



HOW TO STUDY & LEARN

A DISCIPLINE; USING CRITICAL THINKING
CONCEPTS & TOOLS

PART I: LAYING THE FOUNDATION

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HOW TO LEARN IDEAS FROM TEXTBOOKS

18 IDEAS BECOMING A MASTER STUDENT

- 1) Ensure you thoroughly understand the requirements of each class, how it will be taught, and what will be expected of you.
- 2) Become an active learner. Be prepared to work ideas into your thinking by active reading, writing, speaking, and listening.
- 3) Think of each subject you study as a form of thinking. (If you are in history class, your goal should be to think historically; in a chemistry class to think chemically; etc.)
- 4) Become a questioner. Engage yourself in lectures and discussions by asking questions. If you don't ask question, you will probably not discover what you do and do not know.
- 5) Look for interconnections. The content in every class is always a SYSTEM of interconnected ideas, never a random list of things to memorize. Don't memorize like a parrot. Study like a detective, always, relating new learning to previous learning.
- 6) Think of your instructor as you coach.
- 7) Think about the textbook as the thinking of the author.
- 8) Consider class time as a time in which you practice thinking (within the subject) using the fundamental concepts and principles of the course.
- 9) Relate content whenever possible to issues and problems and practical situations in your life. If you cannot connect it to life, you don't know it.
- 10) Figure out what study and learning skills you are not good at. Practice those skills whenever possible. Recognizing and correcting your weaknesses is a strength.
- 11) Frequently ask yourself: "Can I explain this to someone not in class?" (If not, then you haven't learned it well enough.)
- 12) Seek to find the key concept for the course during the first couple of class meetings.
- 13) Routinely ask questions to fill in the missing pieces in your learning. Can you elaborate further on the matter or give an example.
- 14) Test yourself before you come to class by trying to summarize. Orally, in writing, the main points of the previous class meeting.
- 15) Learn to test your thinking using intellectual standards.
- 16) Use writing as a way to learn by writing summaries in your own words of important points from the textbook or other reading material. Make up test questions. Write out answers to your own questions.
- 17) Frequently evaluate your listening. Are you actively listening of main points? Can you summarize
- 18) Frequently evaluate your reading.

THE PROBLEM: NOT BEING ABLE TO THINK WITHIN THE DOMAIN OF FOCUS

A DEFINITION: CRITICAL THINKING IS THE KIND OF THINKING – ABOUT ANY SUBJECT, CONTENT, OR DOMAIN – THAT IMPROVES ITSELF THROUGH ANALYSIS AND ASSESSMENT. ANALYSIS REQUIRES KNOWLEDGE OF THE ELEMENTS OF THOUGHT; ASSESSMENT REQUIRES KNOWLEDGE OF STANDARDS FOR THOUGHT.

ESSENTIAL IDEA: THE SKILLS OF CRITICAL THINKING ARE THE KEYS TO LEARNING EVERY SUBJECT.

THE SOLUTION: TO STUDY WELL AND LEARN ANY SUBJECT IS TO LEARN HOW TO THINK WITH DISCIPLINE WITHIN THAT SUBJECT. IT IS TO LEARN TO THINK WITHIN ITS LOGIC, TO:

- RAISE VITAL QUESTIONS AND PROBLEMS WITHIN IT, FORMULATING THEM CLEARLY AND PRECISELY;
- GATHER AND ASSESS INFORMATION, USING IDEAS TO INTERPRET THAT INFORMATION INSIGHTFULLY;
- COME TO WELL-REASONED CONCLUSIONS AND SOLUTIONS, TESTING THEM AGAINST RELEVANT CRITERIA AND STANDARDS;
- ADOPT THE POINT OF VIEW OF THE DISCIPLINE, RECOGNIZING AND ASSESSING, AS NEED BE, ITS ASSUMPTIONS, IMPLICATIONS, AND PRACTICAL CONSEQUENCES;
- COMMUNICATE EFFECTIVELY WITH OTHERS USING THE LANGUAGE OF THE DISCIPLINE AND THAT OF THE EDUCATED PUBLIC DISCOURSE; AND
- RELATE WHAT ONE IS LEARNING IN THE SUBJECT TO OTHER SUBJECTS AND TO WHAT IS SIGNIFICANT IN HUMAN LIFE.

TO BECOME A SKILLED LEARNER IS TO BECOME A SELF DIRECTED, SELF DISCIPLINED, SELF MONITORED, AND SELF CORRECTIVE THINKER, WHO HAS GIVEN ASSENT TO RIGOROUS STANDARDS OF THOUGHT AND MINDFUL COMMAND OF THEIR USE. SKILLED LEARNING OF A DISCIPLINE REQUIRES THAT ONE RESPECT ITS POWER AS WELL AS ITS LIMITATIONS.

