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***Beyond Course Content:
Changing Hearts and Minds***

Indiana University Southeast

Presented by:

Critical Thinking Faculty Learning Community

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What is Critical Thinking?

Neil Browne and Stuart Keeley

Asking the Right Questions. 6th ed.

Critical thinking refers to the following:

1. Awareness of a set of interrelated critical questions.
2. Ability to ask and answer critical questions at appropriate times.
3. Desire to actively use the critical questions.

The Right Questions

1. What are the issue and the conclusion?
2. What are the reasons?
3. Which words or phrases are ambiguous?
4. What are the value conflicts and assumptions?
5. What are the descriptive assumptions?
6. Are there any fallacies in the reasoning?
7. How good is the evidence?
8. Are there rival causes?
9. Are the statistics deceptive?
10. What significant information is omitted?
11. What reasonable conclusions are possible?

Richard Paul

Critical Thinking: How to Prepare Students for a Rapidly Changing World.

Critical Thinking in Richard Paul's Words

Question: Critical thinking is essential to effective learning and productive living. Would you share your definition of critical thinking?

Paul: First, since critical thinking can be defined in a number of different ways consistent with each other, we should not put a lot of weight on any one definition. Definitions are at best scaffolding for the mind. With this qualification in mind, here is a bit of scaffolding: ***critical thinking is thinking about your thinking while you're thinking in order to make your thinking better.***

Two things are crucial:

- Critical thinking is not just thinking, but thinking which entails self-improvement.
- This improvement comes from skill in using standards by which one appropriately assesses thinking.

To put it briefly, it is self-improvement (in thinking) through standards (that assess thinking).

Characteristics of Comprehensive Critical Thinking

❖ It is thinking which is responsive and guided by **INTELLECTUAL STANDARDS**, such as relevance, accuracy, precision, clarity, depth, and breadth.

❖ It is thinking that deliberately supports the development of **INTELLECTUAL TRAITS** in the thinker, such as intellectual humility, intellectual integrity, intellectual perseverance, intellectual empathy, and intellectual self-discipline, among others.

What is Critical Thinking?

A unique kind of purposeful thinking

In which the thinker systematically and habitually

Imposes criteria and intellectual standards upon the thinking

Taking charge of the construction of thinking

Guiding the construction of thinking according to the standards

Assessing the effectiveness of the thinking according to the purpose, the criteria, and the standards.

❖ It is thinking in which the thinker can identify **ELEMENTS OF THOUGHT** that are present in all thinking about any problem, such that the thinker makes the logical connection between the elements and the problem at hand. For example, the critical thinker will routinely ask himself or herself questions such as these about the subject of the thinking task at hand:

What is the *purpose* of my thinking?

What precise *question* am I trying to answer?

Within what *point of view* am I thinking?

What *information* am I using?

How am I *interpreting* the information?

What *concepts* or ideas are central to my thinking?

What *conclusions* am I coming to?

What am I taking for granted, what *assumptions* am I making?

If I accept the conclusions, what are the *implications*?

What would the *consequences* be, if I put my thought into action?

- ❖ It is thinking that is **ROUTINELY SELF-ASSESSING, SELF-EXAMINING, AND SELF-IMPROVING**. The thinker takes steps to assess the various dimensions of his or her thinking, using appropriate intellectual standards.
- ❖ It is thinking in where **THERE IS AN INTEGRITY TO THE WHOLE SYSTEM**. The thinker is able not only to critically examine his or her thought as a whole, but also to take it apart, to consider its various parts, as well.
- ❖ It is thinking that **YIELDS A PREDICTABLE, WELL-REASONED ANSWER** because of the comprehensive and demanding process that the thinker pursues. If we know quite explicitly how to check our thinking as we go, and we are committed to doing so, and we get extensive practice, then we can depend on the results of our thinking being productive. Good thinking produces good results.
- ❖ It is thinking that is responsive to the social and moral imperative to not only enthusiastically argue from alternate and opposing points of view, but also to **SEEK AND IDENTIFY WEAKNESSES AND LIMITATIONS IN ONE'S OWN POSITION**.

