

EXAMPLES OF SHORT CRITICAL THINKING TASKS FOR TEACHING COURSE CONCEPTS AND DISCIPLINARY ARGUMENT

PSYCHOLOGY: [In this course students were asked to do a 15 minute thinking piece as part of homework for each class period.]

TASK 2: Suppose you are a parent who goes to a child psychologist for advice on how to get your 10 year old child to practice the piano. It seems the child rushes out of the room screaming every time you insist he practices. What different advice would you get if the child psychologist were a behaviorist, a psychoanalyst, or a humanistic psychologist?

TASK 5: Suppose you had a theory that laboratory rats fed a steady diet of beer and hot dogs could learn to find their way through a maze faster than rats fed a steady diet of squash, spinach, and broccoli. How would you design a scientific experiment to test this hypothesis? In your discussion, use the terms experimental group, control group, independent variable, dependent variable. Before beginning this task, review pages 17-23.

TASK 23: Explain in your own words the difference between a variable interval schedule of reinforcement and a variable ratio schedule of reinforcement. Then explore this question: Is a skilled trout fisherman on a variable interval or a variable ratio schedule of reinforcement while fishing?

Formal microtheme for same course

In the morning when Professor Catlove opens a new can of cat food, his cats run into the kitchen purring and meowing and rubbing their backs against his legs. What examples, if any, of classical conditioning, operant conditioning, and social learning are at work in this brief scene? Note that both the cats and the professor might be exhibiting conditioned behavior here.

You and some fellow classmates have been discussing this problem over coffee, and you are convinced that the other members of your group are confused about the concepts. Write a one-page (single-spaced) essay that sets them straight.

MATHEMATICS: Here is a complex quantitative problem that you may or may not be able to solve [problem attached]. Try to solve it. Then write a thinking piece exploring the process you used in trying to solve the problem. Describe your use of the various problem-solving tactics we have discussed in class such as "check the definitions," "restate the problem," "draw a diagram," "argue by analogy," "solve a similar problem," "reason backward from the desired conclusion," and so forth.

NURSING: Using layperson's language, explain to a new insulin-dependent diabetic what is meant by the glycemic index of foods and why knowing about glycemic index is important. *A variation on this assignment:* Explain glycemic index to different audiences using appropriate language: (a) A six year old child; (b) an adult with high school equivalency education; (c) an adult college graduate with strong science background.

ECONOMICS:

TASK 8: As illustrated in Figures 1 and 3 in the Goldin and Rouse article, the sex composition of major symphony orchestras changed dramatically over time. The increase in the percentage of female musicians corresponded with a change in audition policies. Goldin and Rouse use econometric analysis to assess the effect of "blind" auditions on female musicians. What do you see as the advantage of using econometrics over simply examining trends?

TASK 9: In class we discussed a way to estimate the percentage of the wage gap that is attributable to labor market discrimination. How does Durden & Gaynor's approach differ from the approach covered in class? Do not focus on the technical details but on the bigger picture.

LITERATURE: Freewrite on the poem's title (2-3 minutes). Given this title, what do you think the poem may be about? What associations does it raise for you? Then read the poem very carefully at least six times. Circle three significant images that seem most vivid, important, or puzzling to you. Then freewrite for 2-3 minutes about each image. Describe the image and explore what it means for you. Bring your exploration to class, where you will share your discoveries with other members of your small group.

HISTORY: Your next formal assignment will be to create an argument that supports, rejects, or modifies one of the following theses and that supports your argument with historical evidence. For this thinking piece, select one of the theses and explore your initial ideas.

- The *essential* theme of the French Revolution was human freedom; Napoleon Bonaparte killed the French Revolution by reversing its thrust toward freedom.
- The industrial revolution created unprecedented wealth at the expense of brutalizing European labor and colonial producers.
- The ultimate victors in the English Revolution of 1688, the American Revolution, and the French Revolution were the economically conservative property-owning classes.

MICROTHEME: GRAMMAR/EDITING (COMPOSITION COURSE): You are putting yourself through college by operating a grammar hot line and charging people a hefty sum for your advice. One day you receive the following fax:

Dear Grammar person:

I get really confused on how to punctuate words like "however" and "on the other hand." Sometimes these words have commas on both sides of them, but at other times they have a comma in back and a semicolon in front. What's the deal here? How can I know whether to use a comma or a semicolon in front of a "however"?

Bewildered in Boston

Write a response to Bewildered explaining why such words as *however* are sometimes preceded by a comma and sometimes by a semicolon (or a period, in which case *however* starts with a capital letter). Use your own language and invent your own examples.

