

Ira C. Eaker College for Professional Development

**A Mini-Guide
for
Teaching Critical
Thinking**

by

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2008

Foreword

The Ira C. Eaker College for Professional Development (ECPD) Strategic Planning Goal 1 is to develop and present curricula that is operationally relevant, current and academically credible.

A strategic objective of Goal 1 is to develop applicable curricula to enable students to think critically. This mini-guide is a direct product of this strategic objective.

The ECPD Strategic Planning team is indebted to Dr. Evelyn Bean and Mr. Houston Markham for co-authoring this publication. They have unselfishly engaged in expanding out understanding and application of critical thinking to enhance student learning in the college.

Richard I. Lester, Ph.D.
Dean of Academic Affairs
Champion
ECPD Strategic Goal 1

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ECPD Critical Thinking Mini-Guide

Purpose:

In the spirit of aligning its strategic goals and objectives with Air University's, the Ira C. Eaker College for Professional Development (ECPD) established this Critical Thinking mini-guide in a manner that supports its strategic mission and supporting goals of which one is to develop applicable curricula to enable students to think critically.

This guide is designed to provide general information, strategies and a step-by-step process on Critical Thinking, two lesson plans which can be helpful in effectively teaching Critical Thinking, a case study which lends itself to thinking critically to come to a desirable resolution, and lastly, some recommended reading resources for providing a foundation to and assisting instructors in the classroom and with student consultation. The lesson plans and resources recommended will benefit students in enhancing their learning. Some of these ideas you may already be using effectively.

This ECPD Critical Thinking Mini-Guide was compiled for teachers, administrators, and support personnel who in one capacity or another impact the quality of the learning environment.

“Thinking is the hardest work there is, which is the probable reason why so few engage in it.”

- Henry Ford

“Critical thinking in ECPD is about how to think, not what to think.”

- Dr. Evelyn Bean

- Mr. Houston Markham

Introduction:

Critical Thinking is often defined using a lot of adjectives and adverbs such as being able to think or reason analytically, deductively, rationally, logically, independently, strategically, judiciously, reflectively, conceptually, inferentially, and creatively. In a nutshell, critical thinking means to do all of these in order to make informed decisions, address issues, answer complex questions, and solve problems confronted by instructors.

How do we teach students to think critically? This is the challenge many teachers face. Ideally, as a minimum we all want students who are insightful, good problem solvers, make informed decisions and can make fair judgments. To go beyond this, we can fully appreciate students who can reason, analyze, conceptualize, employ creative and logical methods, techniques, strategies and investigation/research to any given situation, question or problem and arrive intelligently, skillfully and fairly at the most practical and effective solution.

As educators, we want to develop curricula that not only teaches what to think (course content), but how to think (analyzing and evaluating). Such skills provide the long-term learning and benefits of thinking through complex problems and situations as opposed to the short term uses of simply memorizing a great deal of information. Thus, much of the information we teach is at the knowledge level and for some, the comprehension level, as opposed to higher levels of learning like application, analysis, synthesis, or evaluation if we use Benjamin Bloom's Taxonomy of Learning as a guide. For many teachers, the first hurdle is to get their hands around the concept of critical thinking, to understand how to teach it before they can get their students to think critically.

After querying several schools within ECPD, it was discovered that much of our curricula incorporate experiential learning (i.e., case studies, group exercises, guided group discussion, activities, etc). Whether Critical Thinking is a stand-alone lesson taught at the beginning of a course followed by various exercises and activities as is the case at the Defense Financial Management and Comptroller School or integrated into the curriculum and utilized in case studies, exercises and group activities as with the Air Force Human Resource Management School, Chaplain Service Institute, and the International Officer School. Often the challenge for teachers is not just teaching those skills or giving problems, situations, or examples, but the challenge comes in designing instruction and facilitating that higher order of thinking that will allow students to ask appropriate questions, formulate hypotheses, test and evaluate, and make informed decisions. According to the Deputy Director at the Commander's Professional Development School, focus areas in the USAF Wing Commander's Course, "provide students the framework to critically think about their leadership philosophy and the situations they will encounter as USAF wing commanders."

Goals of this Critical Thinking mini-guide:

1. To provide quality Critical Thinking instructional curricula and support for ECPD instructors.
2. To allow instructors to demonstrate to their students how to apply the central principles of Critical Thinking skills accurately and appropriately in a variety of workplace and academic settings.
3. To integrate Critical Thinking acquisition with relevant work and life experiences by emphasizing the development of analytical and problem solving concept and other reasoning-specific skills.