General Education Outcomes – Critical Thinking

- ❖ Evaluate the quality of arguments and evidence, and the accuracy of claims
- ❖ Evaluate the quality of statistical evidence
- ❖ Identify logical errors and fallacies
- ❖ Distinguish between facts, inferences, and opinions and value assertions
- ❖ Recognize alternative approaches and conflicting viewpoints.

Communication Critical Thinking Example

*Taken from The Art of Public Speaking by Stephen E. Lucas (2004),
Chapter 7: Supporting Your Ideas, Exercises for Critical Thinking*

Guidelines are provided in this chapter for incorporating examples, statistics, and testimony into speeches. Following the discussion of the chapter, we do the exercise below:

Each of the following statements violates at least one of the criteria for effective supporting materials discussed in the chapter. Identify the flaw or flaws in each statement.

- a. In a random survey last month of 470 members of the Sierra Club, 98 percent of those interviewed opposed drilling for oil in the Alaskan wilderness. Clearly then, the American people oppose such drilling.
- b. In the words of one expert, “Mainstream medical care is not meeting the needs of many Americans.”
- c. Statistics compiled by the National Education Association show that the median salary for teachers in our state is \$48,835. This shows teachers average almost \$49,000 a year in salary.
- d. According to a survey conducted for Verizon Wireless, most people prefer Verizon’s cellular service to that of Cingular, Nextel, or Sprint PCS.
- e. There’s no reason insurance companies should charge higher rates for drivers under the age of 25. All of my friends drive a lot and almost none of them have been in car accidents.
- f. According to the *New York Times Almanac*, San Francisco has the highest per capita annual income of any U.S. city – \$57,414. The lowest per capita annual income belongs to McAllen-Edinburg-Mission, Texas, at \$13,344. The average per capita annual income for all U.S. metropolitan areas is \$31,332.
- g. As Sean Penn noted in a recent interview, the United States needs to change its foreign policy in the Middle East. Otherwise, Penn said, it will be impossible to bring about lasting peace in the region.

As an additional exercise, students are put in groups of three or four to do the following:

Select a topic and focus for a hypothetical speech (*To inform my audience of the potential dangers of drinking from water fountains*). Using this topic, generate a source that they would hope to find (*a statistic from the Health Department or testimony from a doctor*). Write a citation of that type. (*Frequently, they write one of a different type that does not contain all necessary information to cite properly.*) Exchange citations with another group and evaluate its effectiveness.

Nursing Critical Thinking Example

Role Playing in Education

Two Types of Learning (Piaget)

- Assimilation
 - Learning that fills in the mental map of the world
- Accommodation
 - Learning that alters or expands the mental map to fit new perceptions or information
- Both are complementary and concurrent, but different types of learning tend to emphasize one mode over the other.

Assimilation Learning

- Rote memorization
 - Easily forgotten
 - Easily tested
- Assimilation learning may become accommodation learning which facilitates memory

Accommodation Learning

- Learning to climb a tree, ride a bike, or swim
- Complex activity
- Requires gaining a “knack”
- Difficult to forget
 - Thus the saying “It’s just like riding a bicycle, it comes back.”

Assimilation → Accommodation Learning

- By incorporating
 - Small group activities
 - Debates
 - Singing
 - Reading Shakespeare aloud
 - Sociodrama

Role Playing

- Facilitates accommodation learning
 - Pilots use flight simulators
 - Actors rehearse
 - Musicians practice
 - Soldiers engage in military exercises
 - Emergency crews respond to disaster exercises
 - Physicians and nurses use patient simulators

