

Designing Classroom Instruction to Enhance Students' Critical Thinking: A Developmental Approach

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Workshop Goals:

- Clarify Desired Student Critical Thinking Skills
- Discover How Cognitive Development Affects Critical Thinking Performance
- Briefly Discuss How to Use Cognitive Patterns to Assess Critical Thinking Skills
- Design Assignments and Classroom Discussions to Foster Improved Critical Thinking Skills

Critical Thinking Skills

ACTIVITY

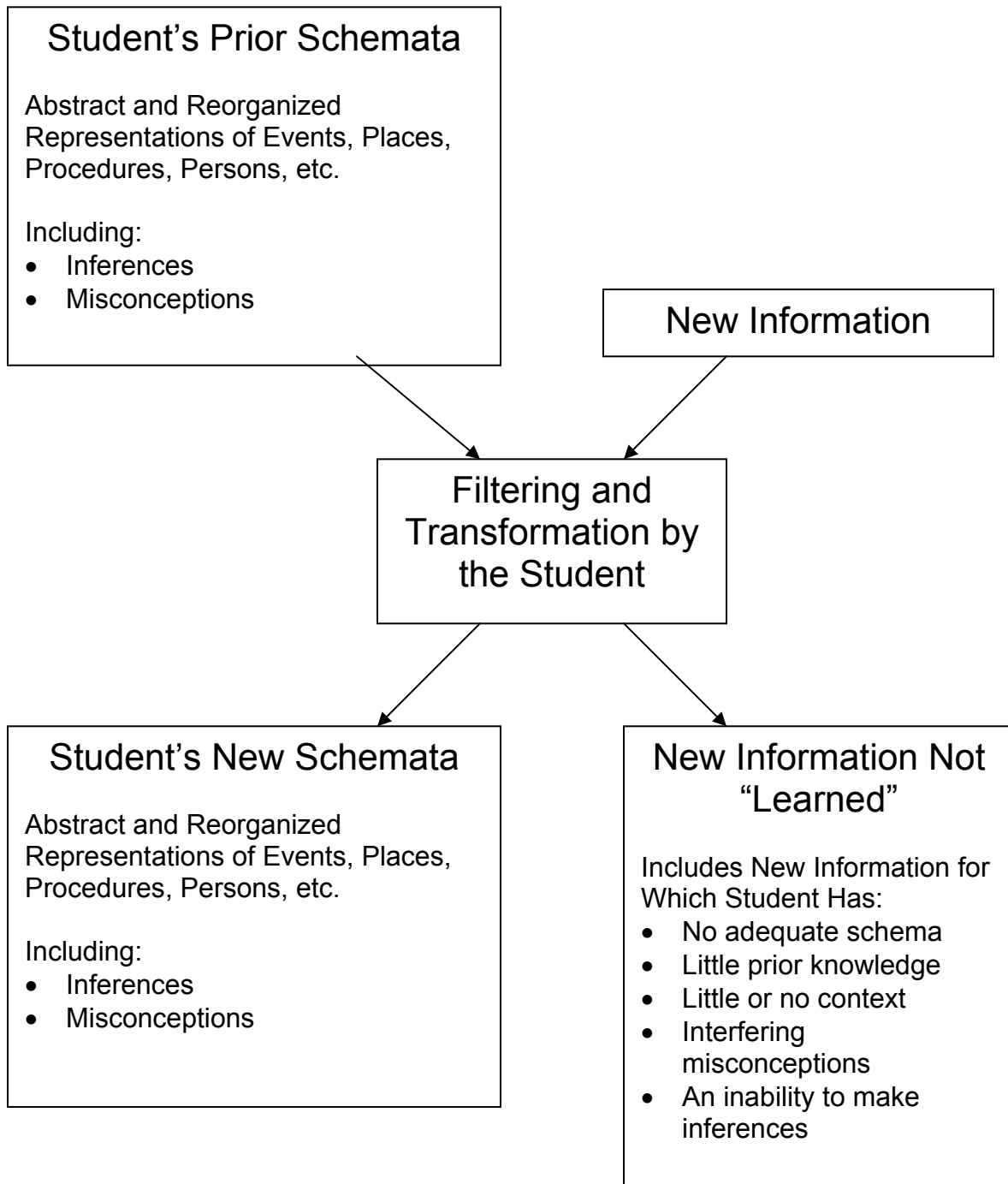
List Words/Phrases That Describe Desired Critical Thinking Skills:

Critical Thinking Skills Currently Assessed at Miami University

(From WSU Critical Thinking Rubric)

- 1) Identifies and summarizes the problem/question at issue (and/or the source's position).
- 2) Identifies and presents the STUDENT'S OWN perspective and position as it is important to the analysis of the issue.
- 3) Identifies and considers OTHER salient perspectives and positions that are important to the analysis of the issue.
- 4) Identifies and assesses the key assumptions.
- 5) Identifies and assesses the quality of supporting data/evidence and provides additional data/evidence related to the issue.
- 6) Identifies and considers the influence of the context on the issue.
- 7) Identifies and assesses conclusions, implications and consequences.