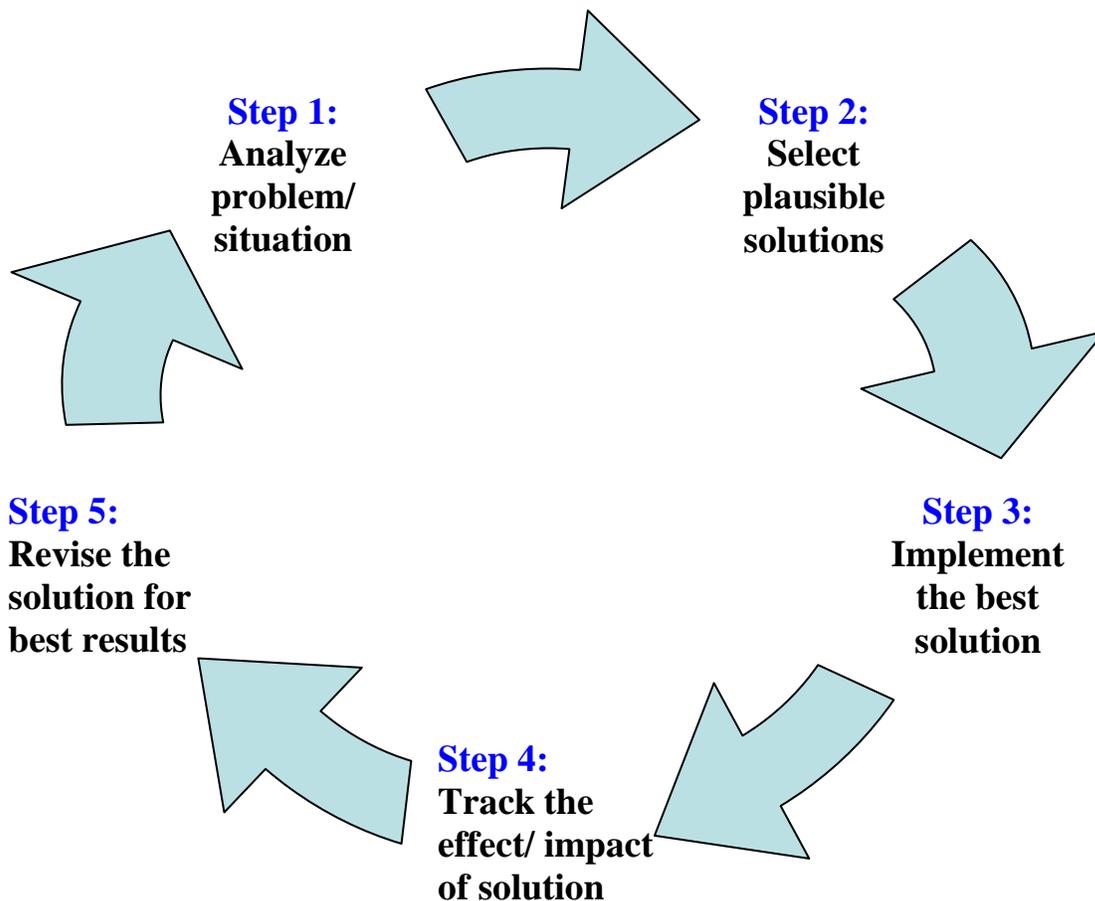
4. To establish a framework to enable instructors to assess the extent to which students are thinking critically and reasoning effectively.

A Critical Thinking Process:

To become a successful student of critical thinking requires the understanding and application of process observation and assessment. The following five-step critical thinking model is one suggested beginning of planning and practicing a methodology of critical thinking and reasoning instructors may use to stimulate student intellectual and emotional growth.

Individuals who use Critical Thinking skills will be able to apply the following five decision making steps in a given educational and learning situation: analyze the problem or situation, look for plausible solutions, implement the best solution and track the effect/impact of that solution, and revise or change the solution if it is not optimal.

- Step 1:** Analyze and gather relevant data about the problem/situation
- Step 2:** Select plausible solutions/conclusions
- Step 3:** Implement the best solution
- Step 4:** Evaluate/Track the effect/impact of the selected solution
- Step 5:** Revise/change solution for best results



Asking Essential Questions:

Inherent in critical thinking is to employ serious questioning. It is the mechanism that shapes and drives critical thinking. The critical thinker will formulate and ask vital questions that generate thought towards analyzing the problem, question, or situation (Step 1), by defining it, delineating facts and issues surrounding it, addressing assumptions, implications and consequences, and working within constraints or restrictions. The questions asked continue to evolve and new ones are formulated throughout the five-step Critical Thinking process. The end result for a critical thinker who uses precise and sound questioning is the ability to produce varying points of view and relevant explanations, and develop new ideas/contexts. It is essential to ask good questions to clarify an understanding of an issue to be solved. Examples of the questioning technique to employ are:

Who is involved in the process?

Why is the application of critical thinking within this context critical to student learning?

What is your plan of assessing the cognitive components of basic thinking skills like analysis, synthesis and evaluation?

When do you think you will be able to start your critical thinking analysis?

Where will you begin the process to introduce a critical thinking emphasis?

How do you plan to incorporate clarity, accuracy, and relevance to your critical thinking?

ACADEMIC INSTRUCTOR COURSE
Maxwell Air Force Base, Alabama

LESSON PLAN

PART I

COVER SHEET

LESSON TITLE: Critical Thinking and Decision Making

RESOURCE PERSON: Mr. Houston Lemond Markham

TEACHING METHOD: Informal Lecture

REFERENCES:

1. Daniel N. Boone, Critical Thinking, 2nd Edition, 2001
2. Richard L. Epstein, Critical Thinking Illustrated by Alex Raffi, 2nd Edition 2002
3. Vincent E. Barry, Invitation to Critical Thinking 1984
4. W. Edgar Moore, Hugh McCann, Janet McCann, Creative and Critical Thinking 1985
5. W. Edgar Moore, Creative and Critical Thinking, 1967

AIDS/HANDOUTS/NOTE TAKERS: Power Point slides and supporting equipment

STUDENT PREPARATION/READING: Read pp 5-15, Daniel N. Boone, Critical Thinking, 2nd Edition, 2001

PRESENTATION TIME: 60 Minutes

PART 1A

COGNITIVE OBJECTIVE: The objective of this lesson is for each student to comprehend the concept of critical thinking and how it enhances decision-making.

COGNITIVE SAMPLES OF BEHAVIORS:

1. In your own words, explain critical thinking.
2. In your own words, generalize creative thinking.
3. Explain the phases of decision making.

4. Illustrate the difference between creative and critical thinking.
5. Explain how to recognize the problem.
6. Predict what will happen if you fail to recognize the problem.
7. Summarize the process of gathering information.
8. Explain how to test conclusions.
9. In your own words, give examples of what is meant by evaluation.