- Provides an opportunity to practice complex behaviors and adapt one's own capabilities
- Real world skills are gained
- Intensifies and accelerates learning the way power tools hasten building
- Requires a “warm-up” period and the safety of working with people one trusts
- Engages the learner
- Facilitates learning about material and integrating knowledge to solve problems
- Permits exploring alternatives and seeking novel and creative solutions in a safe environment
- Must be semi-structured
 - Don't throw a child into the pool and tell him to swim
- Assign roles
- Give players a description of their roles
 - Teacher/Principal
 - Teacher/Student
 - Nurse/Patient
- Assign a realistic scenario
 - Nurse teaching a woman how to use a method of birth control
 - Nurse resuscitating a patient
 - Nurse dialoguing with mother who has just lost a child
- Provide time to “debrief”
 - What did you see?
 - What did you hear?
 - What did you feel?
 - What did you learn?
- Limit class critique unless it is important to the skills to be learned
 - Learning stifled by nit-picking
- Faculty can role play to demonstrate

Business & Economics Critical Thinking Example

Goal: Identify logical errors and fallacies (this example covers only one of the CT goals)

Possible exam question/short writing assignment/in-class discussion:

(Nature of answers indicated in italics.)

Suppose a city government imposes a new rent control law.

- a. What is the main argument in favor of imposing rent controls?**
Protect residents from rental costs that are “too high.”

- b. What incentive might local government officials have toward imposing rent controls?**
Political benefits (gain votes) from being perceived as helping city residents.

- c. Draw a graph showing the market equilibrium before the law is enacted. Draw an effective rent control on the graph. Is it a price floor or ceiling?**
Graph with details marked.

- d. Discuss 3 short run negative economic consequences of imposing a rent control law?**
 - 1) Shortage of housing units develops (relative to number of units desired at that price). Less total housing units are available compared to amount that would be available without price controls.*
 - 2) Other forms of rationing (connections, discrimination, black market activity) will develop.*
 - 3) The quality of rental housing (maintenance and repair activity) will deteriorate.*

- e. What are 2 long run negative economic consequences of rent controls?**
 - 1) Future supply of rental houses will decline due to lack of price incentive to develop additional units.*
 - 2) Inefficient allocation/use of housing space will result (reluctance/inability to move once established in rental unit.)*

Rubric (based on parts d&e):

- Excellent (3):** Correctly described 4-5 negative consequences of the policy.
- Acceptable (2):** Correctly described 3 negative consequences. May have incorporated an erroneous concept as well.
- Weak (1):** Correctly described 1-2 negative consequences. May have incorporated some erroneous concepts as well.
- None (0):** No answer. Did not correctly describe any negative consequences.

Political Science Critical Thinking Example

The following is an example of an exercise that has been used in a political science class. It is typical of critical thinking exercises that will be used in Y103, Introduction to American Politics, which has been designated as a primary course for meeting the General Education critical thinking learning objectives.

The exercise is taken from the text *Clued in Politics: A Critical Thinking Reader in American Government* by Christine Barbour and Matt StREbb (2004). For each of the readings in the text, the authors identify five questions to promote critical thinking. They are:

Consider the source and the audience

Lay out the argument, the values and the assumptions

Uncover the evidence

Evaluate the conclusion

Sort out the political implications

Students are required to read a brief article, essay or editorial and address five CLUE questions at the end of the reading. To help students learn how to think critically the authors have annotated each with call-out style text notes that show what kinds of things would be going through the mind of an experienced critical thinker as he or she reads.

Developing critical thinking exercises: Most disciplines, if not all, have various resources to promote critical thinking. You don't have to reinvent the wheel. To get started, one strategy is to borrow or adapt exercises from these sources that meet your objectives. With a little more experience, you can develop your own exercises.

