

Developing Critical Thinking Skills: Strategies for the Classroom

Lynchburg College
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Presenter:

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Workshop Goals:

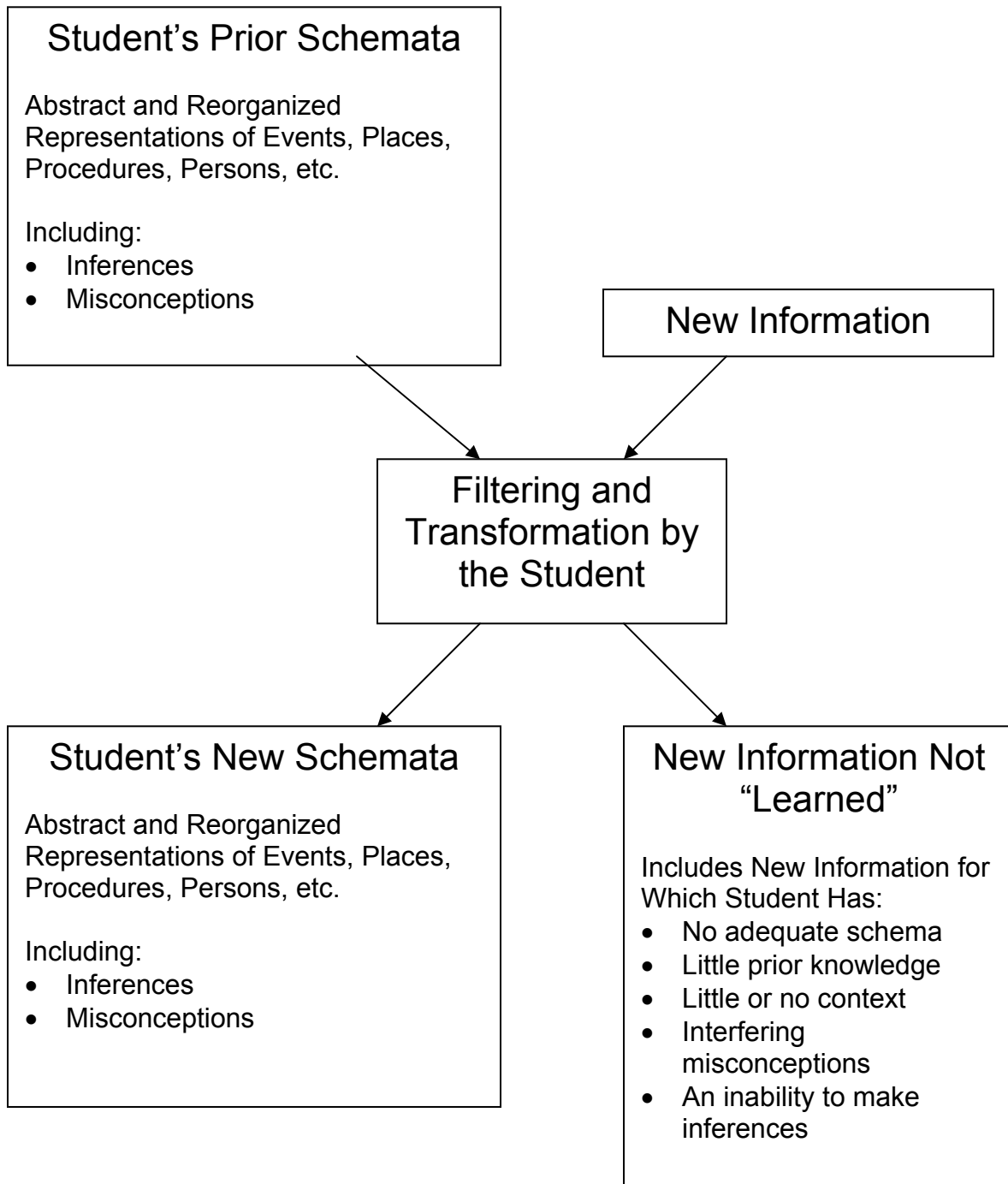
- Clarify Desired Student Critical Thinking Skills
- Discover How Cognitive Development Affects Critical Thinking Performance
- Use Assessment Results to Identify “Next Steps” in Student Critical Thinking Development
- Design Assignments, Discussions, and Other Classroom Activities to Foster Improved Critical Thinking Skills

Critical Thinking Skills

ACTIVITY

List Words/Phrases That Describe Desired Critical Thinking Skills:

Overview of Schema Theory

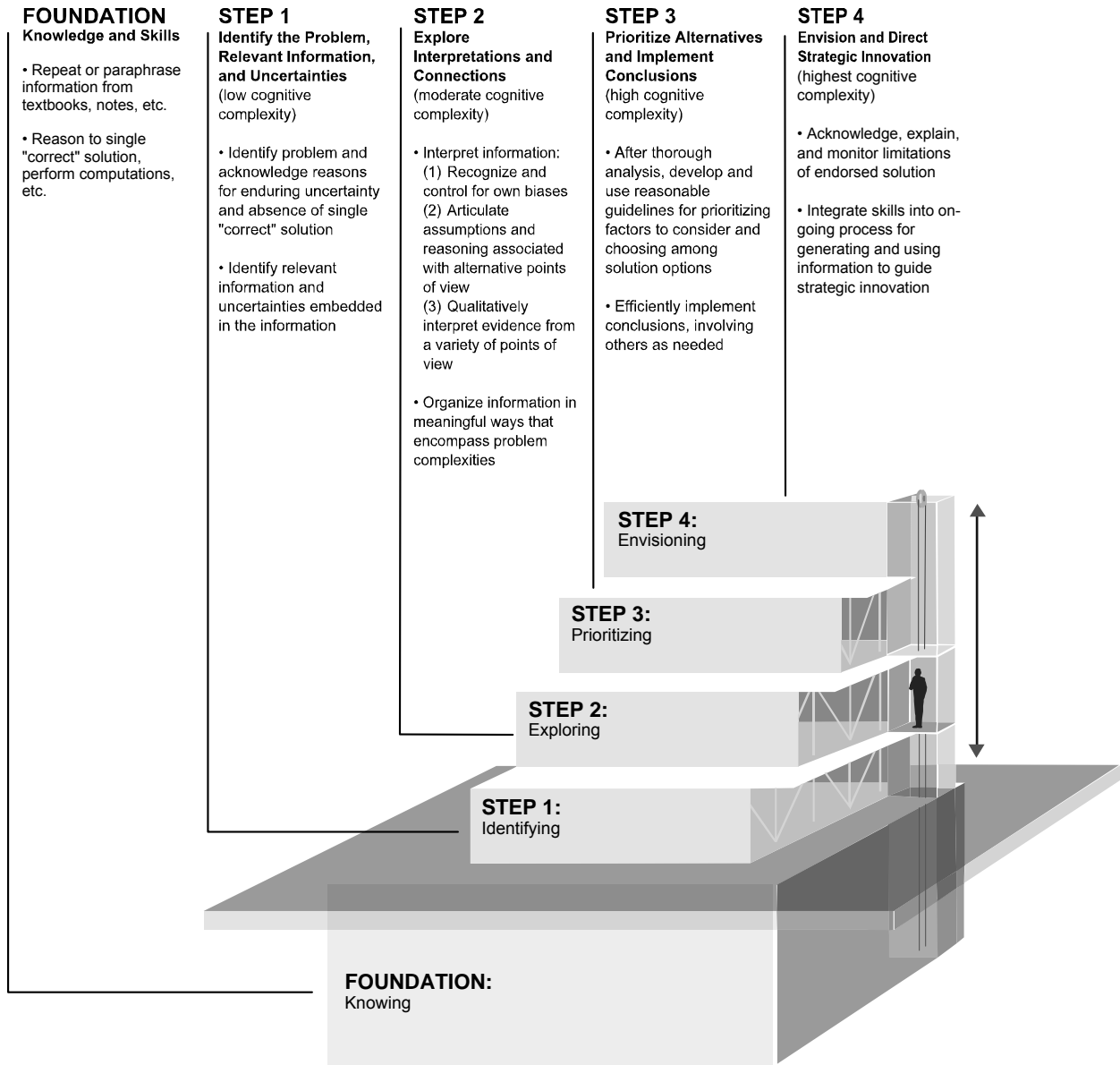


To learn more, see: Cross, K. Patricia and Mimi Harris Steadman, 1996, *Classroom Research: Implementing the Scholarship of Teaching*, San Francisco: Jossey-Bass Publishers, pp. 36-56.