HOW TO LEARN WITH DISCIPLINE

- **WHEN LEARNING: LOOK FOR INTERRELATIONSHIPS,** TRY TO CONNECT EVERYTHING TOGETHER. THINK OF LEARNING AS FIGURING OUT THE PARTS OF AN ORGANIZED AND INTELLIGIBLE SYSTEM (WITH EVERYTHING FITTING TOGETHER LIKE THE PARTS OF A JIG-SAW PUZZLE).
- EVERYTHING YOU LEARN IS RELATED TO EVERY OTHER THING YOU LEARN AND LEARNING THINGS IN RELATION TO EACH OTHER MAKES EVERTHING YOU LEARN MORE MEMORABLE, MORE INTELLIGIBLE, AND MORE USEFUL. UNDERSTANDING SCIENCE IS UNDERSTANDING THE “SYSTEM” THAT SCIENTIFIC THINKNING REPRESENTS. UNDERSTANDING GRAMMAR IS UNDERSTANDING THE SYSTEM THAT GRAMMATICAL THINKNING REPRESENTS. IN OTHER WORDS, THERE IS A LOGIC TO SCIENCE, A LOGIC TO GRAMMAR, A LOGIC TO EVERYTHING WHATSOEVER! SCIENCE IS ABOUT SCIENTIFIC THINKING, GRAMMAR IS ABOUT GRAMMATICAL THIKNING, PSYCHOLOGY IS ABOUT PSYCHOLOGY THINKING, AN SO ON.
- **ALL “CONTENT” IS LOGICALLY INTERDEPENT.** TO UNDERSTAND ONE PART OF SOME CONTENT REQUIRES THAT YOU FIGURE OUT ITS RELATION TO OTHER PARTS OF THAT CONTENT. FOR EXAMPLE, YOU UNDERSTAND WHAT A SCIENTIFIC THEORY IS. YOU UNDERSTAND WHAT A SCIENTIFIC HYPOTHESIS IS. YOU UNDERSTAND WHAT A SCIENTIFIC HYPOTHESIS IS ONLY WHEN YOU UNDERSTAND WHAT A SCIENTIFIC WHAT A SCIENTIFIC PREDICTION IS ONLY WHEN YOU UNDERSTAND WHAT IT IS TO SCIENTIFICALLY TEST A VIEW. YOU UNDERSTAND WHAT IT IS TO

**WHEN LEARNING ANY CONCEPT, IDEA, LAW, THEORY, OR PRINCIPLE ASK
YOURSELF: TO WHAT OTHER CONCEPTS, IDEAS, LAWS, THEORIES, OR
PRINCIPLES IS THIS CONNECTED?**

HOW TO IDENTIFY AN UNDERLYING IDEA FOR THE SUBJECTS YOU STUDY

- VIRTUALLY ALL COURSES HAVE SOME INHERENT UNITY WHICH, WHEN UNDERSTOOD, TIES ALL THE LEARNING OF THE COURSE TOGETHER (LIKE A TAPESTRY). THIS UNITY IS TYPICALLY FOUND IN FOUNDATIONAL IDEAS THAT DEFINE THE SUBJECT AND ITS GOALS.

HOW TO (THINK):



- **Mathematics:** as learning to think quantitatively
- **Economics:** as the study of “who gets what, when, and how”
- **Algebra:** as arithmetic with unknowns
- **Sociology:** as the study of human conformity to group norms
- **Anthropology:** as the physical and historical study of humans in light of their evolution from non-cultural into cultural animals
- **Physics:** as the study of mass and energy and their interaction
- **Chemistry:** as the study of elementary substances and the manner in which they react with each other
- **Philosophy:** as the study of ultimate questions with a view to living an examined life
- **Biochemistry:** as the chemistry of life processes in plants and animals
- **Science:** as the attempt to attempt to learn through quantifiable observations and controlled experimentation
- **Theology:** as the study of theories of spiritual reality
- **Ethics:** as the study of principles to be used in contributing to the good of, and avoiding unnecessary harm to, humans and other sentient creatures.
- **Art:** as the application of skill and judgement to matters of taste and beauty (as in poetry, music, painting, dance, drama, sculpture, or architecture)
- **Professions:** as ways of earning a living through the skilled and artful use of knowledge in everyday life

ESSENTIAL IDEA: WHEN BEGINNING TO LEARN A SUBJECT, IT IS HELPFUL TO FORMULATE AN ORGANIZING IDEA TO GUIDE YOUR THINKING.

UNDERSTANDING CONTENT THROUGH THE THINKING IT REQUIRES: A KEY TO DEEP LEARNING

ALL SUBJECTS REPRESENT A SYSTEMATIC WAY OF THINKING

-THE FIRST AND MOST IMPORTANT INSIGHT NECESSARY FOR DEEP LEARNING ACADEMIC SUBJECTS IS THAT EVERYTHING YOU LEARN IS, IN THE LAST ANALYSIS, NOTHING MORE NOR LESS THAN A SYSTEMATIC WAY OF THINKING ABOUT A PARTICULAR SET OF THINGS.

ORGANIZING SYSTEMATICALLY BY IDEAS

-THERE IS NO WAY TO LEARN A BODY OF CONTENT WITHOUT LEARNING THE IDEAS THAT DEFINE AND STRUCTURE IT. THERE IS NO WAY TO LEARN A CONCEPT WITHOUT LEARNING HOW TO USE IT IN THINKING SOMETHING THROUGH. HENCE, TO LEARN THE IDEA OF DEMOCRACY IS TO LEARN HOW TO FIGURE OUT WHETHER SOME GROUP IS FUNCTIONING DEMOCRATICALLY OR NOT.

LEADING TO A SYSTEMATIC WAY OF QUESTIONING

-IDEAS WITHIN A SUBJECT ARE INTIMATELY CONNECTED WITH THE KIND OF QUESTIONS ASKED IN IT. ALL SUBJECTS REPRESENT WAYS OF ASKING AND ANSWERING A BODY OF QUESTIONS. THERE IS NO WAY TO LEARN MATHEMATICAL CONTENT WITHOUT LEARNING