Critical Thinking Workshop Exercise

Objectives of Exercise:

- To provide an example of a critical thinking exercise
- To give faculty an opportunity to experience what students would be required to do to complete the exercise
- To provide an example of how to assess a critical thinking exercise

Directions:

- A. You will receive a copy of an editorial from the *Washington Times*.
- B. Before reading the editorial look at the list of five questions below to be answered in this exercise.
 1. Briefly explain the main argument of the editorial.
 2. List the main reasons behind the argument and identify what, evidence, if any, is provided to support *each* argument.
 3. Identify an example of faulty logic or deceptive statistics and discuss what the problem is.
 4. What additional information do you need to evaluate the merits of the author's argument?
 5. Identify an alternative position or point of view to the editorial and provide an important argument in favor of that position.
- C. Also, look at the Rubric that has been developed for evaluating the exercise.
- D. Read the editorial. (5 minutes)
- E. Discuss with other members of your group the answer to question #1, and the answer(s) to the question assigned to your group. If you have time you can move on to other questions. (15 minutes)
- F. Two hypothetical student responses will be provided to you. Using the Rubric, grade the two hypothetical answers for question #1 and the question assigned to your group. Do this first on your own, and then discuss your evaluation with the members of the group. (10 minutes)

- G. Be prepared to share with all workshop participants how the application of the rubric worked for you. How much consistency did you find? What problems, if any, did you encounter in applying the Rubric? What question(s) does your group have about the exercise and how it is graded? (10 minutes)

General Education outcomes addressed by this exercise:

The following are the five General Education learning outcomes for Critical Thinking. The items marked indicate which objectives are specifically met by this exercise.

- X** Evaluate the quality of arguments and evidence, and the accuracy of claims
- X** Evaluate the quality of statistical evidence
- X** Identify logical errors and fallacies
- Distinguish between facts, inferences, and opinions and value assertions
- X** Recognize alternative approaches and conflicting viewpoints.

Editorial from The Washington Times

January 8, 2004

President Bush yesterday put forward a sweeping immigration reform plan that would grant legal status and jobs to millions of illegal immigrants currently residing in the United States. This is a bad idea, which we judge will not have sufficient support to be enacted into law by a Republican Congress.

The administration estimates that 8 million illegals, half of them from Mexico, are currently in the country. Other estimates put the number closer to 14 million. All of them would receive temporary legal status in the country for three years – renewable for an indeterminate number of times – so long as they can prove they are employed. Once they are “legalized,” these immigrants would be free to bring family members to this country and travel back and forth between the United States and their country of citizenship. The plan will offer an unspecified increase in the number of green cards – legal documents that permit foreigners to reside permanently in the United States and to apply for citizenship after five years.

It’s striking that, even though the United States is at war, the administration has said little about what effect such a mass legalization would have on U.S. efforts to keep out terrorists. Instead, the White House has focused its case on what it believes to be the economic benefit from mass legalization and the problems posed by the status quo: millions of people working in the country illegally, exploited by unscrupulous employers and landlords, and often driving while uninsured or underinsured. But these problems will not be resolved so long as this country’s southern border remains wide open, and illegals from Mexico, El Salvador and elsewhere in Central America are able to try again and again to sneak into the United States – until, finally, they succeed.

The administration says that, to prevent this from happening, it will take steps to better control U.S. borders, and there will be stricter enforcement of immigration laws on workers and employers. These are laudable statements of intent, and we applaud the president for saying he will make a serious effort to grapple with this difficult and complex

problem. But we'll reserve judgment in this area until we see how much money Congress and the administration appropriate for these purposes, and how vigorous the enforcement efforts actually turn out to be.

Unfortunately, what is known about this plan suggests that the minuses of the proposal vastly outweigh the pluses. It sets an example that will encourage those weighing whether to come to the United States and live here illegally to believe that they, too, can succeed in this endeavor. Mark Krikorian, executive director of the Center for Immigration Studies, accurately describes the Bush plan as "a two-step amnesty."

"It's not what folks on the left want, which is a quick green card, but it is an amnesty nonetheless," Mr. Krikorian tells this newspaper. "It legalizes illegal immigrants and is going to increase the number of green cards so that people will be able to move through the system faster."

Mr. Krikorian raises a number of serious questions about one of the central tenets of the argument for permitting illegals to stay in this country: that they do jobs that Americans won't do. Writing in National

Review Online, he makes a persuasive case that mass immigration is stifling innovation in several sectors of the economy, such as the harvesting of fresh fruit and vegetables and the apparel industry.