STEPS FOR BETTER THINKING

A Developmental Problem Solving Process

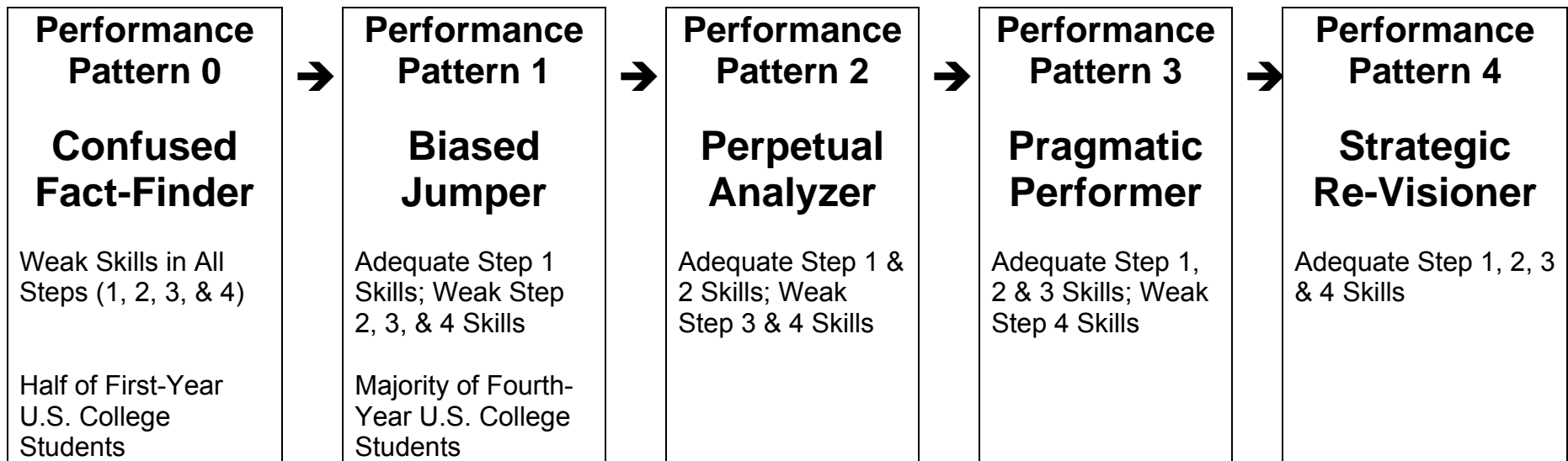


© 2002, Cindy L. Lynch, Susan K. Wolcott, and Gregory E Huber. Please cite this source: Lynch, C. L., Wolcott, S. K., & Huber, G. E. (May 31, 2002). Steps for Better Thinking: A Developmental Problem Solving Process [On-line]. Available: <http://www.WolcottLynch.com>. Model evolved from ideas presented in King and Kitchener's (1994) reflective judgment model of cognitive development and Fischer's (Fischer & Bidell, 1998) dynamic skill theory.

(You can download this figure under "Educator Resources" at <http://www.WolcottLynch.com>.)

Overview: Steps for Better Thinking Performance Patterns

Skills Develop in Sequential Stages:



Note: This page and the following 5 pages can be downloaded as part of the document titled "Overview of Steps for Better Thinking Performance Patterns" under "Educator Resources" at <http://www.WolcottLynch.com>.

Do You Recognize These Students?

Performance Pattern 0: Confused Fact-Finder

- Looks for the “only” answer
- Doesn’t seem to “get it”
- Quotes inappropriately from textbooks
- Provides illogical/contradictory arguments
- Appears unable to read carefully
- Insists professors, the textbook, or other experts provide the “correct” answer, even to open-ended problems

Approx. 50% of U.S. First-Year College Students in Unsupported Settings

Classroom Vignettes: The Confused Fact-Finder (Performance Pattern 0)

Professor Bergen was reflecting on her last finance class session. Part of the session involved identifying and discussing possible reasons why some companies pay dividends while other companies do not. Several of the students seemed to be completely off the mark—they kept referring to “good” or “bad” managers instead of identifying possible reasons, such as differences in free cash flows, which might cause differences in companies’ dividend policies.

Professor Ramakrishnan was grading his world history examination. One question required students to describe the pros and cons of U.S. involvement in the Gulf war. Instead of describing pros and cons, several students simply described the war.

Transition →		
Performance Pattern 0 Confused Fact-Finder	Major Improvements: <ul style="list-style-type: none">• Acknowledges existence of continuing uncertainty• Recognizes viability of multiple perspectives• Begins to use evidence logically to support conclusions	Performance Pattern 1 Biased Jumper

Performance Pattern 1: Biased Jumper

- Jumps to conclusions
- Does not recognize own biases; Accuses others of being biased
- Stacks up evidence for own position; Ignores contradictory evidence
 - Uses arguments for own position
 - Uses arguments against other positions
- Equates unsupported personal opinion with other forms of evidence
- Acknowledges multiple viewpoints, but cannot adequately address a problem from viewpoint other than own

Majority of U.S. College Seniors in Unsupported Settings

Classroom Vignettes: The Biased Jumper (Performance Pattern 1)

Professor Ramakrishnan was grading his world history examination. One question required students to describe the pros and cons of U.S. involvement in the Gulf war. Instead of describing pros and cons, several students provided only the pros OR the cons of U.S. involvement in the Gulf war, but not both.

Two of Professor McDonald's students were very angry about the grades on their Psychology paper. One confronted the professor and argued, "I don't understand how I could get a C—I did the work!" The other angry student complained on the teaching evaluation, "The professor was very biased in her grading."

Transition →		
Performance Pattern 1 Biased Jumper	Major Improvements: <ul style="list-style-type: none">• Attempts to control own biases• Identifies issues, assumptions, and biases associated with multiple perspectives• Logically and qualitatively evaluates evidence from different viewpoints• Organizes information meaningfully	Performance Pattern 2 Perpetual Analyzer

Performance Pattern 2: Perpetual Analyzer

- Unable to establish priorities
- Fails to reach or adequately defend a solution
- Exhibits strong analysis skills, but appears to be “wishy-washy”
- Writes papers that are too long and seem to ramble
- Over-Analyzes:
 - “I can look at it this way, and I can look at it that way, and...”
 - “Wait! What about _____?”

Classroom Vignette: The Perpetual Analyzer (Performance Pattern 2)

Professor Vaughn was very excited as she read this student’s paper. “At last,” she thought, “I’m reading a paper by a student who knows how to analyze.” By the end of the paper, however, she had become disappointed. The student’s recommendation, required in the assignment, was very weak. After presenting the relevant information and analyses, the paper seemed to “fizzle.”

Transition →		
Performance Pattern 2 Perpetual Analyzer	Major Improvements: <ul style="list-style-type: none">• Avoids getting “hung up” by consciously prioritizing issues and information• Maintains objectivity, but articulates well-founded support for choosing one solution	Performance Pattern 3 Pragmatic Performer

Performance Pattern 3: Pragmatic Performer

- Objectively considers alternatives before reaching conclusions
- Focuses on pragmatic solutions
- Incorporates others in the decision process and/or implementation
- Views task as finished when a solution/decision is reached
- Gives insufficient attention to limitations, changing conditions, and strategic issues
- Sometimes comes across as a “Biased Jumper,” but reveals more complex thinking when prompted

Classroom Vignette: The Pragmatic Performer (Performance Pattern 3)

Professors Wu and Kessler were sharing some of their recent experiences in teaching the business strategies course. “I’m sure that some of these students can think more strategically than they demonstrate in the case papers they write for my class,” Professor Wu complained. “But they just don’t seem to take the time to think past making the most obvious recommendation. Maybe they’re too busy interviewing for jobs this semester.”

Transition →		
Performance Pattern 3 Pragmatic Performer	Major Improvements: <ul style="list-style-type: none">• Prioritizes and addresses limitations effectively• Interprets and re-interprets bodies of information systematically over time• Exhibits a strategic, long-term vision• Spontaneously considers possible ways to generate new information	Performance Pattern 4 Strategic Re-Visioner

Performance Pattern 4: Strategic Re-Visioner

- Seeks continuous improvement/lifelong learning
- More likely than others to think “out of the box”
- Anticipates change
- Works toward constructing knowledge over time

Classroom Vignette: The Strategic Re-Visioner (Performance Pattern 4)

Professor Schuler had no reservation about writing a glowing letter of recommendation for this student. “Sandy is the rare student who not only understands engineering technical knowledge, but also performs superior analyses, recognizes and incorporates the most important issues, and always seeks to learn more,” he wrote.

Steps for Better Thinking Performance Patterns

← Less Complex Performance Patterns		More Complex Performance Patterns→		
“Confused Fact-Finder” Performance Pattern 0 Step 1, 2, 3, & 4 skills weak	“Biased Jumper” Performance Pattern 1 Step 2, 3, & 4 skills weak	“Perpetual Analyzer” Performance Pattern 2 Step 3 & 4 skills weak	“Pragmatic Performer” Performance Pattern 3 Step 4 skills weak	“Strategic Re-Visioneer” Performance Pattern 4 Strategically Integrates Step 1, 2, & 3 skills
Overall Problem Approach: Proceeds as if goal is to find the single, “correct” answer	Overall Problem Approach: Proceeds as if goal is to stack up evidence and information to support conclusion	Overall Problem Approach: Proceeds as if goal is to establish a detached, balanced view of evidence and information from different points of view	Overall Problem Approach: Proceeds as if goal is to come to a well-founded conclusion based on objective comparisons of viable alternatives	Overall Problem Approach: Proceeds as if goal is to construct knowledge, to move toward better conclusions or greater confidence in conclusions as the problem is addressed over time
Common Weaknesses: <ul style="list-style-type: none"> • Fails to realistically perceive uncertainties/ambiguities • Recasts open-ended problem to one having a single “correct” answer • Insists that the experts should provide “correct” answer • Expresses confusion or futility • Uses illogical arguments • Cannot evaluate or appropriately apply evidence • Inappropriately cites textbook, “facts,” or definitions • Concludes based on unexamined authorities’ views or what “feels right” 	Major Improvements Over Performance Pattern 0: <ul style="list-style-type: none"> • Acknowledges existence of enduring uncertainties and the viability of multiple perspectives • Begins to use evidence logically to support conclusions Common Weaknesses: <ul style="list-style-type: none"> • Jumps to conclusions • Stacks up evidence quantitatively to support own view and ignores contrary information • Confuses evidence and unsupported personal opinion • Inept at breaking problem down and understanding multiple perspectives • Insists that all opinions are equally valid, but discounts other opinions • Views experts as being opinionated or as trying to subject others to their personal beliefs 	Major Improvements Over Performance Pattern 1: <ul style="list-style-type: none"> • Presents coherent and balanced description of a problem and the larger context in which it is found • Identifies issues, assumptions, and biases associated with multiple perspectives • Attempts to control own biases • Logically and qualitatively evaluates evidence from different viewpoints Common Weaknesses: <ul style="list-style-type: none"> • Unable to establish priorities for judging across alternatives • Reluctant to select and defend a single overall solution as most viable, or provides inadequate support for solution • Writes overly long paper in attempt to demonstrate all aspects of analysis (problems with prioritizing) • Jeopardizes class discussions by getting stuck on issues such as definitions 	Major Improvements Over Performance Pattern 2: <ul style="list-style-type: none"> • After thorough exploration, consciously prioritizes issues and information • Articulates well-founded support for choosing one solution while objectively considering other viable options • Conclusion based on qualitative evaluation of experts’ positions or situational pragmatics • Effectively incorporates others in the decision process and/or implementation Common Weaknesses: <ul style="list-style-type: none"> • Conclusion doesn’t give sufficient attention to long-term, strategic issues • Inadequately identifies and addresses solution limitations and “next steps” 	Major Improvements Over Performance Pattern 3: <ul style="list-style-type: none"> • Prioritizes and addresses limitations effectively • Interprets and re-interprets bodies of information systematically over time as new information becomes available • Exhibits a strategic, long-term vision • Spontaneously considers possible ways to generate new information about the problem Common Weaknesses: <ul style="list-style-type: none"> • Not applicable

Note: This page can be downloaded under “Educator Resources” at <http://www.WolcottLynch.com>.

