes and consequences that mark their course. It strives to put timeless miracles into the particulars of experience and to locate the experience in time and space" (p.13). The failure to recognize this great difference is one source of the failure to communicate amongst the several disciplines. Instead epithets of "scientistic power-hungry drivel" and "weak-minded story-telling" (and worse) are hurled across the Two Cultures divide.

There are questions about self and society, science and technology, and all the ways they are a part of the human career that could be addressed within the broader framework you offer. The pursuit of these questions and what comprises good answers to them by our students first of all requires literacy (the ability to read difficult material) and write (clear and compelling prose); it also requires a degree of numeracy (the language of mathematics and of statistics). Without some facility in these languages, both questions and their answers will not be productive. Moreover, students should be required to learn a language other than English, not necessarily for its "cash value" in their future employment but because it requires them to look at the familiar and taken-for-granted in a new way. Some background knowledge is required as the content for reasoning about a problem or question. Minimally students should have sound foundations not only on our own society and culture (broadly historical) but at least one other culture and society (Russian, Islamic, Chinese, Japanese, etc). Sources of the "self," from theology through Freud to contemporary cognitive science should be a part of any undergraduate education. In this way one might productively ask Kant's most inclusive question: What is human? The many variants of this question, from cosmology through

biological evolution to the creations of the mind are then grist for the scholarly mill and for the curriculum.

7-17-06:

1. Stem Cell research: what it is, what it does, how it works, etc.
2. Citizenship: what it entails, what it's like elsewhere, how it was invented, how it is maintained, the fact that it is a set of *performed actions* rather than a right or a privilege, etc.
3. Global Warming: the simple fact that there is almost no scientific disagreement about the fact that it exists and that it is human-influenced
4. Evolution: the idea that Darwin didn't just make it up, but that he was working within a set of discourses that continue, themselves, to evolve and change to this day
5. Argument: how arguments are constructed, how they can be refuted, how evidence is deployed, recognizable forms of argument, etc.
6. Persuasion: how it happens, how it fails, how to persuade others, how to avoid being persuaded, etc.
7. Religion: comparative, ideological, skeptical, political, and other ways of addressing the exclusively human phenomenon of religious belief
8. Rhetoric: traditionally at the center of liberal arts education, and always the one single liberal art that is *necessary* in a democratic culture; it simply is not possible to sustain a democracy without a populace schooled in rhetoric

7-20-06:

Because of my class and some networking at the American Democracy Project conference this summer, I have found two good resources available to the Academy for thinking about developing citizenship skills. The context is that in order to participate in community decision-making, it is crucial to practice "civic skills" in order to communicate with those who may have very different perspectives from our own.

The usual university-level practice is toward constructing an argument, and that is also the usual conversational style among people anyway: in other words, instead of really listening to and trying to understand another person's needs and perspective, we build up our counterpoints in our heads, even with our friends and family in our private lives. In addition, we seem not to know that our private interests CAN be used in the public sphere to guide dialogue for the common good--IF we practice dialogue instead of debate.

A common perception of this kind of community involvement is that it means we must compromise our values and interests, so why would we do it? In practice, there is some compromise, but values determine where the common good actually lies. For example, when students from across a spectrum of belief discuss a divisive issue, everyone ends up learning and thinking more creatively about actions to meet more needs. Of course there are those who are unable to leave a strongly identified "position"--but most of us CAN understand and work together to find appropriate solutions. And more solutions appear when conflict is "surfaced" in dialogue instead of polarized in argument

or repressed in avoidance and disengagement. Instructors can develop their own skills in surfacing conflict and encouraging dialogue--I have read extensively, tried different methods in the classroom, and trained in community mediation and active listening to surface conflict.

In each discipline there are ways to bring the practice of civic skills and dialogue into the classroom. Here are the two resources:

--A handbook of 10 "arts of democracy" is downloadable at <http://www.democracysedge.org/handbook.pdf>

--The National Issue Forum will send free kits and booklets are also downloadable for their issue "Democracy's Challenge", as well as other issues, at [http://www.nifi.org/discussion\\_guides/index.aspx](http://www.nifi.org/discussion_guides/index.aspx)

These not only can be used in the classroom as appropriate, but they are good background explanations for faculty who want to get "up to speed" on this topic.