The administration and other Republicans argue that, by supporting this program, Republican candidates will make greater headway in attracting Hispanics to support Republican candidates. Polling data is murky on this point. Moreover, the October recall election in California suggests that the opposite may be true: In California, a heavily Democratic state, two Republican candidates, Arnold Schwarzenegger and Tom McClintock, won 62 percent of the vote. Both were sharply critical of incumbent Democrat Gray Davis for signing legislation granting drivers licenses to illegal immigrants. The two Republicans won approximately 39 percent of the Hispanic vote between them; Republicans usually win around 25 to 30 percent of the vote in statewide races.

The electoral benefit, even if there is one, should be irrelevant. The high cost to the nation of such a wrongheaded statute is far too high to justify such expedient calculations.

Rubric for Critical Thinking Exercise

Question 1: Main Argument

- 3 Main Argument is clearly and succinctly stated with no ambiguous wording.
- 2 Main Argument is clearly stated, but some words are ambiguous or wording is confusing.
- 1 Main Argument is unclearly stated, but has some correct elements.
- 0 Statement of main argument is incorrect.

Question 2: Reasons and evidence

- 5 States 5 reasons behind the argument and evidence to support each reason; reasons and evidence are clearly identified in succinct language.
- 4 States 4 reasons and matching evidence clearly and in succinct language.
- 3 States 2 or 3 reasons clearly and succinctly with matching evidence; or has 4 reasons with matching evidence, but not all are clearly and succinctly stated.
- 2 States 1 or 2 reasons clearly and succinctly with matching evidence or has 3 reasons, but not all are clearly and succinctly stated or evidence does not match argument.
- 1 States 1 or 2 reasons, but they are not clearly and succinctly stated or evidence does not match argument.
- 0 None of the reasons match the argument or the writing is so unclear that it is impossible to evaluate the reasons and arguments.

Question 3: Identifying faulty logic

- 3 States one clear example of faulty logic or deceptive statistics and identifies the problem; writing is clear and succinct.
- 2 States one clear example of faulty logic or deceptive statistics, but identification of the problem is not clearly stated.
- 1 The example of faulty logic or deceptive statistics is not clearly stated or is not relevant to the problem or the identification of the problem does not match the example.
- 0 The example of faulty logic or deceptive statistics is wrong or missing.

Question 4: Additional Information

- 3 Identifies at least 4 pieces of additional information needed that are relevant to the argument.
- 2 Identifies at least 3 pieces of additional information needed that are relevant to the argument.
- 1 Identifies at least 2 pieces of additional information needed that are relevant to the argument.
- 0 Identifies one or no pieces of additional information needed that are relevant to the argument.

(Note that at each level, pieces of additional information listed which are NOT relevant to the argument will not be counted.)

Question 5: Alternative Position

- 3 An alternative position or point of view is clearly and succinctly stated and one important argument is given to support this position.
- 2 An alternative position or point of view is clearly and succinctly stated, but the argument in support of this position is not clear or is not relevant.
- 1 The alternative position or point of view is not clearly stated or is not relevant to the current position.
- 0 There is no alternative position stated or the writing is so ambiguous that the position cannot be evaluated.

Total Points: _____/17

Grade Key: 16-17 = A 13-15 = B 10-12 = C 8-9 = D

Note: This rubric gives more weight to one section because there are more possible responses in this section. If you want all sections to be the same, the number of possible responses for the highest score could be adjusted. If you want some other sections to have more weight (for example number 5), just increase the number of points, 5, 3, 1 values instead of 3, 2, 1.

Hypothetical Response to Critical Thinking Exercise: Student A

Question 1: Briefly explain the main argument of the editorial.

Answer:

The proposed plan is a bad idea because illegal immigrants will still get into the country.

Question 2: List the main reasons behind the argument and identify what evidence, if any, is provided to support each argument.