Implications for Student LEARNING ATTITUDES AND APPROACHES

← Less Complex		More Complex →		
“Confused Fact-Finder” Performance Pattern 0	“Biased Jumper” Performance Pattern 1	“Perpetual Analyzer” Performance Pattern 2	“Pragmatic Performer” Performance Pattern 3	“Strategic Re-Visioner” Performance Pattern 4
<p>Common Learning Attitudes and Approaches:</p> <ul style="list-style-type: none"> Assumes there is a single “correct” way to study Equates learning with memorizing Expects experts (such as the teacher or textbook) to provide the answers to all problems Fails to recognize own role in learning other than simplistic aspects such as time spent studying Recasts open-ended problem to one having a single “correct” answer When asked for analysis, quotes inappropriately from textbook or class notes 	<p>Common Learning Attitudes and Approaches:</p> <ul style="list-style-type: none"> Studies in a way that “seems right” or “logical” to him /her Fails to recognize qualitative differences in learning effort or performance Focuses on quantitative aspects of learning (e.g., amount of time spent or number of pages) Equates learning with “doing the work” Perceives criticism of work as criticism of self Expresses curiosity or surprise at ways in which others differ from self Views experts (such as the teacher) as biased persons who are simply promoting their own agenda Ignores or seems discouraged by information suggesting that own learning approach is inadequate Recasts pro/con task as one calling for arguments in favor of own position and arguments against other position(s) 	<p>Common Learning Attitudes and Approaches:</p> <p>Same as Performance Patterns 3 and 4:</p> <ul style="list-style-type: none"> Considers a wide range of learning strategies Recognizes qualitative differences in effort and performance Evaluates the quality of learning strategies in relation to own preferences and skills Objectively considers criticism of work Views experts (such as teachers) as partners in the learning process <p>Unique to Performance Pattern 2:</p> <ul style="list-style-type: none"> Views learning as an exploration of perspectives and information Reluctant to select and defend one learning approach as “best” Has difficulty prioritizing effort to optimize performance Has difficulty drawing adequate conclusions <ul style="list-style-type: none"> Writes overly long papers Jeopardizes class discussions by getting stuck on issues such as definitions 	<p>Common Learning Attitudes and Approaches:</p> <p>Same as Performance Patterns 2 and 4:</p> <ul style="list-style-type: none"> Considers a wide range of learning strategies Recognizes qualitative differences in effort and performance Evaluates the quality of learning strategies in relation to own preferences and skills Objectively considers criticism of work Views experts (such as teachers) as partners in the learning process <p>Unique to Performance Pattern 3:</p> <ul style="list-style-type: none"> Views learning as a problem to be solved Relies on experts’ positions or the pragmatics of the situation in choosing best learning approach Without prompting, provides inadequate explanation of analyses that underlie solution, causing approach to appear biased Fails to adequately anticipate situations calling for changes in best approach 	<p>Common Learning Attitudes and Approaches:</p> <p>Same as Performance Patterns 2 and 3:</p> <ul style="list-style-type: none"> Considers a wide range of learning strategies Recognizes qualitative differences in effort and performance Evaluates the quality of learning strategies in relation to own preferences and skills Objectively considers criticism of work Views experts (such as teachers) as partners in the learning process <p>Unique to Performance Pattern 4:</p> <ul style="list-style-type: none"> Views learning as a process that can be improved strategically over time Spontaneously addresses ways to improve learning or performance

Note: This page can be downloaded under “Educator Resources” at <http://www.WolcottLynch.com>.

Practice Identifying Performance Patterns in Student Essays

ACTIVITY:

- Read the assignment 3 student responses in the separate handout “Example: U.S. Traditions”
- Refer to the “Steps for Better Thinking Performance Patterns.”
- Identify the Pattern That Best Describes Each Student’s Performance.

SCAFFOLDING

Helping Students Develop More Complex Critical Thinking Skills

Have students address OPEN-ENDED problems (i.e., ones having more than one reasonable solution)

Provide reasonable challenges

Remember: Development is sequential (Step 1, Step 2...)

In general: Target one level higher than students' existing skills

For most students, it is critical to focus on uncertainties—reasons why problems are open-ended

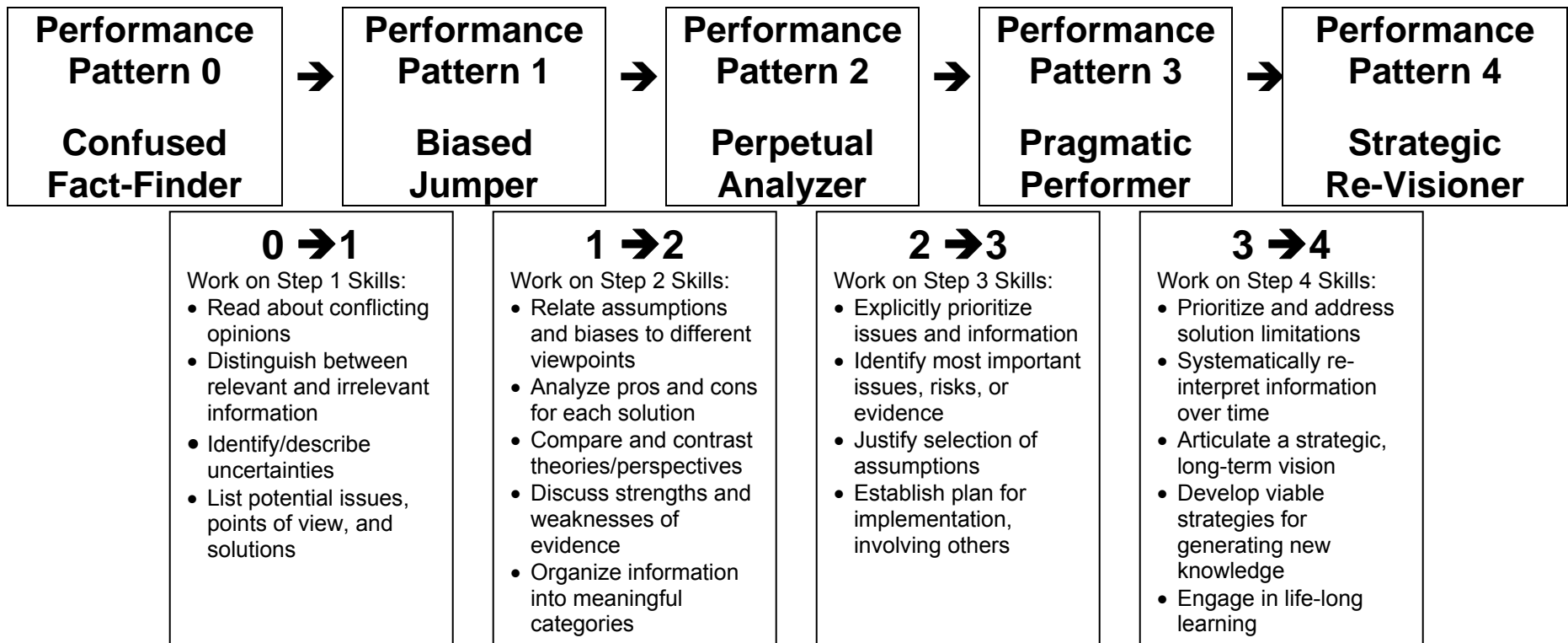
Most professors expect too much too soon; Keep in mind that development takes much time and practice

Provide explicit guidance and support to help students develop new skills. For example:

Use Steps for Better Thinking to help you and students focus on critical thinking skills

Design assignments to focus on specific skills (see “Templates for Designing Developmental Questions” in this handout)

Specific Learning Activities to Encourage Movement to the Next Level of Performance



Note: This page can be downloaded as part of the document titled "Overview of Steps for Better Thinking Performance Patterns" under "Educator Resources" at <http://www.WolcottLynch.com>.

For more ideas, see *Templates for Designing Developmental Questions* on the next page.