PHYSICS MICROTHEME: Suppose that you are Dr. Science, the question-and-answer person for a popular magazine called Practical Science. Readers of your magazine are invited to submit letters to Dr. Science, who answers them in "Dear Abby" style in a special section of the magazine. One day you receive the following letter:

Dear Dr. Science:

You've got to help me settle this argument I am having with my girlfriend. We were watching a baseball game several weeks ago when this guy hit a high pop-up straight over the catcher's head. When it finally came down, the catcher caught it standing on home plate. My girlfriend told me that when the ball stopped in midair just before it started back down, its velocity was zero, but its acceleration was not zero. I said she was stupid. If something isn't moving at all, how could it have any acceleration? Ever since then she has been making a big deal out of this, and she's thinking of breaking up with me. I love her, but I don't think we can get back together until we settle this argument. We checked some physics books, but they weren't very clear. We agreed that I would write to you and let you settle the argument. But, Dr. Science, don't just tell us the answer. You've got to explain it so we both understand because my girlfriend is really dogmatic. She said she wouldn't even trust Einstein unless he could explain himself clearly.

Sincerely,
Baseball Blues

Can this relationship be saved? Your task is to write an answer to Baseball Blues. Because space in your magazine is limited, restrict your answer to 250 words. Don't confuse Baseball and his girlfriend by using any special physics terms unless you explain clearly what they mean.

MECHANICAL ENGINEERING:

For the design application we have been studying, your design team has proposed four alternative solutions: conventional steel roller bearings, ceramic bearings, air bearings, and magnetic bearings. As a team, write a dialogue in which each team member argues the case for one of the alternative solutions and shows weaknesses in the other solutions. Then make a joint case for the best solution based on criteria established by the team.

WELDING:

You are an experienced welder working for a reputable welding contractor. John at Massive Construction Company brought in a broken bracket from the gantry of their 150 ton crane. This was a part which was critical to the safety of the crane, made of a sophisticated alloy, and required exacting welding techniques and testing. Your shop completed the job professionally and certified the part. John was completely satisfied with the results.

However, when your shop submitted a bill of \$XXX to Massive Construction Company, their accounting department demanded an explanation for why it cost so much to simply weld a little bracket. Over the phone, one of the accounting supervisors even suggested that your shop's bill was outrageous. He has asked for an explanation in writing for why the repair was so expensive.

Your task: Write a letter to their accounting department justifying your shop's bill.

FINANCE ASSIGNMENT WITH SCORING GUIDE:

The situation: One day you receive the following memo from your boss:

Our current CEO, Mary Davenport, wants to examine the possibility of selling our Financial Services division. To help with our decision-planning, I need from you a memo that recommends for or against divestiture based on your analysis of key data. I am providing you with a set of reasonable assumptions regarding the future if we sell the assets of this division. Please compare the financial performance of the Smith Corporation if we divest this division versus the financial performance of the Smith Corporation if we do not (status quo plan). In addition to your memo, please provide me for each scenario (divestiture versus status quo) a set of Projected Financial Statements for the next 5 years (2000-2004). These statements should include income statements, balance sheets, common size income statements and balance sheets, statements of cash flow, and a complete set of ratios.

Your task: Write the required memo and attach to it the complete statements requested by your boss. In your memo itself, recommend a course of action regarding divestiture. Drawing on key data from your attachments, support your plan with reasons, explanations, and evidence. Your memo should be succinct (no more than two pages) and clearly written and argued.

Scoring Guide

Overall impact of the memo: *[The memo is self-contained; has high quality accurate/supportable ideas; makes a clear recommendation; supports the recommendation with appropriate reasons, explanations, and data; can be read quickly by a busy executive; and convinces reader of the professional expertise of the writers]*

High Middle Low

Introduction: *[Orients reader to the issue and describes purpose of the memo; states recommended action]*

High Middle Low

Body of report: *[Develops argument point by point regarding each significant effect divestiture will have on future performance; brings in numeric data purposefully for support; explains all data adequately in terms of meaning, implications, or causes; understands that the audience is less knowledgeable than writer about financial analysis]*

High Middle Low

Conclusion: *[Summarizes main findings of the analysis and restates recommendation regarding divestiture]*

High Middle Low

Organization and readability *[Report readily comprehensible to your boss and other possible readers such as Ms. Davenport; well-organized; easy to follow; grammatically coherent; absence of sentence-level errors]*

High Middle Low

Attachments: *[clearly evident understanding of financial concepts and principles; accurate computations; effective display of data]*

High Middle Low

Source: Bean, J. C. (2002, October 16). Low cost writing assignments: How to use writing to enhance learning and critical thinking without increasing the teacher's burden. Presentation given at Kansas State University as a Faculty Swap Session. (*Permission to post was granted by the author*).