AFFECTIVE OBJECTIVE: The objective of this lesson is for each student to respond with interest to the concept of critical thinking.

AFFECTIVE SAMPLES OF BEHAVIOR:

1. Voluntarily assist other students in understanding how to distinguish between the various phases of decision making.
2. Willingly asks questions concerning the process of critical thinking.
3. Independently reads additional material about the concept of creative thinking.
4. Answers instructor's posed questions on how critical thinking will help students become better decision makers.
5. Participates in discussion and case study on creative/critical thinking and its relationship to decision making.

PART 1B

ORGANIZATIONAL PATTERN: Topical

STRATEGY: This lesson is designed to help students understand how critical thinking in the classroom will enhance a student's ability to make decisions. After an appropriate attention step, motivation and overview, the lesson proceeds as an informal lecture with appropriate comprehension level questions within each main point to ensure students understand the relationship between creative and critical thinking. We will then discuss the barriers one typically may face when it comes to being creative. This will be done by talking about the organizational habits of a unit, by how people prejudge certain ideas, and how some people are simply afraid to think critically. We will also touch on some ideation techniques students may use to become more effective in their creative approaches to decision making. After discussing those techniques, we will then move into the definition of critical thinking. It's important to understand how both creative and critical thinking work together, thus the reason we define creative thinking first. After determining the definition of critical thinking, we will then talk about the relationship between Blooms higher levels of learning and critical thinking. We will then conclude with the five step process to decision making. Understanding all these things will make one a more effective thinker and decision-maker because they will know and understand the importance of effective thinking in the instruction and student learning process.

LESSON OUTLINE: TOOTLIFEST © the concept of creative and critical thinking.

MP1. Definition of Creative Thinking

MP2 Techniques for Creative Thinking

- a. Barriers to Creativity
 1. Organizational habit
 2. Prejudging
 3. Afraid
- b. Ideation Techniques
 1. Scamper
 2. Substitute
 3. Combine
 4. Adapt
 5. Magnify/Minify/Modify
 6. Put to Other Uses
 7. Eliminate
 8. Reverse/Rearrange

MP3. Definition of Critical Thinking

MP4. Critical Thinking and Benjamin Bloom's Cognitive Taxonomy

- a. Analysis
- b. Synthesis
- c. Evaluation

MP5. Phases of Decision Making

- a. Recognize and define the problem
- b. Gathering information
- c. Forming tentative conclusions
- d. Testing tentative conclusions
- e. Evaluation and Decision

TEACHING PLAN

PART II

INTRODUCTION

ATTENTION: Everyone's trying to convince you of something: You should go to bed early. You should give your neighbor a piece of your mind. You should buy a BMW instead of a Lexus. You should attend the Academic Instructor School.....and you spend a good bit of time

trying to decide what you should be doing, that is, trying to convince yourself: Should I take out a loan? Should I really marry this person? Should I move to a different neighborhood?

Are you tired of being conned? Of falling for every pitch? Of making bad decisions? Of fooling yourself? Or just being plain confused?

MOTIVATION: Thinking critically is a defense against a world of too much information and too many people trying to convince us. But actually, it is more than that. Reasoning is what distinguishes us from beasts or animals. Many of them can see better, hear better, and are stronger, but they can't plan or they can't think through different situations. When I was in college, in one class we often times had heated debates about different events. I participated in those debates much more than my good friend because I was able to clarify the issues, and when I said my piece, the majority of the class often agreed with me. I had the ability to present my ideas well. That too, is thinking critically. So as you participate in this lesson, think about all the decisions you have made in the past and will continue to make as leaders in our Air Force, or as leaders in your home. By understanding the concepts, definitions and principles we plan discuss, you will have a better grasp of what critical thinking is and how you can make it work in your lives.

OVERVIEW: Today, we are going to look at a topic that can truly make your lives better by applying the principles we discuss in your real world situations. At the conclusion of this lecture/guided discussion; we are going to have a case study to assist you with the application of these principles. But that, as I stated, will be at the conclusion of the lesson. The first thing we are going to do today is define what is meant by creative thinking. Not only will we define creative thinking, we will also discuss some barriers many instructors, students, and people in general typically deal with preventing them from being creative with their various approaches to problems. Following that discussion, we will take a look at the definition of critical thinking and talk about the differences between creative and critical thinking. From the definition of critical thinking, we will look at critical thinking and how it relates to Benjamin Bloom's cognitive taxonomy, specifically looking at the higher levels within this taxonomy. Following this, we will take a look at the five-step process to effective decision making. We will then conclude by going through a case study allowing you to go through the process and hopefully successfully determining an effective solution to the problems presented.

EXTERNAL TRANSITION: Now that you have a clear understanding of what we are planning to do, let's get right to it. In order to be able to understand creative thinking, we must first have a working definition of what it is.

BODY

Main Point 1: Creative thinking may be defined as the formation of possible solutions to a problem or possible explanations of a phenomenon. Critical thinking is the testing and evaluation of these solutions or explanations. Creative thinking and critical thinking are as essential to effective thinking as a good offense and defense are to a winning football team. The example I'd like to use would be if you were a manufacturer of some kind of new product. In order to put this new product on the market, you as the manufacturer would have to first "create"

the idea for the new product. I'd be willing to bet, the manufacturer wouldn't market this product until it has been thoroughly tested and evaluated. The creative thinking would be the manufacturer creating the product and the critical thinking would be the testing or evaluation of the product before going public. Another example might be a private detective. In solving a crime, good detectives first create the possible explanation and then test it. If he/she is careless in criticizing the explanation he/she created, the solution of the crime may be the wrong one. Lastly, whenever we go to the Doctor for any illness, we are watching the physician practice this process first hand. The doctor must first create possible diagnoses that seem to fit the symptoms and then criticizes these by further examination of the patient or by lab tests. His final diagnosis can't be right unless the possible diagnoses he created included the right one. So as we continue to build, create and criticize are the twin watchwords of the effective thinker/effective decision maker.