Templates for Designing Developmental Questions

←Less Complex			More Complex →
Step 1—Identifying	Step 2—Exploring	Step 3—Prioritizing	Step 4—Envisioning
<p>Identifying Relevant Information:</p> <ul style="list-style-type: none"> * List data or types of information relevant to _____ * Identify relevant information in _____ (a textual passage such as a case, article, piece of literature, etc.) * Access relevant standards or rules for _____ * Identify factors related to _____ * Identify various potential solutions to _____ * Describe arguments in favor of _____ <p>Identifying Uncertainties:</p> <ul style="list-style-type: none"> * Explain why _____ cannot completely eliminate risk of _____ * Describe uncertainties concerning _____ * Identify and describe uncertainties about the interpretation or significance of _____ * Identify risks associated with _____ * Describe why there is no single, “correct” way to _____ * Identify reasons why _____ might change or vary 	<p>Interpreting Information From Multiple Viewpoints:</p> <ul style="list-style-type: none"> * Describe the pros and cons of _____ * Analyze the costs and benefits of _____ * Explain how ambiguities affect your analysis of _____ * Identify assumptions associated with _____ (a point of view or alternative) * Interpret _____ from the viewpoint of _____ * Appropriately use _____ (a technique) to analyze _____ * Objectively evaluate _____ information * Explain how alternative solutions might affect _____ (one or more stakeholders) * Analyze the quality of information and evidence related to _____ * Identify own biases and explain how those biases were controlled when _____ * Identify the effects of _____ on _____ <p>Organizing Information:</p> <ul style="list-style-type: none"> * Develop meaningful categories for analyzing information about _____ * Organize the various aspects of _____ to assist in decision making 	<p>Prioritizing and Concluding:</p> <ul style="list-style-type: none"> * Develop and use reasonable guidelines for drawing conclusions regarding _____ * Assess the degree of risk of _____ * Objectively consider _____ when making a decision about _____ * Prioritize _____ * Consider _____ in reaching a conclusion * Develop reasonable recommendation for _____ * Address the costs and benefits of _____ in reaching a conclusion about _____ * Develop reasonable policies for _____ * Develop an effective plan for addressing _____ <p>Effectively Involving Others in Implementation:</p> <ul style="list-style-type: none"> * Take actions to implement the best solution to _____ * Organize _____ (a communication) so that it is meaningful to the receiving party * Communicate _____ effectively for _____ (a given setting and audience) 	<p>Acknowledging Limitations:</p> <ul style="list-style-type: none"> * Identify and describe potential future developments in _____ * Describe limitations to a recommendation about _____ * Strategically consider contingencies and future developments related to _____ <p>Creating and Monitoring Strategies</p> <ul style="list-style-type: none"> * Develop and monitor strategies for _____ * Implement appropriate corrective action for _____ over time * Acknowledge changing circumstances and reconsider _____ (a solution) as appropriate * Continuously monitor and update _____, as needed * Develop strategic uses of _____ * Manage _____ under changing or unusual demands * Apply continuous improvement principles to _____

Note: This page can be downloaded under “Educator Resources” at <http://www.WolcottLynch.com>.

Thinking About the Design of an Assignment

Wake-Up Coffee: Are Hourly Labor Costs Fixed or Variable?

You have recently been hired by Wake-Up Coffee, which owns and operates a chain of retail coffee shops. You work in the finance department, and your first assignment is to develop a budget for fixed and variable costs for the retail stores. You are having difficulty deciding how to handle labor costs for hourly workers. Each store manager sets a weekly schedule for hourly workers, adjusting the schedule over time for sales volumes. In addition, the store manager can send workers home early if sales on a particular day are lower than expected. Hourly labor was treated as a variable cost in previous budgets. However, a certain number of workers is needed to run the store, and managers are reluctant to send workers home early too often for fear of losing good employees. Accordingly, you are wondering whether hourly labor costs should be treated as a fixed cost in next year's budget.

Required:

Provide your recommendation for the treatment of hourly labor costs in next year's budget.

This assignment is part of a pre-course test written by L. Eldenburg & S. Wolcott for *Cost Accounting: Measuring, Monitoring, and Motivating Performance*, John Wiley & Sons, 2005.

(continued)

To Improve Student Learning and Performance, Replace the Preceding Requirement With the Following:

Required: Analyze Information

The following questions will help you analyze the information for this problem. Do not turn in your answers to these questions unless your professor asks you to do so.

Content Knowledge	A. Explain the difference between fixed and variable costs.
Step 1	B. Identify uncertainties about how labor costs should be treated in the budget.
Step 2	C. Discuss pros and cons of alternative treatments.
Step 4	D. Identify additional information you might like to have.

Required: Written Assignment

Your boss wants your recommendation about how hourly labor costs should be treated in next year's budget. Turn in your answer to the following.

Step 3	E. Use the information you learned from the preceding analyses to write a memo with your recommendation. As you write the memo, consider what information your boss will need from you to help make the final decision.
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Comments About Asking Specific Questions Aimed at Steps 1, 2, 3, & 4 in an Assignment:

This type of assignment is useful when you would like to:

- Expose students to future skills beyond those they can currently address
- Challenge all students in a course
- Gather assessment information about your students' critical thinking levels (for example, at the beginning of a course or for students at a point in time during a program)

Expect better student performance for assignments structured this way, compared to assignments having less specific instructions.

Examples of Open-Ended Problems and Potential Questions

Topic (Subject) and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Accounting for Bad Debts: Give students a scenario in which a company uses credit reports and other information to make credit decisions. In the scenario, the company has experienced an unexpected increase in bad debts.</p>	<ul style="list-style-type: none"> Identify and explain possible reasons why management might not foresee an increase in bad debts. Explain why credit reports can't be used to know for sure which customers will pay and which will become bad debts. 	<ul style="list-style-type: none"> Discuss the strengths and weaknesses of using credit reports to make credit decisions. Given bad debt problems, discuss the pros and cons of extending credit to customers. 	<ul style="list-style-type: none"> Analyze the company's credit policies and practices and recommend improvements to management. 	<ul style="list-style-type: none"> Develop a plan for monitoring the performance of the company's credit policies and practices.
<p>Education—Effectiveness of the Public Schools: You are the leader of a community task force that has been asked to establish strategies for evaluating the effectiveness of the public schools in your metropolitan school district. The task force has received very different recommendations from two national experts. One focuses on the use of standardized, norm referenced test scores. The other includes a wider range of alternative indicators, such as curricular innovations, portfolios, and satisfaction ratings.</p>	<ul style="list-style-type: none"> How is it possible for two national experts to give very different recommendations for evaluating public school effectiveness? Identify resources that will help you evaluate the two recommendations. 	<ul style="list-style-type: none"> What are the pros and cons for each recommendation? Who are the various stakeholders for the work of the task force? For each stakeholder group, discuss whether the group is likely to have a preference for one of the two recommendations. 	<ul style="list-style-type: none"> Develop a plan for the work to be performed by the task force. Explain the reasons for the design of your plan. Which expert recommendation do you think is better? How did you prioritize issues in arriving at your conclusion? 	<ul style="list-style-type: none"> Assume that the school district adopts the recommendations of the expert you consider to be better. Explain how the school district could use the evaluation results over time to improve educational effectiveness.

Examples (continued)

Topic (Subject) and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Military Law You have just arrived at your first duty station at Grand Forks AFB, ND. You are the missile maintenance squadron section commander. This is your first duty day and while MSgt Big, your first sergeant, is showing you around TSgt Small approaches and says "Sir/Ma'am it's SSgt Loser again. He was 30 minutes late for work this morning and his uniform looks like he slept in it." MSgt Big tells TSgt Small, SSgt Loser's supervisor, to have SSgt Loser report to your office in 10 minutes. Welcome to North Dakota!</p> <p>You meet with SSgt Loser who tells you that he overslept. He also explains that his wife just left him and she did all his laundry and ironed his uniforms. You dismiss SSgt Loser and tell him to put on a proper uniform and you will deal with him later when you have more facts.</p> <p>Meanwhile, MSgt Big has told me, the Commander, about SSgt Loser. I come to your office, welcome you to North Dakota, tell you to find out what's up with SSgt Loser and give me a recommended course of action.</p> <p>SSgt Loser does not show up for work the next day and is nowhere to be found.</p> <p>Pertinent sections of the UCMJ and maximum punishment tables are appended to your textbook.</p> <p>Adapted from a problem developed at the U.S. Air Force Academy</p>	<ul style="list-style-type: none"> • What are your options? • What else do you need to know before making your recommendation and why do you need to know it? 	<ul style="list-style-type: none"> • Do you have any personal beliefs or assumptions that may interfere with your ability to make an objective recommendation? If so, what are they and how did you overcome them? • What are the arguments for and against each possible recommendation'? 	<ul style="list-style-type: none"> • What is your recommendation? What is the basis for your recommendation? How did you decide between the various options available to you? 	<ul style="list-style-type: none"> • What are the limitations of your recommendation? Is it possible to minimize the effects of those limitations?