Answer:

Reason 1: The United States does not do a good job of preventing illegal immigrant from coming to this country.

Evidence: There are 8 to 14 million illegal immigrants in the U.S.

Reason 2: Illegal immigrants do not actually take the jobs that Americans won't do.

Evidence: The article by Mark Krikorian that claims mass immigration stifles innovation in certain parts of the economy.

Reason 3: The program is really an amnesty program that will encourage more illegal immigrants to come to this country.

Evidence: It gives green cards to any immigrant who can prove he/she has a job.

Question 3. Identify an example of faulty logic or deceptive statistics and discuss what the problem is.

Answer:

California voters threw out Governor Davis who had supported granting drivers licenses to illegal immigrants. They elected Arnold Schwarzenegger who was critical of the program.

Problem with logic: Just because Schwarzenegger won does not necessarily mean that Davis' stand on illegal immigrants was the reason. There may have been other factors.

Question 4. What additional information do you need to evaluate the merits of the author's argument?

Answer:

- More data on the question of whether illegal immigrants displace American workers.
- The article is not very clear about who will in fact be eligible to obtain green cards.
- Is there any evidence to support the claim that the issue of illegal immigrants helped oust Governor Davis?

Question 5. Identify an alternative position or point of view to the editorial and provide an important argument in favor of that position.

Answer:

Grant all undocumented workers amnesty and give them green cards.

Reason: They are needed to fill low-wage jobs that American workers won't do so American businesses are going to hire them one way or another.

Hypothetical Response to Critical Thinking Exercise: Student B

Question 1: Briefly explain the main argument of the editorial.

Answer:

The main argument is that the reform to give legal status to many illegal immigrants in this country is a bad idea.

Question 2: List the main reasons behind the argument and identify what evidence, if any, is provided to support each argument.

Answer:

Reason 1: 8 – 14 million illegal immigrants enter the country each year.
Evidence: Statistical data.

Reason 2: This plan will increase and not decrease illegal immigration.
Evidence: The plan allows an increase in the number of green cards, and the southern border of this country will remain open.

Reason 3: Immigration is hurting development in certain industries.
Evidence: This from Mark Krikorian of the Center for Immigration studies.
However, no real evidence is provided.

Reason 4: The plan may hamper efforts to keep out terrorists.
Evidence: None given

Reason 5: The people of California want tougher immigration laws.
Evidence: Two Republican candidates for governor received 62% of the vote in a Democratic state; both of these candidates were critical of Gray Davis' plan to give driver's licenses to illegal immigrants.

Question 3. Identify an example of faulty logic or deceptive statistics and discuss what the problem is.

Answer:

Although it is stated by Mark Krikorian that immigration is “stifling innovation” in certain industries, no direct evidence is given.

Question 4. What additional information do you need to evaluate the merits of the author’s argument?

Answer:

- Which of the two numbers (8 million or 14 million) is correct for the estimate of illegal immigrants?
- What is the evidence for immigration “stifling innovation” in certain industries?
- What is the opinion of California voters on the issue?
- What effect would this plan have on keeping out terrorists?
- What kind of “stricter enforcement” of immigration laws will the administration impose?

Question 5. Identify an alternative position or point of view to the editorial and provide an important argument in favor of that position.

Answer:

The plan is a good idea. It will prevent illegal immigrants from being exploited by workers and will decrease the number of uninsured and underinsured drivers.

Critical Thinking Exercise Answer Key

Question 1: Briefly explain the main argument of the editorial.

Answer:

President Bush's proposal to reform immigration laws in the country by establishing a guest worker program is not a good plan because it will not solve the main problem of illegal immigrants entering or remaining in the country.

Question 2: List the main reasons behind the argument and identify what evidence, if any, is provided to support each argument.