Overview of Schema Theory

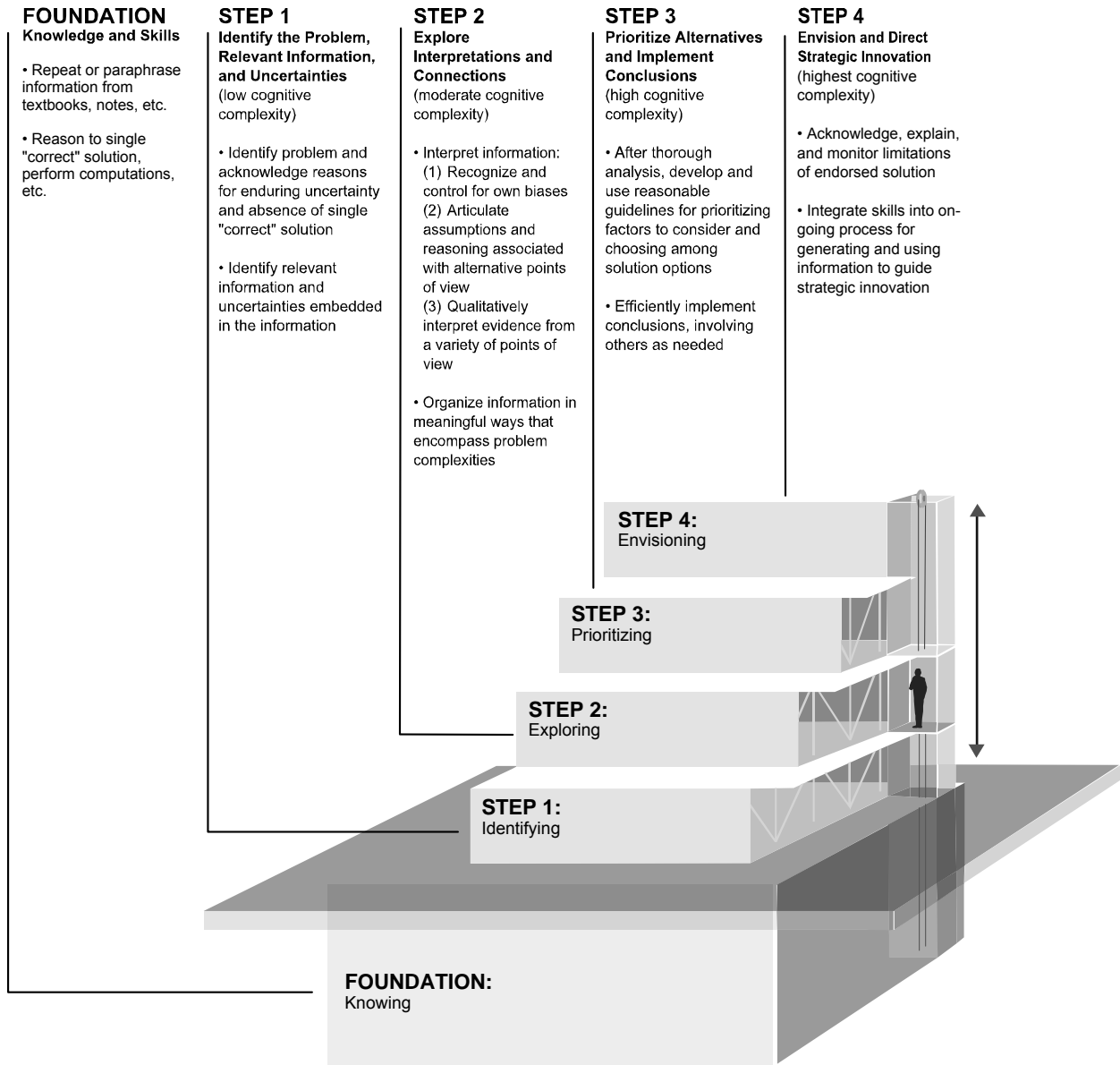


To learn more, see: Cross, K. Patricia and Mimi Harris Steadman, 1996, *Classroom Research: Implementing the Scholarship of Teaching*, San Francisco: Jossey-Bass Publishers, pp. 36-56.