Examples (continued)

Topic (Subject) and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Health Care—Elderly Patient Tiny Miss Ruth sat hunched without words in her wheelchair, living the final stages of Alzheimer’s-like dementia. Her 91-year-old hands slid over the beautiful but slick cover of Birds and Blooms magazine. Birds, gardening, and reading had always been her interests. Now she couldn’t read or talk about her favorite topics; she couldn’t even hold the magazine. This frustrated and angered her! She flailed and she hummed, communicating her agitation. Quietly and with a very heavy heart, I watched, saying little but thinking much. “What might I do to improve her quality of life?”</p>	<ul style="list-style-type: none"> • What have you observed about Miss Ruth and her situation? • What is currently being done to care for Miss Ruth? • What does current literature say about caring for people like Miss Ruth? • What theories and evidence are available? • Do different facilities provide different kinds of care for people like Miss Ruth? If so, why don’t they all provide the same kind of care? • Who has input into the care Miss Ruth receives? • Why might these people view her needs and care differently? • What factors might you need to consider as you explore this problem? 	<ul style="list-style-type: none"> • What biases and assumptions might affect how you view this situation, and how might you compensate for your biases? • Evaluate evidence from the literature and from your observations of Miss Ruth’s situation from a variety of perspectives, including a traditional maintenance model of care, a restorative model of care, the perspective of her family members, the nursing home administrator, nursing director, and social worker. • What are the similarities/differences across the different perspectives about how to care for Miss Ruth? • How might you organize your analyses to help you reach a conclusion about the best way to care for Miss Ruth? 	<ul style="list-style-type: none"> • What priorities have you given to different factors that must be considered in deciding how to care for Miss Ruth? • Why do you believe those priorities are most appropriate? • Given those priorities, what do you recommend regarding Miss Ruth’s care? • How will you present your ideas to those who are interested in her care? • How might you deal with people’s different assumptions and biases if you were part of a team that would decide about Miss Ruth’s care? • Do you anticipate any disagreement? If so, how will you deal with that? 	<ul style="list-style-type: none"> • As you work with Miss Ruth, what additional information do you want to gather? • Why is this information important? • How can you go about getting that information in a systematic fashion? • What might cause you to reconsider Miss Ruth’s care plan?

Examples (continued)

Topic and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Hong Kong Dollar—Introduction to Business Course Read the following two articles:</p> <ul style="list-style-type: none"> • “Deutsche Bk Calls For 20% HK Dlr Devaluation, Then Float,” by Liz Rudall and Raymond Tsoi, <i>Dow Jones Newswires</i>, January 30, 2003. • “What’s in a Peg?” <i>The Economist</i>, October 31, 2002. 	<ul style="list-style-type: none"> • Identify and discuss uncertainties about whether the HK dollar should be delinked. 	<ul style="list-style-type: none"> • Discuss pros and cons of delinking the HK dollar. 	<ul style="list-style-type: none"> • Should the HK dollar be delinked from the U.S. dollar? Explain what was most important in reaching your conclusion. 	<ul style="list-style-type: none"> • Discuss whether it would be possible for you to change your mind about this question in the future.
<p>Ethics (Financial Accounting): Ask students to read excerpts from the report of the “Special Investigative Committee” of WorldCom, Inc., filed with the Securities and Exchange Commission (SEC) on June 9, 2003. The report describes a major financial accounting fraud committed by the managers of WorldCom during 1999 through 2002, the motivations behind the fraud, and the methods that were used to commit it. The report also discusses the fact that at least some employees, beyond those directly involved, were aware of the fraudulent activities. Pose the following scenario: Many people at WorldCom were either aware of or actively participated in the company’s fraud. Suppose you were an employee at WorldCom who became aware of the fraud.</p>	<ul style="list-style-type: none"> • Identify and describe possible alternative actions you could take to this ethical dilemma. • Identify uncertainties about how you should respond. 	<ul style="list-style-type: none"> • Identify the stakeholders involved in this ethical dilemma (including you) and explain how each alternative action would affect various groups of stakeholders. • Discuss the pros and cons of each course of action. 	<ul style="list-style-type: none"> • Propose a course of action and explain how you weighed issues in reaching a conclusion. 	<ul style="list-style-type: none"> • Identify the limitations of your proposed course of action. • Discuss how addressing this ethical scenario can help prepare you for possible ethical situations you may face in the future.

Examples (continued)

Topic and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Self-Made Man—History course Background: During the late nineteenth-century, the United States experienced tremendous economic growth in its manufacturing sector. This occurrence was both the cause and result of large-scale immigration from Europe and the emergence of the modern corporation which came to dominate the business community. For a few, vast fortunes were being made. For some, there was a rise to middle-class prosperity. For many, life was a struggle near or in economic poverty.</p> <p>Given this background, this became the question: How did one account for the great inequalities of wealth? What was the explanation for why some people prospered so greatly while others struggled? For some the answer was given in a set of ideas collectively known as the "self-made man" theory, (also commonly known as the theory of "rugged individualism.")</p>	<ul style="list-style-type: none"> In one paragraph, explain why there are uncertainties about whether theories such as the "self-made man" theory provide good descriptions of historical events. 	<ul style="list-style-type: none"> In two-to-three paragraphs discuss the validity of the "self-made man" theory by noting both the praise and the criticism made of it. In one page, discuss how your own personal work history (or someone in your family) relates to the principles of the "self-made man" theory. Do you find the theory to be accurate or not? Why? 	<ul style="list-style-type: none"> In one page, cite the principles of the "self-made man" theory which are the most or least valid. Explain. 	
<p>Communication (Any Course): Give students a scenario in which they need to prepare a written communication for a specific audience.</p>	<ul style="list-style-type: none"> Prepare a list of information that might be appropriate to include in the communication. Explain why uncertainties exist about the best way to communicate to the audience. 	<ul style="list-style-type: none"> Describe the information needs of the audience. Describe the pros and cons of including one or more pieces of information in the written communication for this audience. 	<ul style="list-style-type: none"> Create a written communication for the audience that provides appropriate information prioritized for the setting and audience. 	<ul style="list-style-type: none"> Create a written communication for the audience that provides appropriate information for the setting and audience, including recommendations for strategies the audience member(s) might employ to monitor performance or processes in the future.

Examples (continued)

Topic and Potential Scenario Given to Students	Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking			
	Step 1	Step 2	Step 3	Step 4
<p>Study Habits (any course) As a part of this course, you have maintained a study journal to help you reflect on your grading habits, course performance, and feelings.</p> <p>As you approach the final exam in this course, you must prepare a one to two page (single-spaced) essay on the following question:</p> <p style="text-align: center;"><i>How effective have your study habits been in this course?</i></p> <p>In your essay, you must address each of the following issues:</p>	<ul style="list-style-type: none"> Does one “perfect” way to study exist? 	<ul style="list-style-type: none"> What, if anything, have you learned about your study habits this semester? 	<ul style="list-style-type: none"> Have you made any changes this semester in how you study, take tests, or think/feel about your schoolwork? <ul style="list-style-type: none"> If no, why not? If yes, what changes have you made and why? With what results? 	

Practice Designing Questions for an Assignment

Consider the U.S. Traditions Assignment (separate handout)

Students A and C might have demonstrated more complex critical thinking skills if the assignment had been designed differently. The assignment called for the students to develop a thesis and to provide support for that thesis—i.e., to demonstrate the skills of a “Biased Jumper.” This assignment design provided an appropriate level of challenge for Student B, who was unable to present a persuasive set of arguments with evidence from the text. However, the other two students needed encouragement to think more complexly, such as considering other viewpoints or identifying and evaluating their underlying assumptions.

ACTIVITY:

Use the “Templates for Designing Developmental Questions” to help you write several questions for this assignment that explicitly address skills for each cognitive level (Step 1, 2, 3, 4).

Lynchburg College Assignment Example: Senior Capstone

This final exam was used in the senior symposium, under the faculty leadership of Dr. Peggy Pittas.

GS 436 Spring 2004

Final Exam

Directions: Please answer two of the following three questions. This exam is a take-home and covers class readings, presentations, and class discussions. The essays should be written as argumentative essays. Please note that *at least* two readings and *at least* two presentations should be cited in each answer—this is a minimum.

Each question will require at least three pages as you will need to develop your answers more fully than your weekly writing assignments. Please note that the rubric for grading the final exam will be the same as your weekly writing assignments. **NO LATE EXAMS WILL BE ACCEPTED.** Do not get any help on your exam.

Please turn in two (2) copies of your papers, which will be used for assessment purposes. Place only your social security number on the second copy.

Question #1

Agree or disagree with the following statement:

Tyranny and freedom are absolute opposites.

Use the readings and speakers in the areas of *art* and *technology* to support your position.

Here are some springboards to help your thinking about this:

Many assume that “freedom” and “tyranny” are absolute opposites, meaning that they are mutually exclusive categories—if one term applies to a situation, the other does not. In addition, to most minds, the term “tyranny” gets a negative charge and “freedom” a positive one. Yet, in human experience, the shift from tyranny to freedom does not always follow the negative-to-positive pattern: American children liberated from parental restrictions often feel “lost” or depressed; governmental deregulation of businesses does not always produce the best environment for the population; people in other parts of the world are content living under tyranny and dismayed by freedom.

While we may not want to argue that tyranny is good and freedom is bad, perhaps the tyranny/freedom dichotomy (separation) is a false one. Maybe the categories actually contain each other—perhaps there is freedom in tyranny and tyranny in freedom. Or, perhaps tyranny is not always political, but interpersonal, intellectual, cultural, and/or psychological.

The task here is to find a way to talk about the oppositional concepts drawing on your own experience to prove or disprove the statement. Be sure to define your concepts at the outset.

Question #2

The United States government--and others similar to it--runs according to the "rule of law." Instead of shooting our enemies, we turn to legal weaponry: we sue them. When significant chaos breaks out in the US, it is always in defiance of the law—either "law" in general or a specific law or set of laws. Most Americans support some laws and oppose others. When enough Americans oppose a law, things happen: a flurry of legislation, the creation of media visibility of problem areas, passive resistance, scoffing at laws, the funding of studies of varying credibility, government investigations. As a voting adult, you will need to look carefully at the laws that guide this nation.

What are the best criteria for an individual to use to decide whether to support or oppose a law?

Discuss your support or opposition to a specific law that is currently in force or under debate. Offer criteria for making the decision, giving a rationale for each. Then, apply your criteria to 3 different laws that you either support or oppose. Note, the question does not ask you what action one should take to change the law but how one should deliberate the support or opposition of any law.

Speakers: Wm. Brown, Dan Brown, Tiller, Williams, Reams, Martin, Bower, Longfellow (?)