7-25-06

1. Religion (i.e. what is the function of religion in society? How do religions go about making claims of truth? In the Christian context, the development of Christianity, the Bible, and how politics and power play into these topics. In the United States -- which claims to separate religion and the state -- where does religion enter into the public sphere? What are some problems that arise?)

I think religion is playing an increasingly dangerous role in our public life in the United States but very few are willing to engage the topic from a critical perspective. I find this very dangerous indeed. I would like to see a much more serious and engaged approach in institutions of higher learning to the role of religion in society.

2. Consumerism/capitalism

What does it mean for us to live in a nation that consumes so much more per capita than most of the world? What does it mean that we use so much energy? That we buy and throw so much away? Are we responsibly using the world's resources?

3. Politics

Why do so many Americans vote against their own interests? Why does the religious right have so much power? Why don't young people vote? I am not all that much of a political animal, but I do react strongly to the American penchant for gross oversimplifications that so many people seem to be fond of and vote on. This manifests itself, of course, in religion in general and especially in all the wedge issues. It seems to me that if we could engage more students to think about politics in a broader and more complex fashion, perhaps we could get more people voting wisely instead of on one issue -- which, as you know, leads to people making very bad political choices.

7-26-06

At a highly general level:

Religion -- people need to be able to think clearly about religion, identify core claims and distinguish them from less-essential trappings, etc. This is often threatening, both to adherents of the religion being examined and to others (adherents of different religions or those who do not identify with any). Put bluntly, there is an awful lot of third-grade level of understanding of religion out there, among both supporters and non-supporters of any particular tradition.

Science -- both in the context of the "science-religion debate" and in general, people need to think clearly about the goals, methods, and claims of science. There are people who hear "theory of evolution" and think "that means it's JUST a theory."

At a more specific level (this response reflects my own interests, of course):

How people think about society, the economy, and politics -- how they understand their own position in the economy, how they evaluate public policies, how they decide on a party or candidate. Clear, critical thinking may be able to help students recognize irrational appeals and place specific issues in a broader intellectual context.

8-4-06

The main issue I am concerned with is that we are sending our students out to live in a culture dominated by consumption - they will have to deal their whole lives with things like fashion, choices among foods, vehicles, houses, recreations - all of which have consequences, ethical, human and natural. They will get into debt, declare bankruptcy, invest savings...and we have not given them a single tool to deal with this. I teach a topics course on consumer culture every third year, and there are a few other faculty in the college who teach courses which touch on these issues...but as far as I can tell we completely fail to equip them for making the choices of daily life in a consumer culture. As far as I can tell, this topic meets both the roles you define for liberal education, and I see it is our biggest failure, one which dooms a great deal of what we teach to being irrelevant to their lives and without fundamental utility.

8-7-06

My main goal in my undergraduate classes is to help students establish intellectual independence. I want them to learn to think for themselves. This is actually a fairly complex project as it involves helping them learn to think analytically and critically and gain the confidence to do this to solve problems both in class and in life. It also requires that they be made aware of where their ideas come from so that they can make a conscious decision about what to believe, and it involves helping them learn to deal with data, first by recognizing it and then by analyzing it in order to draw a conclusion or construct an argument.

I have many strategies for doing this, which I will enumerate if you like, but in answer to your question about valuable topics and issues to teach, in my mind this is more fundamental than any particular topic and helps alleviate the ethical dilemma of teaching political topics that may seem like teaching people what to think when it is more appropriate to teach them how. Of course I do not shy away from politically charged topics since young people are more able to engage if the examples come from issues they care about. I also do not agree with my colleagues who argue that IU students are lazy and ill prepared. I see them as having different skills from the ones I came to college with, e.g. they are very analytical about visual media, and I use these skills as the basis for helping them develop new ones.

I do not obsess about course content; I don't really care about what they memorize. I want them to be able to work with information and to know how to find it and evaluate it. This skill can be developed within the context of my own discipline, but is worth my time and theirs only insofar as it is generalizable to other topics and to life. Undergraduates benefit little from memorizing data or formulae that are irrelevant to their interests and which they will immediately forget. They can look up an equation or define a word in 10 seconds on the web. They need to know what the equation can and cannot do or at least how to find out what it can and cannot do. To do this some memorization is necessary, but much less than most textbooks promote. This sort of "teaching" is cheap.