STEPS FOR BETTER THINKING

A Developmental Problem Solving Process

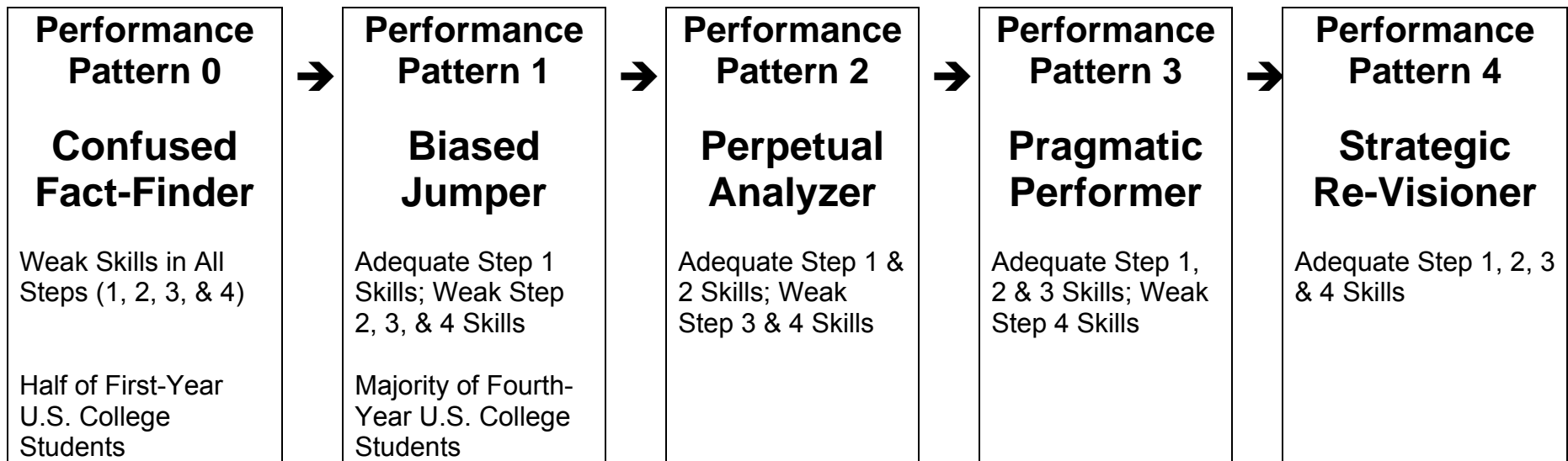


© 2002, Cindy L. Lynch, Susan K. Wolcott, and Gregory E Huber. Please cite this source: Lynch, C. L., Wolcott, S. K., & Huber, G. E. (May 31, 2002). Steps for Better Thinking: A Developmental Problem Solving Process [On-line]. Available: <http://www.WolcottLynch.com>. Model evolved from ideas presented 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>.

Example: Expansion of Skills in WSU Critical Thinking Rubric

Critical Thinking Skill	←Less Complex		More Complex →	
	Step 1—Identifying	Step 2—Exploring	Step 3—Prioritizing	Step 4—Envisioning
1) Identifies and summarizes the problem/question at issue (and/or the source's position).	<ul style="list-style-type: none"> Identifies the problem from a set of information in which the problem is clearly evident 	<ul style="list-style-type: none"> Clearly identifies the main problem and subsidiary, embedded, or implicit aspects of the problem, and addresses their relationships to each other Identifies not only the basics of the issue, but recognizes nuances of the issue 	<ul style="list-style-type: none"> Identifies the most important problem or most important aspects of the problem 	<ul style="list-style-type: none"> Identifies problems arising from limitations of current solutions; anticipates future problems
2) Identifies and presents the STUDENT'S OWN perspective and position as it is important to the analysis of the issue.	<ul style="list-style-type: none"> Clearly states own position Uses logical reasoning to support a point of view (reasons may include own feelings/experiences or other sources of information) 	<ul style="list-style-type: none"> Identifies and uses information not available from assigned sources 	<ul style="list-style-type: none"> Identifies priorities used to establish own position, taking into consideration an OBJECTIVE evaluation of alternatives Describes reasoning associated with own position, including assumptions, evidence, and priorities 	<ul style="list-style-type: none"> Argues convincingly using a complex, coherent discussion of own perspective, including its strengths and limitations
3) Identifies and considers OTHER salient perspectives and positions that are important to the analysis of the issue.	<ul style="list-style-type: none"> Lists multiple perspectives/positions provided in assigned sources Identifies uncertainties that prevent a single "correct" perspective or position 	<ul style="list-style-type: none"> Compares and contrasts/ provides arguments for and against different perspectives or positions, not limited to information from assigned sources 	(see above)	(see above)
4) Identifies and assesses the key assumptions.	<ul style="list-style-type: none"> Acknowledges existence of more than one interpretation or conclusion States own opinion about explicit assumptions or ethical issues in assigned sources 	<ul style="list-style-type: none"> Identifies and questions the validity of the assumptions and addresses the ethical dimensions that underlie the issue 	<ul style="list-style-type: none"> Identifies and addresses the most important or critical assumptions and ethical issues Provides objective, reasonable, and substantive justification for own assumptions 	<ul style="list-style-type: none"> Develops strategies for addressing ethical issues or limitations of assumptions over time

(continued on next page)

(continued)