Readings: Mill, Plato, Madison, Holocaust Doc.s, Lewis, Huxley, Bush, Childress

Question #3

You are the executive director for a private foundation that grants annual cash awards to artists and arts organizations. With recent government cut backs in spending for the arts, your foundation is going to get a lot of requests for support this year. You need to draft a statement that defines "art" in the foundation's granting guidelines so that only qualified individuals and organizations will apply for funds. Then you need to sell your board of directors on the idea—

Write an essay that will be the script for your presentation to the board. In it, you should define "art" for the purposes of the foundation (make up any foundation you like, with any values you choose). Defend your position drawing on the semester's resources.

You do not want to get into a big fight about the definition, but you also realize that there is a diversity of opinion, so your rationale must be clear and convincing. You cannot just dictate the definition, because if you do not bring them along in your thinking, you may lose your job. Be clear, reasonable, and knowledgeable so that your directors will not question your judgment. Make sure that you include *at least* two readings and two lectures to support your position.

Relevant readings: Tolstoy; Aristotle; Renoir; DaVinci; Copland; Sessions; Turner

Relevant speakers: Goding, Tolstoy, Krimstein, Pumphrey, McCraw, Potter

Question #4

A.

In 1750, Jean Jacques Rousseau published his “First Discourse on Technology and Art.” In it he writes:

Nos âmes se sont corrompues à mesure que nos sciences et nos arts se sont avancés à la perfection .

Our souls have been corrupted to the extent that our technology and our arts have advanced towards perfection.

Consider his words in light of the readings and lectures in the *technology and arts* sections. You will need to first explain what you think he means. Then, define your terms, and then agree or disagree with his opinion supporting your position with sources from the course.

B.

In 1750, Jean Jacques Rousseau published his “First Discourse on Technology and Art.” In it he writes

Nées de nos vices et de notre orgueil, les sciences encouragent à l'oisiveté et détruisent le sens religieux sans rétablir la morale.

Technology was born from our vices and from our pride, and it encourages us towards idleness while it destroys the sense of religion without re-establishing morals.

Do you agree or disagree with his opinion? Use course resources to develop your answer.

**Historical note:

Rousseau witnessed the inventions of the piano, the tuning fork, the steam engine, the thermometer, the diving bell, the flying shuttle (not an airplane but a tool to speed up the making of fabric). The industrial revolution's beginnings were soon to be established, later in the century, with the steam engine and the cotton gin. Discord in France reached its zenith with the Revolution (1789), the objectives of which were facilitated by the invention of the guillotine....but Rousseau had died nearly a decade before 1789. He was alive for the events of 1776, however.

Lynchburg College Assignment Example: Senior Capstone

This final exam was used in the senior symposium, under the faculty leadership of Dr. Peggy Pittas.

GS 435 Fall 2003

Final Exam

Directions: Please answer two of the following three questions. This exam is a take-home and covers class readings, presentations, and class discussions. The essays should be written as argumentative essays.

Please consult your class syllabus for the criteria by which your paper will be judged. Take especial note of the number of citations your answers must include. Please turn in two (2) copies of your papers, which will be used for assessment purposes. Place only your social security number on the second copy.

1. This semester several speakers addressed our tendencies to “either-or” or “binary thinking” when addressing complex issues. For example, one might argue that either that a sociopathic child is genetically flawed (nature) or that it has been raised in a corrosive environment (nurture). Dr. Ike Wood talked to you about the problems in this type of thinking, showing how neither is 100% correct. Other speakers this term have also suggested that binary thinking just traps us in categories that are inadequate, categories that exclude human experience and mask subtleties of difference. If we are going to be good critical thinkers, perhaps we should get beyond assuming that something is either right or wrong, sin or blessing, learned or inherited, living or dead, smart or dumb, science or faith, etc. Talk about a *ccontemporary issue* that seems to get played out in a super-simple binary—the justifiability of the war in Iraq, gay marriage, cloning, punishment, theories of evolution—and *think beyond a binary position to establish your own*. Bring in the readings and lectures from the term where appropriate.

Lectures and Readings:

Dr. Ike Wood - "Psychopathy in Children--Is There Proof for the Bad Seed?" Reading: Wilson, *On Human Nature* (1978)

Mr. Stephen Humphrey - "Inherited Ideas Are a Curious Thing: Human Nature and the Nature of Government" Conklin, *Evolution and Democracy*

Dr. Steve Saupe - "The Biology of Resurrection: Life after Death in the Fungi." Readings: Pasteur, "The Germ Theory and Its Application to Medicine and Surgery" and "On Spontaneous Generation at <http://guava.phil.lehigh.edu/spon.htm>

Rev. Grant Azdell - "Is It Ever Right to Do Wrong?" Readings: Bonhoeffer, *Letters and Papers from Prison* and Wiesel, *Night*.

Rev. Dr. Lisa Wilson Davison - "Original Sin or Original Blessing?" Readings: *Job*, Chapters 1,2 and 42, *Micah*, *Genesis*

Dr. William Sutherland - "Stalking a Meaningful Relationship Between Faith and Science." Readings: Galileo, *Letter to the Grand Duchess Christina* and Einstein, *Science and Religion*

Rev. Dr. Edward H. Parrish, III - "Mountain Morals 101" Readings: *Matthew*, Chapters 4, 5, 6, 7 and *Matthew* 18, 15-20

Rev. Sarah Webb - "Being True To Your Path (Retro on the Emperor)" Reading: Aurelius *Meditations*

2. You have been put on a Federal advisory committee charged with the task of recommending to Congress how it should distribute a budget surplus of \$200 billion. You have been asked to recommend percentages of distribution to various sectors of the economy. Select the sectors that will receive all or a portion of funding from the following list (or add your own). Assign proportions (as percentages) and support your decisions using the readings and lectures you have considered this term in Senior Symposium. Defense, Basic Scientific Research, Welfare, Social Services, Crime, Technology, Weaponry, Education, Community.

Readings and Lectures:

R. D. Floyd - "What if, like the planet Venus, clouds completely and perpetually covered the Earth?" Reading: Jean, *The Astronomical Horizon*

Kathleen H. Groover - "The Future on Ice: Cryopreservation in support of Basic Research at the NIH" Reading: Bush, *Science: The Endless Frontier*

Tom White - "Addiction's Impact on Family and Society" Readings: chapters 5 and 6 from *Huck Finn* <http://etext.lib.virginia.edu/toc/modeng/public/Twa2Huc.html>

Dr. Ike Wood - "Psychopathy in Children--Is There Proof for the Bad Seed?" Reading: Wilson, *On Human Nature* (1978)

Dr. Lee Kirkpatrick "Evolutionary Psychology: Stone-Age Minds in Modern Environments" Readings: Darwin, *The Origin of Species*, *The Descent of Man*

Dr. Steve Saupé - "The Biology of Resurrection: Life after Death in the Fungi." Readings: Pasteur, "The Germ Theory and Its Application to Medicine and Surgery" and "On Spontaneous Generation at <http://guava.phil.lehigh.edu/spon.htm>

Mr. Stephen Humphrey - "Inherited Ideas Are a Curious Thing: Human Nature and the Nature of Government" Conklin, *Evolution and Democracy*

Or you might choose any other reading and presentation to support your answers

3. Some things that were once considered bad science -- for example, the theory of continental drift -- are now in the mainstream, generally considered valid. Today, we have controversy over other issues, including global warming, ozone depletion, and evolution. How can we distinguish good science from pseudoscience (a theory erroneously regarded as scientific?)

Dr. Lee Kirkpatrick "Evolutionary Psychology: Stone-Age Minds in Modern Environments"

Readings: Darwin, *The Origin of Species*, *The Descent of Man*

Dr. Steve Saupe - "The Biology of Resurrection: Life after Death in the Fungi." Readings: Pasteur, "The Germ Theory and Its Application to Medicine and Surgery" and "On Spontaneous Generation" at <http://guava.phil.lehigh.edu/spon.htm>

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Dr. William Sutherland - "Stalking a Meaningful Relationship Between Faith and Science." Readings: Galileo, *Letter to the Grand Duchess Christina* and Einstein, *Science and Religion*

Mr. Stephen Humphrey - "Inherited Ideas Are a Curious Thing: Human Nature and the Nature of Government" Conklin, *Evolution and Democracy*

Lynchburg College Assignment Example: Freshman English

This final exam was used in the Freshman English course by Lyndall Nairn.

Essay #1:

1. General Topic: How can a person who wants to develop his/her critical thinking skills move from one step to the next? Write an essay, proposing a solution to this problem. Imagine that you are a critical thinking consultant who is making a recommendation to a client about how to advance his/her critical thinking skills. Your client should be someone who needs sophisticated critical thinking skills for his/her career, e.g. a student, a trial lawyer, a politician. Before you start writing, decide on answers to the following questions: Who is your client? What stage of critical thinking has your client reached so far? What strategies will help him/her to advance to the next stage?
2. Required reading: "The Allegory of the Cave" by Plato** (50 E 284-291), "Learning to Read and Write" by Frederick Douglass** (50 E 100-105), "Learning to Read" by Malcolm X** (50 E 245-254), Developing an argument (RFW #46 and #47), and "The Declaration of Independence"*** by Jefferson (50 E 163-171).
3. Assignment: Use the WolcottLynch model, "Steps for Better Thinking Competency Rubric." Provide specific examples from at least three of the readings to show your client some techniques that will advance his/her critical thinking from one step to the next.
4. Your essay should be 3 – 4 pages long, i.e. at least 3 full pages, but no more than 4 full pages. Double space your essay and follow the MLA guidelines for page layout, which we discussed in class.
5. Include a Works Cited list with at least three items, which you mention in the text of your essay. (See RFW #54b.)
6. The first draft is due Fri. Jan. 28. Bring two copies for peer review.
7. The first and second drafts are due Mon. Jan. 31.
8. Hand in Essay #1 in a folder. Your folder should include all your notes, pre-writing, planning, a complete first draft of your essay, and the final draft, which will be graded. I will be looking for substantial differences between the two drafts. In addition, your folder should contain the two peer review worksheets that your classmates wrote when they reviewed your first draft. A visit to the Writing Center is a good idea.