Answer:

- Reason 1: U.S. efforts to control illegal immigration are not effective; evidence: between 8 and 14 million illegal workers are in the U.S. illegally.
- Reason 2: Illegal immigrants will see this as an amnesty program and will be encouraged to stay in or come to the U.S. expecting to be granted amnesty; evidence: undocumented aliens who can prove they are working are eligible to obtain a green card.
- Reason 3: Immigrants will be free to bring family members to this country and travel back and forth between the U.S. and their country; no evidence stated to support this.
- Reason 4: Mass immigration is stifling innovation in several sectors of the economy; no direct evidence stated; reference to another author's work.
- Reason 5: It won't help the president win votes; evidence: the California recall vote of California Gray Davis indicates that those who grant favors to illegal immigrant will be punished by voters.

Question 3. Identify an example of faulty logic or deceptive statistics and discuss what the problem is.

Answer:

Candidates in California who were critical of Gov. Davis won 62 percent of the vote; this implies that Davis's position on illegal immigrants was the reason that voters recalled Davis.

Question 4. What additional information do you need to evaluate the merits of the author’s argument?

Answer:

- Is there any evidence that the plan would not deter workers from sneaking into the country? What is the evidence of the economic pluses and minuses of illegal immigrants?
- What are the assumptions and arguments behind Mark Krikorian’s “stifling innovation” argument?
- Under Bush’s plan who will be eligible for the green cards?
- What exactly does the proposal state about family members who accompany green card workers?
- What kind of “stricter enforcement” of immigration laws will the administration impose?

Question 5. Identify an alternative position or point of view to the editorial and provide an important argument in favor of that position.

Answer:

Two obvious alternative points of view:

- (1) Not only should the U.S. crack down on illegal immigrants but also restrict the number of legal immigrants because they are a threat to the security and economy of the United States.
- (2) Grant broad amnesty for undocumented workers because it recognizes the reality of the situation and U.S. companies need these workers to do jobs American won’t do.

Critical Thinking Faculty Learning Community

Critical Thinking Videos – Dr. Richard Paul Annotated Bibliography

1. How to Teach Students to Seek the Logic of Things

In this video, critical thinking is discussed with regard to seeking the logic of things. What we know are ideas, which are logically interrelated in systems – to understand one idea, you need to understand the others. However, looking for logical connections is not what students do – they try to recall ideas without relating them to others. We need to give students a paradigm of understanding logical connections. The basic framework offered is: when given ideas, we can make statements and ask questions; statements and questions allow us to seek reasons and evidence; and when we have reasons and evidence, we can assess them. Richard Paul also talks about this applies to various disciplines (biology, etc.) and how there are multiple logics in the world. Three logics that are important to the teacher are the logic of reasoning, the logic of content, and the logic of the student’s thinking. Paul discusses these, including the nine parts to reasoning (what is the purpose?, what is the problem?, etc.). The challenge, according to Paul, is to take this model into the classroom and make it real and practical

2. How to Teach Students to Listen and Read Well

In this video, Dr. Paul looks at strategies that can be used to teach students to listen and read well. He explains the four modalities of learning: reading, writing, speaking and listening. The logic of reading and listening are similar as are the logic of writing and speaking. In reading and listening, the basic question is: “How can I translate the logic of his/her words into the logic of my experience?” In writing and speaking, the basic question is: “How can I put the logic of my experience into words?” He then goes through several strategies that can be used to help students in their writing/speaking and reading/listening.

3. How to Teach Students to Write Well

The ability to write well is connected to the ability to think well. As long as students don’t see the value in writing, it is very difficult to teach them. Richard Paul addresses a theme here that appears in other videos in this series – the logic of content and reasoning are intertwined, and thus talking about content separate from reasoning makes no sense. He also points out that reasoned writing must precede creative writing, and that to think well one must practice. Paul outlines the logic of reasoning (what is the purpose?, what is the problem?, etc.). He also offers basic advice on how students should write a paper: begin with an introduction (stating the problem, why it is significant, and how it is approached) and come to a conclusion. The paper must be assessed by the teacher, another student, or the writer, with the latter being the ultimate goal.