Critical Thinking Skill	←Less Complex		More Complex →	
	Step 1—Identifying	Step 2—Exploring	Step 3—Prioritizing	Step 4—Envisioning
5) Identifies and assesses the quality of supporting data/evidence and provides additional data/evidence related to the issue.	<ul style="list-style-type: none"> Accurately repeats or lists information contained in a reading or assignment Distinguishes between facts and opinions that are explicitly presented Sorts information based on whether it supports or does not support a point of view 	<ul style="list-style-type: none"> Examines the evidence and source of evidence; questions its accuracy, precision, relevance, completeness Observes cause and effect and identifies existing or potential consequences Identifies and evaluates value judgments Sorts information into meaningful categories 	<ul style="list-style-type: none"> Addresses consequences when reaching conclusions Ranks information in terms of importance, relevance, reliability, or other qualitative factors 	<ul style="list-style-type: none"> Anticipates and addresses potential future consequences when reaching conclusions Describes process for systematically generating new information or for reinterpreting the significance of evidence over time
6) Identifies and considers the influence of the context * on the issue.	<ul style="list-style-type: none"> Addresses own perspective on the issue 	<ul style="list-style-type: none"> Identifies and considers the influence of context (cultural, political, etc.) when exploring information and alternatives Identifies and considers contexts not explicitly provided 	<ul style="list-style-type: none"> Analyzes the issue with a clear sense of scope and context, including an assessment of the audience of the analysis 	<ul style="list-style-type: none"> Identifies and addresses long-term considerations related to the scope, context, and audience
7) Identifies and assesses conclusions, implications and consequences.	<ul style="list-style-type: none"> Clearly states conclusions and reasons Identifies at least some uncertainty about conclusions, implications, and/or consequences 	<ul style="list-style-type: none"> Identifies and discusses alternative conclusions, implications, and consequences, considering context, assumptions, data, and evidence Objectively identifies and reflects upon own assertions 	<ul style="list-style-type: none"> Reaches conclusions, taking into account implications, consequences, context, assumptions, data, and evidence Provides objective, reasonable, and substantive justification for own assertions 	<ul style="list-style-type: none"> Applies a systematic process of critical inquiry to build a solution Articulates how problem solving approach and criteria can be refined, leading to better solutions or greater confidence over time

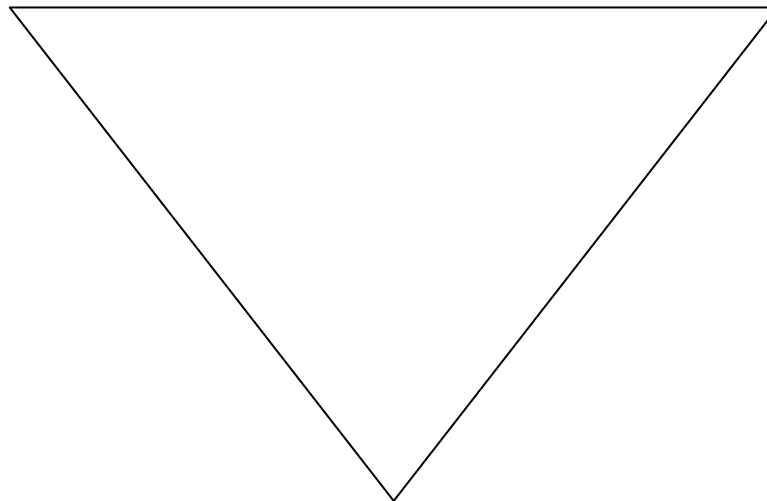
Assessment Triangle

Essay Assignment
(Must elicit details of the complexity of student thinking)

Two Steps for Better Thinking Rubrics
(Can be downloaded under "Educator Resources" at <http://www.WolcottLynch.com>.)

Observation
A set of beliefs about the kinds of observations that will provide evidence of students' competencies

Interpretation
An interpretation process for making sense of the evidence



Cognition
A model of student cognition and learning in the domain

Steps for Better Thinking
(Reflective Judgment Model and Dynamic Skill Theory)

Adapted from pages 39-45 and 281 of Pellegrino, J., Chudowsky, N., and R. Glaser (eds.). (2001). *Knowing What Students Know: The Science and Design of Educational Assessment*. Report of the National Research Council, Center for Education, Division on Behavioral and Social Sciences and Education. Washington, D. C.: National Academy Press. Can be obtained at: <http://www.nap.edu/catalog/10019.html>.

Assessment Example: Ethical Dilemma

This assignment was used by Susan Wolcott in a sophomore-level financial accounting course at University of Helsinki—Mikkeli. The following requirement was preceded by two questions about accounting aspects of the fraud at WorldCom. Those questions are omitted here because they were aimed at accounting technical knowledge rather than critical thinking.

WHAT IS THE ETHICAL THING TO DO?

[Students were asked 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.]

Requirement:

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. Analyze alternative actions you could have taken, and propose a course of action. As you analyze this situation, be sure to address uncertainties about how you should respond, the possible effects of your actions on others as well as yourself, and how you weighed issues in reaching a conclusion. (This part of the assignment should be 1-2 pages, single spaced.)

Note: This assignment is designed to encourage students to demonstrate the following skills in Steps for Better Thinking:

- Step 1: Identify information that will be used in analysis at Step 2: Alternative actions, uncertainties about the appropriate response, and others who might be affected
- Step 2: Analyze the situation, including addressing uncertainties about appropriate response and recognizing the possible effects of actions on others as well as self; the analysis should identify issues (which are then weighed in Step 3)
- Step 3: Propose a course of action and explain how issues were weighed in reaching a conclusion
- Step 4: Acknowledge limitations (i.e., uncertainties) about proposed course of action

Response of Student A

If I was an employee in that company I would call attention of the Board of Director to such incident and I would advise them to make an investigation on the subject matter since the Board of Director have a final says in management of company. It is better to make Board of Director to aware what was going on in the company and let them take a legal action of that matter.