Assignment Example with Vignette: Genetically Modified Foods

The following assignment is used at Daemen College by Professor Ellen Banks in a research study of students' progress in reflective judgment as they proceed through the college curriculum. Student subjects are from four different fields: Psychology, Physical Therapy, Physician Assistant Studies, and History/Government.

The 5 questions at the bottom of this assignment were adapted from questions in the Reflective Judgment interview (King & Kitchener, 1994). These questions improve the ability to assess cognitive level because they are designed to elicit information about the student's underlying assumptions about knowledge.

Trish and Laurie, college juniors, have moved out of residence halls and into an apartment. They are in the supermarket to stock up their kitchen. Looking through the case of veggie burgers, Trish says "Let's get these—the label says they have No Genetically Modified Ingredients.

"Why do you care about that?" Laurie asks.

Trish answers, "Scientists from big food companies are changing the genetic structure of corn, soybeans, and other crops, and even fish and other animals, to make them resistant to disease, or just to increase the amount of food they produce. They just want to make more money."

"Wait a minute," Laurie says. "How's that really different from using weed killers or insecticides on crops? I think I've heard that these genetically modified plants and animals might let farmers use less chemicals on their crops or herds. That would help with the cost of food and also help keep dangerous chemicals out of our food. Farmers have been breeding plants and animals to select the traits they want for centuries. Genetic modification is just a new technology to produce food better. As long as it's done carefully, I don't see that we should stop science from improving our food supply."

Trish answers "Yes, but what if the modified plants and animals escape into the environment and get mixed up with natural plants and animals—these genes could spread and have effects we don't know about. I think I heard something about butterflies being harmed by genetically modified corn pollen? Or what if they change a plant to make it resist a disease or insect, and then it spreads and wipes out other good plants? Or what if it makes people sick for some unknown reason? In Europe they call these genetically modified foods "Frankenfood." I think it's just weird, and we shouldn't tamper with nature. Let's get the non-GMF burgers."

Write a response to the following question:

Are genetically modified foods safe and useful, and should their production be encouraged?

In your response you should address the following questions, so please think about them before you start writing:

1. What is the basis of your opinion about this issue?
2. Do you think it is possible to decide whether or not your opinion is correct? Why or why not?
3. Do you think it is possible for different experts to disagree about the safety of genetically modified foods?
4. Since scientists disagree about this issue, does that mean that one scientist is correct and another is wrong? If not, is one view better than the others?
5. What kind of information, if any, would lead you to change your thinking about this issue?

Worksheet to Help Students Describe Their Critical Thinking Process

The following case was written by Susan Wolcott and Charlene Gray.

Responding to a Homeless Man: A Case Study of Alternative Points of View

“Brrrrr, it’s cold outside!” exclaimed Holly as she poured herself a large mug of coffee. “Where did the spring weather go?”

“I don’t know,” answered Karen as she sipped her coffee. “Flowers were blooming in my garden last week, and now it’s cold again. I wish spring would get here and stay!”

Holly and Karen always joined each other for coffee before beginning work. They took this time to engage in casual conversation and also to discuss joint work projects. Karen had just finished a large project, and she was looking forward to a slower pace at work for the next few days.

“Speaking of cold weather,” Karen added, “you won’t believe what happened at my house last night. I was still working on that Hollings project at about 11 o’clock, when the doorbell rang. John had already gone to bed, so I went to see who was there. It was a homeless man. I was nervous about opening the door to a stranger, particularly at that time of night. But the man was standing with a grocery cart, and I didn’t think I was in danger, particularly with my dog barking and growling. So, I opened the door to find out what he wanted. The man told me that he was homeless and that someone had taken his stash of blankets. He said that he saw lights on in my house and thought that maybe I could loan him some blankets for the night. The weather was cold last night, he looked fragile. I can’t imagine what it would be like to be homeless! I asked him to wait on the porch. Then I re-locked the front door and ran upstairs to find some extra blankets. While rummaging in the closet, I also found an old down coat—a mid-calf length, hooded coat that I had been planning to donate to a charity. I think the man could use it as a pillow. When I gave him the blankets and coat, the man was very polite. He thanked me profusely and said that he would bring the things back to me the next day. I told him that he didn’t need to do that, that he could keep them. I just can’t help but wonder how he’s doing. The blankets I gave him weren’t enough to keep him warm on the ground at night.”

“Wow!” exclaimed Holly. “Now that you’ve given him something, he is going to be back at your house all the time looking for more handouts. If I were you, I wouldn’t have answered the door. People like that should go out and get jobs. They don’t appreciate it when you give them things, and they always want more. Just wait. You’ll see that man again real soon.”

Each student manually completed a worksheet that contained the following requirements:

1. Describe each point of view (Karen and Holly)
2. List possible underlying assumptions for each point of view
3. For each point of view:
 - Select one underlying assumption
 - Explain how that assumption leads to how the person would respond to the homeless man.
4. Describe how you might respond in this case. What issues did you weigh more heavily than others in arriving at your conclusions?

NOTE: This assignment asked students to demonstrate primarily Step 2 skills.

Student Self-Evaluation Worksheet

Recommended Use:

- The worksheet on the following pages is designed for situations in which students have been or will be taught Steps for Better Thinking. However, you could modify this worksheet for any other set of critical thinking skills.
- Have students fill out this worksheet after they have completed a written assignment on an open-ended problem.
- If used in conjunction with a class discussion, have students fill out the worksheet step-by-step during the discussion (e.g., discuss different overall approaches to the problem and then have the students fill out item A on the worksheet).
- Faculty may wish to use a similar form to evaluate student performance and then compare their ratings to the students' own ratings. If possible, students should be given feedback on the accuracy of their self-evaluation.
- Faculty should review the worksheet, together with student papers, to gain an understanding of weaknesses in student problem solving skills. In most cases, weaknesses in the early items (i.e., items A and B) will lead to weaknesses in the later items on the worksheet.
- Once student weaknesses are identified, educational activities can be designed to help students develop better problem solving skills. The items on the worksheet (A through G) are organized from least complex skills to most complex skills. To increase the likelihood that students will develop desired skills, educational activities should focus first on the least complex skills in which student weaknesses are identified.

Alternative Uses:

- Have Students Evaluate:
 - Own Paper Before Submission
 - Another Student's Paper
 - Hypothetical Student's Paper
- Modify for Oral Presentation (need to reword item F)

The student example on the following pages is from an accounting case assignment (not included in this handout).

Self-Evaluation of Performance: Student X

Dark-Bordered Boxes and Bold Script Are Student's Own Ratings

One of the skills of a professional is self-regulation, which is sometimes referred to as "life-long learning." This self-evaluation form will help you evaluate your efforts in addressing an open-ended problem. After completing this form and discussing it in class, you can target specific aspects of your problem solving skills for improvement. For each evaluation criterion below, circle the rating that best describes your performance on the case assignment. In the space provided, provide comments and/or make notes about things you could do differently in the future to improve your performance.

Steps for Better Thinking: Step 1

A. Overall Approach to the Problem				
Circle best description of your performance:				
Proceeded as if goal was to find the single "correct" answer	Proceeded as if goal was to stack up evidence and information to support conclusion	Proceeded as if goal was to establish a detached, balanced view of evidence and information from different points of view	Proceeded as if goal was to come to a well-founded conclusion based on objective comparisons of viable alternatives	Proceeded as if goal was to construct knowledge, to move toward better conclusions or greater confidence in conclusions as the problem is addressed over time
Explain the reasons for your evaluation:				
<i>I don't think there is a single correct answer.</i>				
B. Use of Relevant Information in Addressing the Problem				
Circle best description of your performance:				
Used very limited information, primarily "facts" or definitions	Used limited information, primarily evidence supporting overall conclusion and arguments against other solutions	Used a range of carefully evaluated, relevant information	Used a range of carefully evaluated, relevant information, including overarching criteria for judging among solutions	Used a range of carefully evaluated, relevant information, including overarching judgment criteria and viable strategies for generating new information to address limitations
List relevant information that you <i>could have used</i> in addressing the problem:				
<i>SEC can create a rule (it has legal authority) Should use FASB #14, #131; Segment reporting should be consistent with internal reporting</i>				

Steps for Better Thinking: Step 2

Dark-Bordered Boxes and Bold Script Are Student's Own Ratings

C. Interpretations of Information

Circle best description of your performance:

Presented information, but did not interpret it	Interpreted information as either supporting or not supporting different points of view	Qualitatively interpreted information from multiple points of view; included discussions of assumptions, alternative objectives, and evidence quality	Qualitatively evaluated information using general principles that allow for comparisons across points of view	As new information was generated over time, interpreted and re-interpreted information systematically
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Explain how you demonstrated your interpretations of information for this problem:

Interpreted all of the information in the case as supporting different points of view

D. Use of Organizing Concepts for Information

Circle best description of your performance:

Organized information into categories of right, wrong, or uncertain	Responded to problem without sufficiently breaking it down; did not effectively address larger context	Organized information and concepts into a viable framework for exploring the realistic complexities of the problem	Organized information and concepts well; included generalized criteria that apply across different points of view and allow for qualitative comparisons of solution options	Organized information and concepts well, including generalized criteria; articulated that framework and criteria can be refined, leading to better solutions or greater confidence over time
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Explain how you organized the information for this problem:

I organized the information with limited breakdown (reason for my recommendation) of problem

I explained why the company should keep the current segment reporting policy

Steps for Better Thinking: Step 3

Dark-Bordered Boxes and Bold Script Are Student's Own Ratings

E. Use of Guidelines or Principles to Judge Across the Various Options

Circle best description of your performance:

Did not reason logically from evidence to conclusions; relied primarily on unexamined prior beliefs or clichés as justification

Provided little evaluation of alternatives; offered partially reasoned conclusions; reported superficially understood evidence in support of beliefs

Used evidence to reason logically within a given perspective, but criteria used do not necessarily apply across solution options

Used well-founded, overarching guidelines or principles to objectively compare and choose among alternative solutions; provided reasonable and substantive justification for assumptions and choices in light of other options

Argued convincingly using complex, coherent discussion of own perspective, including strengths and limitations; articulated how systematic processes of critical inquiry was used to build solution

List the guidelines that you used to judge across the various options and explain why you chose them:

I didn't give many alternatives but explained why we don't have to follow SEC's inquiry. The reason I chose this way is that I thought it was the best way to explain about negative effects.