INTERNAL TRANSITION: We will look at the definition of critical thinking a little more later in the lesson, but first let's look at some barriers that might keep one from thinking creatively.

The first barrier one might encounter would be organizational habit, or just plain old habit. Organizational habit can be defined as the tendency of an organization to continue to do things the same way. This type of mindset restricts a group's willingness to venture beyond the familiar routine.

***QUESTION:** What are some examples you may have experienced where organizational habit prevented you from being creative?*

More often than not, the saying "if it ain't broke, don't fix it" isn't the best approach to resolving an issue. Our approach is: "if it ain't broke, fix it." Everything in the educational process can be improved. We challenge instructors to constantly improve.

The next barrier could be the way we prejudge things before hearing all the facts. Automatically rejecting ideas that you are emotionally bias toward is often times the most difficult barrier to overcome. It's difficult because we have been taught to think and have our own thoughts about a process before just taking someone else's word as the "gospel." In fact, isn't that what is being taught in this lesson? But sometimes, it is good to hear an idea through before placing any kind of judgmental feelings/ideas. Finally, some people are simply afraid of creativity. We are living in a society that wants to evaluate everything. It is through evaluation that we determine things are off or not quite right. But some people can't handle the truth about something especially, if it doesn't receive good responses or remarks. So, instead of hearing something bad, we will stay with the same thing that has been working. Does that sound eerily familiar? Some people are simply afraid of being ridiculed, laughed at or criticized by supervisors, peers, and/or students. Since we don't want to hear bad news, we stay afraid to be creative.

EXTERNAL TRANSITION: Now, we have taken a brief look at some barriers to creativity, let us now take a look at some techniques that are good to use. It is good to know what "not to do" from a creativity standpoint, but we want to focus briefly on the "what to do". The first

thing I would recommend would be to brainstorm. Let's look at what we mean by brainstorming.

Main Point 2

QUESTION: What do you think the word brainstorm means?

Brainstorming is a technique by which an individual or group attempts to solve a specific problem by amassing a large number of ideas in a brief period of time. Brainstorming is an idea generating technique. Its main goals are to break us out of our habit-bound thinking and to produce a set of ideas from which we can choose. Nobody wants to have a choice of only one product when buying a car or cookies, so why have a choice of only one solution when working on a problem? Brainstorming can take place either individually or in a group of two to ten, with four to seven being ideal. Alex Osborn, brainstorming inventor, recommends an ideal group size of twelve, though this has proven to be a bit unwieldy. The best results are obtained when the following guidelines are observed.

The first thing everyone should realize is that there should be **NO CRITICISM**. Judgment should be deferred until later whether positive or negative. This is the most important rule to be cognitive of. When ideas are brought forth, they are all written down. As stated earlier, we are so quick to be analytical in our thinking that this step is very difficult to observe, but crucial. To create and criticize at the same time is like watering and pouring weed killer onto grass at the same time. The second step is to **FREEWHEEL**.

QUESTION: What do you think **FREEWHEELING** means?

Exactly; Freewheeling means to be wild and creative with the ideas you come up with. The wilder the idea, the better because it is easier to tame down than it is to think up. While freewheeling, remember to look for the quantity of responses. Particularly important here is the idea of having a great number of ideas, because the greater the number of ideas, the more likelihood of useful ones. Impossible and unthinkable ideas are fine also. In fact, in every session, there should be several ideas so bizarre that they make the group laugh. Remember, practical ideas very often come from silly, impractical, impossible ones first. **HITCH-HIKE** next. Improve, modify, and build on ideas of others. What's good about the idea just suggested? How can it be made to work? What changes would make it better or even wilder? This is sometimes called piggybacking, or ping-pong. Use another's idea as stimulation for your own improvement or variation. As we noted earlier, changing just one aspect of an unworkable solution can sometimes make it a great solution.

Example of this might be:

PROBLEM: How can we get more students at our school?

IDEA: Pay them to come here.

MODIFIED: Not paying them with money, but with emotional, spiritual, or intellectual reward or better job contacts and networking opportunities.

QUANTITY is the last guideline but it is very similar to what we have already talked about in freewheeling. When thinking about quantity, concentrate on generating a large stock of ideas so that later on they can be sifted through. The larger your list of possibilities, the more you will have to choose, adapt, or combine from. Some brainstormers aim for a fixed number of ideas before quitting a session.