4. How to Teach Students to Assess Their Own Work: Foundations

Numbers 4 and 5 go together as a set and examine ways to teach students to assess their own thinking as they attempt to learn the content of the class. Dr. Paul stresses that there must be both content and reasoning in the classroom. You do not sacrifice one by doing the other. In fact, thinking and reasoning about the content is the most important part of a student's learning. Thinking is a process of recognizing, comprehending, application, evaluating and being creative. How do we get this in the classroom? Students bring to the class certain attitudes, perceptions, knowledge and experience. Use those. Dr. Paul uses an example of history. To get our students to understand the logic of history, let them learn the logic of something close to history they do understand – like gossip.

5. How to Teach Students to Assess Their Own Work: Tactics

This second part of the video develops some tactics to get our students to reason. Incorporate understanding, skills, performance, and traits. Understanding and traits are necessary for appreciating skills and carrying out performance. Ask ourselves: are we giving students opportunities to perform? Are we trying to cultivate traits? What teachers need to do is hook students- get reasoning going and get them into the subject. This starts thinking. Then teachers need to model what they want – be an example.

6. Why Students – And Often Teachers – Don't Reason Well

This videotape is part 6 of the Richard Paul lecture series, "How to Teach Critical Thinking," which itself is part of the videotaped proceedings of the International Conference on Critical Thinking and Educational Reform. Paul starts the lecture by asserting that although the inability to reason is a problem that affects both students and teachers, the latter case is the more serious one because of the negative impact on the teaching of critical thinking. The blame is placed on the education of the teachers, who were, according to Paul, taught passively in classes in which pure knowledge (knowing content without comprehension) and not the ability to reason was rewarded with good grades. One of the most informative parts of the lecture is when Paul reads and criticizes a student essay that apparently was provided as an example of an 8 (maximum score) by the State (California) Department of Education. He also reads an essay on the same topic, not written by a student, that does demonstrate critical thinking. Interestingly, most teachers, upon reading both compositions, tend to give the first one a higher rating because the second essay – despite showing better reasoning – never answers the posed question (on why the author prefers rock music to other types). He ends the lecture with an attack on American culture, arguing that movies, news programs, etc. do not encourage critical thinking, and he discusses the negative repercussions of poor reasoning skills on American businesses (contrasting the situation with that in Japan).

7. Why Intellectual Standards? Why Teach for Them?

The video points out that you cannot NOT use standards. There is no choice. There is a difference between criteria and standards. We start with criteria and the standards are levels of performance that we expect on the criteria. From where do standards come? Three elements: language (the meaning of words), questions (we must understand the question), and reality (thinking must be conformed to reality). Intellectual standards in the classroom must be articulated, linked to reasoning, to language and to content.

8. Putting It All Together

In this lecture video, Richard Paul makes a strong argument that it is impossible to separate content from teaching critical thinking skills. He develops the premise that “everything good in education is interdependent with everything else that is good in education.” When education is fragmented, e.g. teaching reasoning separately from problem solving or communicating, then quality of education is not possible. Content has logic and is produced by reasoning minds, Paul argues, and therefore to talk about separating content from critical thinking and reasoning is a contradiction. If you take reasoning out of content there is no content left. To master the content is to master the logic. However, few applied examples are given in this video, with the exception of the suggestion of having students explain what they learned to other students and having the other students ask questions of them. Such explanations require the students to understand the logic of the material and the logic of how to critically communicate thought to others. Paul concludes with a strong emphasis on creativity, arguing that creativity is reasoning and requires standards and discipline, countering those who define creativity in terms of emotion, fantasy, and imagination.

9. How to Devise Assignments and Activities Requiring Reasoning Students Are Capable of Doing

Dr. Paul presents eight components of the logic of reasoning in assignments. These include: purpose, question, information, concepts/ideas, assumptions, conclusion, point of view, and implications/ consequences. Teachers need to design assignments that students can reason over, not assignments based on opinion or matters of taste.