F. Clarity of Written Communication and Appropriateness for Setting

Circle best description of your performance:

Quality of written communication was poor or inconsistent; ^a did not address the information needs of the audience

Well written; ^a provided insufficient information for audience to understand alternative points of view

Well written; ^a provided sufficient information for audience to understand alternative points of view, but did not adequately prioritize information

Well written; ^a provided appropriate information prioritized for the setting and intended audience

Well written; ^a provided appropriate information prioritized for the setting and intended audience, including descriptions of processes for constructing valuable knowledge

Explain how you addressed the audience and setting in writing your memo:

I provided some possible negative effects of accepting SEC's inquiry

^a *Well written* means consistently used correct spelling, good grammar, appropriate sentence and paragraph structure, proper referencing, and logical organization.

G. Acknowledging Solution Limitations

Circle best description of your performance:

Did not acknowledge significant limitations or uncertainties beyond lack of information or experts' lack of agreement on the correct solution

Identified at least one limitation or reason for significant and enduring uncertainty

Articulated connections among underlying contributors to limitations and described limitations from different perspectives

Adequately described relative importance of solution limitations when compared to other viable options

Suggested viable processes or strategies for monitoring results or otherwise addressing significant limitations over time

List the limitations you identified in your paper and describe how you suggested that the board of directors address them:

I didn't think there was a limitation. I just tried to solve the problem with given information.

Identifying the Skills Needed to Perform Well on an Assignment

In accounting courses, I often ask students to analyze financial statement ratios. This accounting task requires identification and evaluation of evidence as well as consideration of qualitative factors, leading to a conclusion/recommendation.

Below is a detailed list of the skills needed to perform well on this type of assignment. Creating this list gave me a better appreciation of my students' difficulties and provided useful information for classroom instruction and assignment design. A few years ago, I found it quite difficult to create this type of list. Over time, the process has become much easier!

←Less Complex		More Complex →		
Content Knowledge	Step 1—Identifying	Step 2—Exploring	Step 3—Prioritizing	Step 4—Envisioning
<ul style="list-style-type: none"> * Find formulas and calculate ratios * Locate financial information used in calculation * Locate comparative information for comparable companies/industry * Recognize and adjust calculations for differences in ratio formulas in different sources * Determine whether higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc * Describe the mechanical impact of accounting entries on ratio results. 	<ul style="list-style-type: none"> * Explain why ratios aren't "absolute" measures of profitability, liquidity, stability, activity, etc. * Explain why higher/lower ratios don't always indicate a better/worse company * Explain why financial experts might disagree about the interpretation of a company's ratios * Explain why ratios aren't the same for all companies. Identify factors that cause ratio values to differ across companies and across years for the same company. * Identify information that might be useful in interpreting a company's ratios, including competitor/industry ratios, accounting methods employed, and non-financial information 	<ul style="list-style-type: none"> * Identify and compensate for own biases in ratio interpretation * Describe possible business reasons why ratios vary across companies and across years * Identify and evaluate the quality of assumptions underlying alternative interpretations of a company's ratios * Explain how different stakeholders might view ratios differently * Explore the strengths and weaknesses indicated by the time trend and competitor comparison of a company's ratios * Describe the strengths and weaknesses of using ratios to evaluate a company * Incorporate non-ratio information in the interpretation of ratios * Adjust for and evaluate the impact of alternative accounting methods on ratio interpretations * Organize and summarize the information from your analysis 	<ul style="list-style-type: none"> * Prioritize the strengths and weaknesses of the company's ratios and other data in reaching a conclusion about the company's profitability, liquidity, stability, activity, etc. * Effectively communicate your interpretation for a given setting and audience * Effectively encourage others to take a specific action (e.g., grant a loan) based upon your interpretation 	<ul style="list-style-type: none"> * Describe limitations to a conclusion about a company's profitability, liquidity, stability, activity, etc. resulting from a ratio analysis * Identify circumstances that might cause a change in conclusions about a company's ratios * Develop a plan for monitoring a company's performance in the future * Investigate and work toward implementation of new, superior methods of ratio analysis

Try This in a Class Session

Give students 5 minutes at the end of class to write one paragraph on a question addressing uncertainties about that day's topic.

Examples:

- Why don't we know with certainty what [the author of a piece of literature or other writing] intended to convey?
- How certain are you that [a theory] adequately explains/describes [a phenomenon]?
- Why don't we know with certainty whether [one theory/hypothesis] or [another theory/hypothesis] better explains/describes [a phenomenon]?
- Why can't [a decision maker] know with certainty which [choice] is best?
- Why does uncertainty exist about whether [a social/business/personal policy or practice] is beneficial?
- Why can't [experts] completely solve [a problem]?

Quickly scan the students' responses. You will learn about your students':

- Critical thinking skills
- Knowledge and/or misconceptions regarding the content of that day's class session

This exercise also helps students think more complexly about the topic.

Motivating Students

Grade initially based on student effort to complete assignment rather than on level of performance;
Explain that purpose of first assignment is to provide them with feedback to improve their performance.

BUT—Include *appropriate* critical thinking tasks on exams and other graded assignments later in the course.

Give completed rubric to students as feedback;
Explain that their personal goal should be to move one column to the right.

Discuss with students the benefits of developing these skills (needed in later coursework, skills required in professional workplace, improved thinking for personal and civic lives, etc.)

Have students address interesting open-ended problems that they are likely to perceive as relevant to their future careers.

Consider having peers evaluate student papers.

Resources for Learning More

Article Summarizing the Theoretical Underpinnings of Steps for Better Thinking:

Lynch, C. L., & Wolcott, S. K. (2001). *Helping your students develop critical thinking skills* (IDEA Paper #37). Manhattan, KS: The IDEA Center. Available at http://www.idea.ksu.edu/papers/pdf/Idea_Paper_37.pdf

See References Cited in IDEA Paper Above. Additional References:

Angelo, T. A., & Cross, K. P. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers*. 2nd Ed. Jossey-Bass Higher and Adult Education Series. San Francisco: Jossey-Bass. Devoted entirely to classroom assessment techniques addressing knowledge, skills, attitudes, etc. Many, many ideas and examples from different types of classrooms.

Walvoord, B. E. and V. J. Anderson. (1998). *Effective Grading: A Tool for Learning and Assessment*. San Francisco: Jossey-Bass. Provides examples and detailed explanations of "primary trait analysis," which uses descriptions of levels of student performance for assessment.

Wolcott, S. K. (2005, forthcoming). Assessment of critical thinking. In T. G. Calderon & K. D. Martell (Eds) *Assessment of Student Learning in Business Schools: Best Practices Each Step of the Way*, Vol 1, No. 1. AACSB International and Association for Institutional Research (AIR). Available at www.AACSB.edu/ARC. Discusses the definition of critical thinking and how the definition relates to assessment design. Summarizes the strengths and weaknesses of different assessment methods for critical thinking, and presents several examples of assessment rubrics.

Wolcott, S. K. and C. L. Lynch. 2002. *Developing Critical Thinking Skills: The Key to Professional Competencies*. A tool kit. Sarasota, FL, American Accounting Association. The handbook contained in this tool kit provides detailed guidance for using Steps for Better Thinking in accounting education. Although it is designed for accounting education, the guidance can easily be adapted to other disciplines. Includes numerous assessment and assignment examples. Available at: <http://aaahq.org/market/display.cfm?catID=1>.

WolcottLynch Associates. 2005. *Educator Resources, Conference Handouts, and Working Papers* [On-line]. Available: <http://www.WolcottLynch.com>.

WolcottLynch Associates. 2003. Guidance documents prepared for the American Institute of Certified Public Accountants (AICPA) Core Competency Framework Educational Competency Assessment Web Site. New York: AICPA. Although these documents are oriented toward accounting competencies, the guidance can easily be adapted to other disciplines. Contact Susan Wolcott for copies of files in which you are interested: swolcott@WolcottLynch.com.

- o *Competency Levels* (Describes competency levels as defined in Steps for Better Thinking and explains their importance for student development of desired competencies)
- o *Designing Your Own Competency Elements*
- o *Establishing Desired Learning Outcomes*
- o *Achieving Competencies in a Program*
- o *Coursework Design for Competencies*
- o *Focus of Learning Techniques*
- o *Competency Assessment Methods*
- o *Introduction to Performance Assessment*
- o *Advanced Performance Assessment* (Illustrates use of Steps for Better Thinking Performance Patterns and Steps for Better Thinking Rubric to assess student competencies)
- o *Assessment Context, Validity, and Reliability*