PRACTICAL METHODOLOGY FOR BRAINSTORMING

The first thing a group should do when beginning the practical aspects should be to choose a recorder. Someone must be put in charge of writing down all the ideas. Preferably, the ideas should be written on a board or butcher papered walls so that the whole brainstorming group can see them. Otherwise, ideas should be put on a sheet of paper. In an ideal session, the recorder should be a non participant in the brainstorming session, since it is hard to be thoughtful and creative and write down everything at the same time. But in small sessions, the recorder is usually a participant too. The next step should be to ORGANIZE THE CHAOS. For groups of more than three or four, have a moderator to choose who will offer an idea next, so that several people don't speak at once. The moderator should prefer those with ideas that tag onto previous ideas, then those with new ideas. If necessary, the moderator will also remind members of the group not to inject evaluation into the session. We then want to KEEP THE SESSION RELAXED AND PLAYFUL. The creative juices flow best when participants are relaxed and enjoying themselves and feeling free to be silly or playful. Eat popcorn or pizza or ice cream or make paper airplanes while you work, even if the problem itself is deadly serious like cancer or child abuse. Don't keep reminding everyone that "this is a serious problem." Now that you are silly and feeling relaxed, LIMIT THE SESSION. A typical session should be limited to about fifteen or twenty minutes. Longer than that tends to become dragging. You should probably not go beyond thirty minutes, though thirty is the "ideal" length recommended by Alex Osborn, an advertising writer who has contributed many powerful creative thinking techniques. After the session is complete, MAKE COPIES. No attempt should be made to put the list in any particular order, just simply neaten up the list and make copies. Finally, ADD and EVALUATE. The group should meet again the next day to evaluate each of the ideas and develop the most promising ones for practical applications. During the evaluation session, wild ideas are converted to practical ones or used to suggest realistic solutions. The emphasis is now on analysis and real world issues. Some brainstormers divide the ideas found to be useful into three lists:

- A. *Ideas of immediate usefulness.* These are ideas you will be able to use right now.
- B. *Areas for further exploration.* These are ideas that need to be researched, followed up, thought about, and discussed more fully.
- C. *New approaches to the problem.* These are ideas that suggest new ways of looking at the situation.

Remember, evaluation does not take place on the same day as the brainstorming session. This fact keeps the idea session looser and allows time for more ideas and time for thinking about the ones suggested.

INTERNAL TRANSITION: Now that we have an idea of how to handle a brainstorming session, we still haven't talked about the variations of how to proceed during this process.

The first thing you may consider is brainstorming via the STOP AND GO method. For stop and go brainstorming, ideas are generated for three to five minutes. Then the group is silent and thinking for three to five minutes. Then ideas are given out for another three to five. This pattern alternates for the entire session. SEQUENCING is a technique where the moderator goes in order from one member of the group to the next in turn. Each member gives whatever ideas he then has, and they are written down. If a member has no ideas, he just says, "Pass," and the next member responds. This movement in turn or around the table continues throughout the session. Sequencing has been said to nearly double the number of ideas generated in a brainstorming session.

Then, give the class a list of topics and have them to select one as a group. From the list of topics they select, give them a few minutes to brainstorm and come up with 35 ideas for solving the problem. Then distill this list into at least three practical, effective ideas. The list is as follows.

1. A new snack food
2. How to keep rowdy children quiet on a school bus
3. How to get more tourists into the United States
4. How compatible people can meet each other for romance
5. How to reduce hospital costs
6. How to reduce airport congestion and delays
7. A name for a new laundry detergent
8. How to keep your car keys safe at the beach
9. A new toy
10. A new electronic consumer product

EXTERNAL TRANSITION: Now that we have talked about how to be creative and come up with various solutions to a problem, it is time to be critical. We don't mean be critical as in nasty but critical from the standpoint of asking "is this really going to work?"

Main Point 3.

Having said that, let us take a look at the definition of critical thinking. Critical thinking is the testing and evaluation of proposed solutions to a problem. Now as we begin to blend these two together, we look at the fact that effective thinking would consist of both creative and critical thinking. Indeed, both kinds of thinking are essential in all areas of human activity.

EXTERNAL TRANSITION: Thus far, we have looked at the definition of creative thinking, techniques to help improve your creative thinking, and the definition of critical thinking. Let us now take a look at how critical thinking and Benjamin Bloom's Cognitive Taxonomy work together.

Does everyone remember Benjamin Bloom?

QUESTION: What are the various levels of learning within Blooms taxonomy?

Great!!!!

Main Point 4. Problem solving and Benjamin Bloom's cognitive taxonomy

Problem solving skills are critical to any leader or supervisor. Having the ability to problem solve can greatly enhance the effectiveness of an individual in their organization. The simple question is what does problem solving involve? According to Thomas Cyr's "Problem solving requires the student to integrate previously learned solutions to new novel situations and thus expand their problem solving ability. In many instances these concepts or principles will have been learned in other contexts".

With the previous information in mind let's take a look at Benjamin Bloom's cognitive taxonomy in particular the three higher levels of learning. The three higher levels of learning are associated with critical thinking and problem solving.

a) **Analysis-** Involves breaking a communication or product down into the essential components and relating the parts to each other to discover new relationships and connections.

- Possible behavioral action terms at the analysis level

- Categorize
- Support
- Analyze (the relationship between... and...)
- Diagnose (the problem with...)
- Discover (the cause-effect relationship...)
- Identify (the true intent of...)

- Examples of learning performance objectives at the analysis level

- The student nurse will distinguish facts from fallacies on a given list of statements about food.
- Given a speech by Martin Luther King Jr., the student will identify the assumptions of the speaker that influenced his remarks.
- Given a scenario, the student will diagnose the scenario for possible problems or cause-effect relationships.

b) **Synthesis** – Involves combining elements of a communication in such a way as to make it unique and original for the student at a certain time. The new structure of the product or idea must clearly be distinguished from the prior structure.

- Possible behavioral action terms at the synthesis level

- Create
- Formulate a solution
- Compose (an original...)
- Develop (a theory that...)

- Invent (a way that...)
- Design (a set for the plan...)
- Produce (a story that...)

- Examples of learning performance objectives at the synthesis level

- Ability to make extemporaneous speech
- Skill in writing, using an excellent organization of ideas and statement
- Ability to integrate the results of an investigation into an effective plan or solution to solve a problem
- Ability to design simple machine tools to perform specified operations

c) **Evaluation** – The highest level of intellectual skill in which the results of analysis and synthesis are judge according to some internal or external criteria. Evaluation might involve some value judgments.