Response of Student B

There are three major actions one can take after finding out about the fraud in the company. First, one can act passive, pretend nothing ever happened and let the fraud continue (committing a crime at the same time?). Second, one can actively join the bad guys and commit even bigger crime. The third option is to blow the whistle and be honest. Most of us would probably want to be honest, but the company may be prepared to put pressure on people to keep them quiet. Even peer pressure can be enough pressure to ensure employee loyalty. Not to mention maybe the most powerful tool, money. Nobody wants to risk their job and future incomes. I wouldn't. The easiest and the best way to deal with a fraud is to try to get away from it. I would try to sneak out from the company and find another job. After making sure I have another job, I could disclose the fraud.

Response of Student C

The question of reporting frauds is a very ethical one. I think, if you are involved in a company which commits fraud, you may realize what is going on but you are most probably not aware of the consequences such a fraud effectuates. That is probably one of the reasons why most employees or involved persons who are aware of the fraud, do not react and uncover those illegal actions immediately. If they realize and discover what is really going on in the company, some might take actions, depending on the people and their ethical standpoint. People who commit fraud obviously do not have any morals, because otherwise they could not handle the consequences and negative effects on all the people involved in this company, say investors, creditors, government and top priority the employees and the whole economy who suffers from a fraud of umpteen billion dollars and might take a long, long time to recover.

If I become aware of a fraud taking place in the company, what would I do? As I most probably would never have been involved in such a business before, I would first look at what is going on here. Which numbers and accounts are faked, what is the purpose of those faked numbers? On the other hand, I would want to find out what the real

situation would look like. The consequences are obvious. If the company calculated as it is supposed to under the generally accepted accounting principles, it would report a loss, so it is obvious why the company committed fraud.

So, what would I do? I think I would definitely uncover the fraud. There are 2 reasons for that: As soon as you are aware of a fraud, the risk to be considered as guilty is very high. Secondly, by uncovering the fraud as soon as possible, there might be the possibility to contain the loss, first of all because there are so many parties involved in such a big company as WorldCom, who suffer from the fraud. Although, there are also many negative consequences. Of course, I would think of the effects of my actions on others and myself. Ok, if a company commits fraud, the numbers shown on the balance sheet and income statement are positive and out of the perspective of an employee there is no concern of not getting his salary, unless the fraud is not uncovered. But you have to think that the fraud is just a temporary method, it cannot be hidden endlessly, so by revealing the fraud you risk that many employees lose their jobs but on the other hand, there will come the point of laid-off employees anyway, at the latest when the fraud is uncovered.

How I would proceed in uncovering the fraud is a difficult question, particularly since I have no idea how this business works. Maybe there exists some anonymous auditing service which you can go to in case of fraud. First, maybe it could be best to talk with the executives of the company itself, despite the risk to get laid off. If they are not willing to change their procedure and keep on manipulating financial statements, I would inform either such anonymous auditing service, as far as they exist, or internal audit team to check and investigate WorldCom's financial statements.

You also have to be aware, that in case of uncovering a fraud, the company has to file a petition in bankruptcy. In case of WorldCom, the employees get paid, customers get service, and WorldCom retains possession of assets and a little breathing room to reorganize. Banks that provide the loans are in favor because they will be first in line to be repaid. If Chapter 11 is successful, WorldCom can continue to operate with a restricted debt load, operate more efficiently than before and preserve jobs and assets. Actually, that is the benefit of bankruptcy for WorldCom.

Using a Rubric to Assess Critical Thinking

RUBRIC: Set of scoring guidelines for assessing student performance

Ideally, an Assessment Method Should:

- Link Assessment Results to Student Learning (Recall the Assessment Triangle)
- Provide Students With Useful Feedback by Pointing to Ways They Can Improve

Assessment Alternatives

	Steps for Better Thinking Competency Rubric	Steps for Better Thinking Rubric
Description	Describes incremental improvement in two major skills for each of the four steps in Steps for Better Thinking. Also describes overall problem approach for each performance pattern.	Describes performance patterns of two major skills for each of the four steps in Steps for Better Thinking.
Major Advantages	<ul style="list-style-type: none"> • Relatively easy to understand and use • Focuses on skill-building rather than on weaknesses • Provides meaningful feedback to students 	<ul style="list-style-type: none"> • Describes finer distinctions between performance patterns • Supports more reliable ratings
Major Disadvantages	<ul style="list-style-type: none"> • Does not provide a complete description of each performance pattern 	<ul style="list-style-type: none"> • Requires more practice and training

Recommendations:

- If you are interested primarily in assessment for classroom purposes, use the Steps for Better Thinking Competency Rubric and give it to your students as feedback.
- If you are interested in high reliability for research or program assessment, use the Steps for Better Thinking Rubric.

Note: Blank copies of both rubrics and assessment illustrations can be downloaded under "Educator Resources" at <http://www.WolcottLynch.com>.