One strategy which I use consistently across all my classes is to teach against the textbook I assign. It is a sure-fire way to bring out students' critical skills and strangely it seems to encourage

them to read the text, rather than the reverse. This strategy also empowers them and gives them confidence that they can think for themselves and do not need to accept everything they hear that purportedly comes from an expert.

So, in short, from my perspective, what I teach boils down to the scientific method: clear testable hypotheses about any topic as a way to clarify their thoughts, verifiable arguments as a means of objective evaluation, humility about what we can know and what the limitations on the truth of any proposition are for human beings, responsibility for their ideas and the actions that they take based on them.

Teaching is the most subversive of all activities. Objectivity is a goal, but is not humanly attainable. Consequently our views and values influence what and how we teach; the best we can do is try to be responsible for this by facing it as objectively and ethically as possible. Encouraging independent thought is the most politically dangerous and radical project I can imagine. All of the comments under the topics on your list of useful ideas are examples of critical thinking about data and expert testimony, but the only way to get these ideas to stick is to give students the tools to come up with them themselves or at least be able to appreciate the scholarship upon which they are based.

8-9-06

There is lots of talk about "critical thinking," but few students, and, I think, few teachers, have defined just what this consists of and why it is important. The message below outlines what I consider to be the foundations that need to be in place BEFORE one starts addressing issues and assertions: otherwise you end up with a discussion driven by uncritical statements and unconsidered opinions-- and even worse, a group of students trained to think that's what discussion should be.

As a minimum, a well-educated person should have in place at the end of her formal education a system of ethics and an understanding of rhetoric and argumentation. In an era whose buzzword is (rightly) "globalization," but which simultaneously glorifies "instant gratification," it is ever more rare, and ever more important, that individuals think about the motivations as well as the consequences of their actions. A responsible person must have a well-defined conception of what is good, which he has examined carefully so that it is worthy of respect. In order to put that conception of the good into action, one must be aware of how individuals and institutions persuade others to give them attention and allegiance; and one must be competent to judge whether attention and allegiance ought to be given. These are essential skills for citizens of a democracy: certifying students as "educated" and sending them out into the world without these skills is not only unfortunate, it is dangerous.

Most undergraduate courses touch on aspects of ethics, rhetoric, and argumentation, but without naming them as such. Very few address them systematically and as the essential and interdependent building-blocks of civilized human existence.

An ideal undergraduate education would address these "building-blocks" in a required course, something highly unlikely ever to materialize at IU, not least because it would be nearly impossible for anyone to teach such a course without being labeled as a proselytizer of one persuasion or another. Still, something as simple as a more frequent use of these terms in brief discussions about "why we do what we do in this course and what you will learn here," and analysis of the ethical, rhetorical and argumentative components of any given issue or problem, would increase student awareness of these systems, give them the vocabulary with which to analyze and assess them, and perhaps encourage them to pay more attention to their own development.

8-20-06

---- What Every Educated Citizen Should Know From Mathematics -----

1. Arrow's theorem on the impossibility of a social choice procedure (e.g., voting, ranking, etc.) that is fair to all.
2. Hardy's theorem on the persistence of recessive (genetic) traits within populations and its consistency with Darwin's theory of evolution.
3. Two person, zero-sum games and their solution; and the Prisoner's Dilemma, the Tit-For-Tat strategy, and the evolution of cooperation in a non-zero sum "game".
4. The inclusion-exclusion and complementation principles, their application in Venn Diagrams, and their connection to the logical meanings of "and", "or", and "not".
5. Conditional probability and its connection to modifiers of and subordinate clauses on subjects; Bayesian probabilities (and reasoning); and their application to diagnostic situations.
6. Linear modelling, especially input-output (resource allocation) models.
7. The use of differential equations to model situations that change.
8. The use of Riemann sums for computing totalities and the definite integral.
9. The Fundamental Theorem of Calculus (Isaac Newton) that relates items 7 and 8 and provided the mathematical foundation for the development of the natural sciences.