- Possible behavioral action terms at the synthesis level

- Decide
- Defend
- Assess (the accuracy of...)
- Judge
- Argue (the value of...)
- Evaluate

Examples of learning performance objectives at the evaluation level

- After observing an instructor in a classroom teaching situation, the teaching consultant will evaluate the quality based on the following criteria:

- level of questions
- lecture format
- voice characteristics
- The ability to use a given criteria (based on standards)in the judgment of a Work or task
- Skills in recognizing and weighing values involved in alternative courses of Action
- Given opposing arguments dealing with the use of marijuana, the student will evaluate them according to the following criteria:
 - medical use
 - recreational use
 - legalization

TRANSITION: Hopefully, that made some sense to you but if not, feel free to see me after class so we can continue to discuss some of your concerns. But now, we are moving into the last part of this lesson. We have determined thus far that there is a problem and we now know how to come up with creative alternatives to resolve it. Not only that, we have critically thought through the creative possibilities. We also understand how Bloom’s high three levels apply to

thinking through these alternatives. But now it is time to make a decision. So let us take a look at the phases of decision making.

MAIN POINT 5

The general procedure for applying creative and critical thinking to any problem can be described as a cycle with five phases. This cycle should not be considered a rigid procedure in which each phase must be completed before the next begins. In practice, you may go back to an earlier phase or work on several phases simultaneously. Does this sound familiar to you? It sounds very similar to the ISD process doesn't it? But if you are to have any real assurance that your ultimate decision is sound, all phases must be completed. The details of each phase will vary with the problem, but the general principles apply to all situations. The details of each phase are too complex to permit more than a brief description of them at this point. Even so, you should begin immediately to practice using this cycle with your own problems. Merely reading or talking about effective thinking is not enough. Only through practice can we acquire the skills we need. The first phase is **RECOGNIZING AND DEFINING THE PROBLEM**. A typical process of decision making begins with the recognition of a problem. Once a problem has been recognized, it should be carefully defined. If you do not correctly define your problem, you are not likely to solve it. You may solve some problem but not the one you should have been trying to solve. Suppose you are the type of person who is always running out of money and unable to meet expenses. You may react by resenting your employer or those responsible for your financial support for being stingy. You may, without realizing it, define your problem as how to get even with these people. You may succeed in solving this problem only to realize too late that the real problem was how to reduce your expenditures. In many situations, defining the problem will be the most difficult phase; once you have correctly defined the problem, the rest will be relatively easy. Often you will start with the wrong definition. The thinking you do in the subsequent four phases may help you realize your definition is improperly defined. In this event, you should start over at the beginning of the cycle. Sometimes you will find it helpful to use the entire five-phase cycle to define the problem. You will find it helpful in defining problems to follow three rules. The first is that the definition should not be too general. The definition sets the guidelines for the succeeding phases of the cycle. If it is too broad, the guidelines for a solution will be too broad, and the investigation may flounder. The second rule for defining problems addresses the opposite danger: the definition should not be too specific. A definition of a problem is too specific when it unnecessarily restricts alternative solutions. Finally, the definition should not in itself constitute a "solution" to the problem. Very often definitions of problems that are themselves solutions also have the fault of being too specific. As definitions become more specific, alternative answers tend increasingly to be ruled out, until at last only one remains. But not all definitions that are too specific get as far as dictating only one conclusion, and we will do better at defining problems if we keep these two rules separate.

INTERNAL TRANSITION: We now have the first step in the process, but recognizing the problem alone isn't the answer. The next step in this process will be to **GATHER INFORMATION**.

Once you have defined your problem, you should begin to gather information about it. The information may be of many kinds. The detective may call his or her information "clues"; the

doctor may speak of “symptoms”; the scientist, of “data.” Adequate and accurate information is essential to sound decisions. In general, the more information you have on which to base your decision, the more likely it is that the decision will be sound.

INTERNAL TRANSITION: After gathering the information, we must next **FORM TENTATIVE CONCLUSIONS.**

Forming tentative conclusions represent solutions to the problem. You can begin doing this as soon as you have enough information to suggest some possible answers, but you must remember that solutions at this stage can only be tentative. The objective in this phase is not to settle on one conclusion but rather to formulate as many plausible ones as possible. The more we produce, the more likely we are to include a sound one. Furthermore, forming several tentative conclusions is the best safeguard against the dangers of accepting or acting upon a proposed conclusion without adequate evidence. In this phase your thinking must be primarily creative. You should give freedom to your imagination and postpone critical thinking until the next phase. If you look for flaws in tentative conclusions while forming them, you may choke off a sound one before it can be born. In this phase it is desirable to give attention to every idea that comes to mind. Sometimes, ideas you might impatiently reject as wild or irrelevant turn out to be solutions of problems or important clues to solutions.

Now that we have tentative conclusions, let’s **TEST THE TENTATIVE CONCLUSIONS.** In this phase, the objective is for you to “criticize” all tentative conclusions by assessing their reliability. All tentative conclusions are reached through some kind of inference, a process of reasoning by which they are derived from evidence or available facts. For example, a young man of seventeen reads a statement in the newspaper stating “all males must register for the draft when they reach the age of seventeen.” If he concludes that he is about to be drafted and put in the army, his conclusion is the result of an inference. He combines two pieces of evidence, the statement in the newspaper and the fact that he is seventeen, and infers that he is soon to be inducted. If he immediately charges down to the recruiting office to volunteer so that he can choose his branch of the service, he has violated two cardinal rules of effective thinking: he has formed only one tentative conclusion, and he has acted on it without testing it for reliability. Although his conclusion could prove to be true, it is not reliable. A conclusion is completely reliable only when it is known to be true. In order to know that a conclusion is true you must know that the evidence used is in itself completely reliable, that is, known to be true; and that all inferences involved are logically flawless. The young man’s conclusion fails to meet either test. He does not know yet whether the statement in the newspaper is true; newspaper statements are often false. Furthermore, his inference is faulty: even though registration for the draft might be required, it does not follow that anyone is presently being drafted. The young man’s inference is therefore not reliable at all; he has jumped to a conclusion. Although a completely reliable conclusion that he was about to be drafted would be difficult, if not impossible, to reach—even an order to report for induction could possibly be in error—he should have investigated the situation more fully before acting so he could consider all the relevant evidence. Ideally, all conclusions should be tested for reliability. If you test some but not others, you may be protecting your cherished beliefs by testing only the tentative conclusions that displease you.