Procedures for Using Steps for Better Thinking Competency Rubric

1. Use one copy of the rubric for each assessment.
2. Review the performance carefully. If it is written, underline key statements made by the student that provide clues about the student's underlying thinking.
3. First consider the student's overall approach to the problem (the bottom row) and circle or highlight the closest description on the competency rubric. If you are having trouble recognizing the overall approach, refer to the Steps for Better Thinking Performance Patterns (earlier in this handout) for additional guidance.
4. Next, identify and circle or highlight all skills exhibited by the student. You can do this in any order, but it will probably be easiest to do this row-by-row. Begin at the top of the rubric, and move from left to right. Beginning with the left-most skill in a row, determine whether or not the student's performance exhibits the skill. If so, circle/highlight the skill and continue one cell to the right. If not, skip that row and move to the next row. (If a student does not exhibit the skill in a particular cell, then the student will not exhibit the skills in any cells to the right on the same row.)
5. Sometimes a student exhibits only part of a skill. In that case, circle/highlight only the part(s) exhibited.
6. Avoid overrating student skills by giving them the "benefit of the doubt." Do not circle/highlight a skill unless the performance demonstrates it. (However, students might not explicitly discuss uncertainties. Sometimes you must infer their understanding of uncertainties based on the way they discuss and evaluate information and perspectives.)
7. Students with very weak skills might have only one skill circled/highlighted on the entire rubric—typically, "Identifies facts, definitions, and/or experts' opinions."
8. When you are finished circling/highlighting skills, determine the student's performance pattern by identifying the right-most column containing marked items. If the majority of skills in that column are circled/highlighted, then the student's rating is the performance pattern for that column. If a student's right-most skills appear to be split between two adjacent columns, then the rating is half-way between those two performance patterns (e.g., 1.5 for a rating between 1 and 2).
9. It is rare for a student's highest performance to be spread across more than two performance patterns. This type of finding usually means that there are problems with the ratings, the assessment assignment, or the quality of the student's response. You should carefully review the ratings.
10. Sometimes a student's response does not provide enough information to adequately classify the student's skills. Assess that response as "unable to rate."
11. Compare your skill rating with your initial rating from #3 above. They should agree within 0.5. If not, review and revise your ratings.

Steps for Better Thinking Competency Rubric

Student: WorldCom Ethical Dilemma: Student C

Rater: Susan Wolcott

Possible Overall Ratings: U (Unable to rate), 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0

Overall Rating: 1

	Performance Pattern 0 “Confused Fact Finder”	Performance Pattern 1 “Biased Jumper”	Performance Pattern 2 “Perpetual Analyzer”	Performance Pattern 3 “Pragmatic Performer”	Performance Pattern 4 “Strategic Revisoner”	
Step 1 Skills	Identify relevant information Circle ALL that apply	Identifies facts, definitions, and/or experts’ opinions.	Identifies information ¹ that is relevant to the problem	Explores a wide range of relevant information ¹	Focuses on the most important relevant information ¹	Develops viable strategies for generating important relevant information ¹ over time
	Recognize and address uncertainties ² Circle ALL that apply	Identifies at least one reason for temporary uncertainty ²	Identifies at least one reason for significant and permanent uncertainty ²	Addresses significant and permanent uncertainties ² when interpreting information	Identifies and discusses the significance of the most important uncertainties ²	Develops viable strategies for minimizing important uncertainties ² over time
Step 2 Skills	Integrate multiple perspectives ³ and clarify assumptions ⁴ Circle ALL that apply		Acknowledges more than one potential solution, approach, or viewpoint	Analyzes information from multiple perspectives, ³ including assumptions ⁴ and alternative objectives	Provides reasonable and substantive justification for assumptions ⁴ used in analysis	Argues convincingly using a complex, coherent discussion of own perspective; Articulates strengths and weaknesses of position
	Interpret and organize information Circle ALL that apply		Uses evidence logically to support a point of view; Correctly applies concepts/theories/techniques	Qualitatively interprets information and develops meaningful categories for analysis	Preserves problem complexity, but emphasizes the most important and/or most relevant and reliable information	Systematically re-interprets information as circumstances change or new information becomes available
Step 3 Skills	Use guidelines or principles to judge objectively across options Circle ALL that apply			Avoids reaching a biased conclusion	Maintains objectivity while establishing reasonable priorities for reaching a well-founded conclusion	Uses a systematic process of critical inquiry to build a solution; Articulates how problem solving approach and criteria can be refined, leading to better solutions or greater confidence over time
	Communicate and implement conclusions Circle ALL that apply				Appropriately tailors communication or implementation plans to the setting and audience	Provides appropriate information to motivate and engage others in long-term strategies
Step 4 Skills	Address solution limitations Circle ALL that apply				Focuses on most efficient ways to address limitations or to gather additional information	Articulates solution limitations as a natural part of addressing open-ended problems
	Engage in continuous improvement Circle ALL that apply					Identifies uncertainties and limitations as opportunities for continuous improvement; Engages in lifelong learning
Overall Approach to the Problem Circle ONLY ONE		Proceeds as if goal is to find the single, “correct” answer	Proceeds as if goal is to stack up evidence and information to support own conclusion	Proceeds as if goal is to establish an unbiased, balanced view of evidence and information from different points of view	Proceeds as if goal is to come to a well-founded conclusion based on objective consideration of priorities across viable alternatives	Proceeds as if goal is to strategically construct knowledge, to move toward better conclusions or greater confidence in conclusions as the problem is addressed over time

¹ Information can take many forms, including facts, descriptions, definitions, arguments, opinions, ideas, claims, theories, concepts, observations, research findings, values, perceptions, beliefs, influences, effects, and so on. Information can be obtained in many ways such as reading, seeing, hearing, touching, feeling, experiencing, interacting, thinking, etc.