Our final step in this process is the EVALUATION AND DECISION PHASE. The objective of the fifth phase of the cycle is to determine whether you have found any workable solutions to your problem and, if so, to select the best of them. Thus this phase involves assessing the reliability of solutions based on the testing done in phase 4. When you begin testing tentative conclusions by appropriate methods, you will soon discover that completely reliable conclusions are rare. Usually there will be some weakness either in the evidence or in the inferences or in both. In practical matters, the best we can hope for is a high degree of reliability. If we delayed making a decision until we reached absolute reliability, we would dwell forever in the limbo of decision by indecision. The minimum degree of reliability you should have before accepting or acting on a conclusion varies with the circumstances. A juror in a murder case who believes that convicting an innocent defendant of murder would be a tragic error should demand the high degree of reliability known as true beyond reasonable doubt. A person trying to decide which is better of two boxes of cereal can afford to settle for a much lower degree of reliability since relatively little is at stake. When evaluation of your tentative conclusions shows that none of them is sufficiently reliable, you should repeat the whole cycle. Each time we repeat the cycle we are likely to discover new information that may suggest new and more promising tentative conclusions. The process should be repeated until you have a conclusion with a degree of reliability sufficient for your purpose.

TRANSITION: Man, we have traveled a great distance this past hour or so. Let us quickly recap the journey we have traveled today.

CONCLUSION

SUMMARY: We started this lesson by showing you how in this day and time, everybody has something to sell. Some people are trying to con you while others are simply trying to provide a service you may not need all the while, making a nice piece of profit. But now, you should have a better grasp of how to think through the process of effective thinking to determine if it is right for you. We started this hour by giving you a definition of creative thinking. We determined that creative thinking is the imaginative recombination of known elements into something new and useful. From that definition, we talked about some things you can do to better assist you in your creative thinking. After establishing your creativity, we determined the definition of critical thinking as the testing and evaluation of proposed solutions to a problem. After realizing we need both creative and critical thinking to be effective, we looked at Bloom's higher levels of learning and drew the relationship between those higher levels and how critical thinking relates to it. We finally took a look at the five phases of effective decision making, to include first "recognizing the problem, through the idea of evaluating and making the final decision.

REMOTIVATION: Each of you is or will be a teacher. But greater than that, you will all be and are leaders in this great Air Force. Now, the power of critical thinking can be yours. Defend yourself against the hazard of unjustified emotional appeals, illogical arguments. Amaze your subordinates and co-workers with your new power to persuasion. Intimidate your boss with your ability to expose the flaws in every policy. Explore the mysteries of life and unravel the secrets of the universe as never before possible.

CLOSURE: Now as we leave this block of instruction, let us not forget how important it is to not only think for ourselves, but to think critically before every decision we make in the future. Thank you for your time and attention.

PERSONNEL SENSITIVITY

CASE STUDY

This case study actually happened. It was prepared in cooperation between Brigadier General Susan L. Pamerleau, HQ AFPC/CC, Randolph AFB, Texas, 78150-4703 (DSN 487-6042), and Dr. Richard I. Lester, Ira C. Eaker College for Professional Development, ECPD/EA, Air University, Maxwell AFB, Alabama, 36112-6429 (DSN 493-7058).

We invite your attention to the format in this case. The design of this case might be helpful in preparing your own case study relevant to critical thinking.

PERSONNEL SENSITIVITY

Case Objectives

To heighten a conscious awareness of sensitivity in Air Force organizations; to build an alertness in identifying acute emotional and physical needs; to comprehend and value chain of command vigilance in demonstrating positive action to elevate critical personnel needs.

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How to initially participate in a case study?

1. Review the case to get a broad overview.
2. Reread the case carefully, noting what is basically involved.
3. Determine what in your judgment, are the most fundamental, crucial, or urgent sensitivity issues or problems presented.
4. Assess what, if anything should be done? Who should do it? When should it be done? Why do you think so?
5. Ever mindful of the consequences of your decisions, develop a strategy and set of recommendations you deem appropriate.
6. Analyze and evaluate how you will communicate your ideas to the group discussion.
7. Defend your position based on the facts as you perceive them.

Actual Participation in Case Study Discussion

(NOTE: A facilitator will guide the instruction. The core of Case Teaching is the facilitation of student learning.)

1. Be prepared; master the details involved.
2. Keep your contributions relevant to the discussion and ask good questions.
3. Listen attentively to others and carefully evaluate their positions.
4. Be mindful that the key value in the discussion is the unfolding of the analytical process of the personnel sensitivity scenario presented.
5. Do not “beat a dead horse.”

THE SCENARIO

PERSONNEL SENSITIVITY

A young man joined the Air Force, attended tech school and was assigned to his first permanent duty station. After being on duty for 14 months, he deserted. He was apprehended two years after he deserted, was court martialed and pled guilty to a single specification of desertion terminated by apprehension. He was sentenced by a military judge to a reduction in grade to E-1 and a dishonorable discharge.

On the surface, this seems like a very light sentence for desertion. But now for the rest of the story.

The young man had joined the Air Force after completing several semesters of college work. After completing basic training, en route to tech school, he married his high school sweetheart.

At his first permanent duty assignment, he could not get on-base housing, so he and his wife rented a small apartment about 10 miles from the base. As with most very young couples, there wasn't a lot of money; in fact, there were some small debts which were being paid off month to month. He had taken advance pay for the apartment deposit and to cover minor moving expenses. His car became unreliable, so he got more advance pay to make a down payment on a newer, more reliable car. They were making it, but barely. He wanted to get a second job, but his unit told him that wasn't allowed until he got his five level. His wife could not work because she had had several episodes of illness. The base doctor suspected kidney problems and referred her off base for evaluation. A kidney biopsy showed she had less than 20 percent of her kidney function left.

The young airman did not have any supplementary insurance. His application for Medicaid was refused because theoretically the military provided his dependent with medical care.

Medical bills began to mount. CHAMPUS has a catastrophic cap of \$1,000, but \$1,000 is a lot of money when you don't have any. Further, that cap renews each calendar year.

CHAMPUS does not cover all medical bills either. The airman submitted claims that were turned down. For instance, when his wife was hospitalized downtown, she routinely had lab work and X-rays. Those claims were denied because those services were available on base. No one adequately answered the question how she was supposed to get to the base to get these services when she was an in-patient downtown. Additionally, even though the base told the airman that this particular hospital was the only place to get the necessary treatment, the doctor and hospital routinely billed higher fees than CHAMPUS allowed. All of the excess was the airman's responsibility.

The airman went to the Air Force for help. He applied for humanitarian transfer to the base that was near his extended family and that had a base hospital with the ability to treat his wife's condition. That would have significantly reduced his expenses, and his family would have been able to help out with getting his wife to appointments, and they could have provided some emotional support. The Air Force turned down his request. He obtained more documentation from his wife's doctor and reapplied. His second request was also denied. At no time did his commander or first sergeant discuss the possibility of a humanitarian discharge.

For five months, the airman tried to get other help from the Air Force. With all the medical and normal expenses, he couldn't make ends meet. He went to a budgeting class. He was trying, but everything seemed to be working against him. His wife's condition continued to worsen. She needed some pretty expensive medication. One type alone cost \$50.00 a week. CHAMPUS would pay for some but the airman had to pay for it first, then file a claim. He got an emergency

loan from the Air Force Aid Society, but he was told their money was tight, and he would have to find some other way to buy the medication the next time.

His wife's medical condition continued to deteriorate. She was unable to drive, and the airman had to drive her everywhere. She needed three 4-hour sessions of dialysis per week. The hospital was 30 minutes away from the base.

The airman took a day off from work, got all of his belongings, placed them in a trailer, got his wife and went to his hometown. Over the two years he was a deserter; he got a job, got promoted in that job, and took care of his wife. At the time of his apprehension, his wife was virtually blind and in a wheelchair.

After the trial, the judge said the Air Force deserted the airman long before the airman deserted the Air Force.

KEY DISCUSSION QUESTIONS

1. What do we mean by personnel sensitivity?
2. Can modern organizations such as the Air Force be sensitive? Can they “care”? Is there a limit to how sensitive an organization should or can be? If so, what do you perceive these limits to be?
3. What is the problem in this case?
4. What should the Supervisor, First Sergeant, Squadron Commander, Group Commander, Wing Commander, Air Force Personnel Center, Medical Services, and others have done about it?
5. What should (or could) the airman have done that he did not do?
6. What are the lessons learned?
7. How can the ability to understand people be improved?
8. What is the bottom line in this case?

Suggested/Recommended Resources for Teachers

Barnet, Sylvan and Hugo Bedau. Critical Thinking, Reading, and Writing: A Brief Guide to Argument. Boston: Bedford/St. Martin's, 1999.

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Browne, M. Neil, Asking the Right Questions: A Guide to Critical Thinking, Prentice Hall: Upper Saddle River, NJ, 2001.

Elder, Linda and Richard Paul, The Thinker's Guide to the Art of Strategic Thinking: 25 Weeks to Better Thinking and Better Living: First Steps to Becoming a Critical Thinker, Foundation for Critical Thinking, Dillion Beach, CA, 2004.

Epstein, Richard L. Critical Thinking. New York: Wadsworth Publishing Company, 1999.

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Paul, Richard and Linda Elder, The Miniature Guide to Critical Thinking: Concepts & Tools, 4th edition, Foundation for Critical Thinking, Dillion Beach, CA, 2004.

Paul, Richard and Linda Elder, The Miniature Guide to Understanding the Foundations of Ethical Reasoning, Foundation for Critical Thinking, Dillion Beach, CA, 2005.

Ruggiero, Vincent Ryan. Becoming a Critical Thinker. 3rd Ed. Boston: Houghton Mifflin Company, 1999.

Summary

The hallmark for one who thinks critically is the ability to reason, assess, question, investigate, formulate, calculate, evaluate, and judge to make informed decisions and successfully solve problems for a desired outcome. The greatest benefit to implementing critical thinking into your curriculum is the significance beyond the classroom. It's the student's ability to apply these skills on the job, on the battlefield, and in personal life.

While there is often disagreement on exactly what critical thinking is by writers and educators, there is little disagreement on the importance for students to use critical cognitive skills to solve problems and making better decisions. This guide has identified helpful components of critical thinking and provided a lesson plan, a case study, and useful resources to help instructors teach and facilitate critical thinking.