² Uncertainties can relate to many aspects of the problem, including the problem definition, availability of solution alternatives, quality and interpretation of information, effects of alternatives, priorities and values of the decision maker and others, and so on.

³ Perspectives can relate to any type of grouping that is meaningful to the problem, such as categories of people, cultures, societies, roles, races, genders, hierarchies, theories, concepts, ideas, beliefs, attitudes, physical locations, time, disciplines, values, emotions, and so on.

⁴ Assumptions are hypotheses, suppositions, conjectures, assertions, presumptions, beliefs, or premises that are taken for granted or that lie behind an argument. Assumptions are made because of uncertainties; the “truth” cannot be known or proven. Some assumptions are better than others. Better assumptions are more reasonable, logical, comprehensive, plausible, likely, rational, impartial, objective, justified, credible, and/or believable.

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Procedures for Using Steps for Better Thinking Rubric

1. Use one copy of the rubric for each assessment.
2. Review the performance carefully. If it is written, underline key statements made by the student that provide clues about the student's underlying thinking.
3. First consider the student's overall approach to the problem (row H, at the bottom) and circle or highlight the closest description on the rubric—i.e., item H0, H1, H2, H3, or H4. If you are having trouble recognizing the overall approach, refer to the Steps for Better Thinking Performance Patterns (earlier in this handout) for additional guidance.
4. Next, go through the rest of the rubric row-by-row (A through G) and identify and circle or highlight the single best description within each row. You can do this in any order, but it will probably be easiest to begin at the top and move down. Because the descriptions become more complex as you move from left to right along a row, it is usually easiest to look for the student's performance beginning at the left and moving to the right.
5. Sometimes a student does not fully exhibit the skills described in the cell that contains the best match. In that case, circle/highlight only the part(s) exhibited.
6. Avoid overrating student skills by giving them the "benefit of the doubt." Do not circle/highlight a description unless the performance demonstrates it. (However, students might not explicitly discuss uncertainties. Sometimes you must infer their understanding of uncertainties based on the way they discuss and evaluate information and perspectives.)
7. If you find that your assessments of items A through H span more than two columns, carefully review your work. It is rare for a student's skills to span more than two columns. This type of finding usually means that there are problems with the ratings, the assessment assignment, or the quality of the student's response.
8. Review your assessments of items A through H and classify the student's overall performance pattern as either: (a) predominantly in one column (i.e., "0," "1," "2," "3," or "4") or (b) a mixture of two adjacent columns (i.e., "0.5," "1.5," "2.5," or "3.5").
9. Sometimes a student's response does not provide enough information to adequately classify the student's skills. Assess that response as "unable to rate."

Adapted from "To-Do List for Getting Started" in Chapter 4 of Wolcott, S. K. and C. L. Lynch. 2002. *Developing Critical Thinking Skills: The Key to Professional Competencies*. An Academic Partners Toolkit. Sarasota, FL, American Accounting Association. See: http://raw.rutgers.edu/raw/aaa/market/ap_toolkits.htm

Steps for Better Thinking Rubric

Student: WorldCom Ethical Dilemma: Student C

Rater: Susan Wolcott

Possible Overall Ratings: U (Unable to rate), 0.0, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0

Overall Rating: 1

Steps for Better Thinking ↓ SKILLS ↓	←Less Complex Performance Patterns			More Complex Performance Patterns→	
	"Confused Fact Finder" Performance Pattern 0—How performance might appear when Step 1, 2, 3, and 4 skills are weak	"Biased Jumper" Performance Pattern 1—How performance might appear when Step 1 skills are adequate, but Step 2, 3, and 4 skills are weak	"Perpetual Analyzer" Performance Pattern 2—How performance might appear when Step 1 and 2 skills are adequate, but Step 3 and 4 skills are weak	"Pragmatic Performer" Performance Pattern 3—How performance might appear when Step 1, 2, and 3 skills are adequate, but Step 4 skills are weak	"Strategic Re-Visioneer" Performance Pattern 4—How performance might appear when one has strong Step 1, 2, 3, and 4 skills
Step 1: IDENTIFY A—Identify and use relevant information B—Articulate uncertainties	A0—Uses very limited information; primarily "facts," definitions, or expert opinions B0—Either denies uncertainty OR attributes uncertainty to temporary lack of information or to own lack of knowledge	A1—Uses limited information, primarily evidence and information supporting own conclusion* B1—Identifies at least one reason for significant and enduring uncertainty*	A2—Uses a range of carefully evaluated, relevant information B2—Articulates complexities related to uncertainties and the relationships among different sources of uncertainty	A3—Uses a range of carefully evaluated, relevant information, including alternative criteria for judging among solutions B3—Exhibits complex awareness of relative importance of different sources of uncertainties	A4—Same as A3 PLUS includes viable strategies for GENERATING new information to address limitations B4—Exhibits complex awareness of ways to minimize uncertainties in coherent, on-going process of inquiry
Step 2: EXPLORE C—Integrate multiple perspectives and clarify assumptions D—Qualitatively interpret information and create a meaningful organization	C0—Portrays perspectives and information dichotomously, e.g., right/wrong, good/bad, smart/stupid D0—Does not acknowledge interpretation of information; uses contradictory or illogical arguments; lacks organization	C1—Acknowledges more than one potential solution, approach, or viewpoint; does not acknowledge own assumptions or biases D1—Interprets information superficially as either supporting or not supporting a point of view; ignores relevant information that disagrees with own position; fails to sufficiently break down the problem	C2—Interprets information from multiple viewpoints; identifies and evaluates assumptions; attempts to control own biases* D2—Objectively analyzes quality of information; Organizes information and concepts into viable framework for exploring realistic complexities of the problem*	C3—Evaluates information using general principles that allow comparisons across viewpoints; adequately justifies assumptions D3—Focuses analyses on the most important information based on reasonable assumptions about relative importance; organizes information using criteria that apply across different viewpoints and allow for qualitative comparisons	C4—Same as C3 PLUS argues convincingly using a complex, coherent discussion of own perspective, including strengths and limitations D4—Same as D3 PLUS systematically reinterprets evidence as new information is generated over time OR describes process that could be used to systematically reinterpret evidence
Step 3: PRIORITIZE E—Use guidelines or principles to judge objectively across the various options F—Implement and communicate conclusions for the setting and audience	E0—Fails to reason logically from evidence to conclusions; relies primary on unexamined prior beliefs, clichés, or an expert opinion F0—Creates illogical implementation plan; uses poor or inconsistent communication; does not appear to recognize existence of an audience	E1—Provides little evaluation of alternatives; offers partially reasoned conclusions; uses superficially understood evidence and information in support of beliefs F1—Fails to adequately address alternative viewpoints in implementation plans and communications; provides insufficient information or motivation for audience to adequately understand alternatives and complexity	E2—Uses evidence to reason logically within a given perspective, but unable to establish criteria that apply across alternatives to reach a well-founded conclusion OR unable to reach a conclusion in light of reasonable alternatives and/or uncertainties F2—Establishes overly complicated Implementation plans OR delays implementation process in search of additional information; provides audience with too much information (unable to adequately prioritize)	E3—Uses well-founded, overarching guidelines or principles to objectively compare and choose among alternative solutions; provides reasonable and substantive justification for assumptions and choices in light of other options* F3—Focuses on pragmatic issues in implementation plans; provides appropriate information and motivation, prioritized for the setting and audience*	E4—Articulates how a systematic process of critical inquiry was used to build solution; identifies how analysis and criteria can be refined, leading to better solutions or greater confidence over time F4—Implementation plans address current as well as long-term issues; provides appropriate information and motivation, prioritized for the setting and audience, to engage others over time
Step 4: ENVISION G—Acknowledge and monitor solution limitations through next steps H—Overall approach to the problem	G0—Does not acknowledge significant limitations beyond temporary uncertainty; next steps articulated as finding the "right" answer (often by experts) H0—Proceeds as if goal is to find the single, "correct" answer	G1—Acknowledges at least one limitation or reason for significant and enduring uncertainty; if prompted, next steps generally address gathering more information H1—Proceeds as if goal is to stack up evidence and information to support own conclusion	G2—Articulates connections among underlying contributors to limitations; articulates next steps as gathering more information and looking at problem more complexly and/or thoroughly H2—Proceeds as if goal is to establish an unbiased, balanced view of evidence and information from different points of view	G3—Adequately describes relative importance of solution limitations when compared to other viable options; next steps pragmatic with focus on efficiently GATHERING more information to address significant limitations over time H3—Proceeds as if goal is to come to a well-founded conclusion based on objective consideration of priorities across viable alternatives	G4—Identifies limitations as in G3; as next steps, suggests viable processes for strategically GENERATING new information to aid in addressing significant limitations over time* H4—Proceeds as if goal is to strategically construct knowledge, to move toward better conclusions or greater confidence in conclusions as the problem is addressed over time*

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Common Assessment Difficulties

- Good/Poor Communication Skills
 - It is sometimes difficult to distinguish between students with good/poor *thinking* skills versus students with good/poor *communication* skills
- Reasonable-Sounding Solution With Reasonable Support, But It Is Unclear Whether the Student Objectively Considered the Alternative(s)
 - Student probably lacks Step 2 skills
- Student Merely Cites Existence of Other Points of View or Asserts That There Are Multiple Solutions, But Fails to Adequately Consider Them
 - Student probably lacks Step 2 skills
- Student Confusion About:
 - “What the Professor Wants”
 - Appropriate Degree of Detail in Written Communication
- Performance Spans Two Cognitive Levels
 - It is common for performance to span two adjacent cognitive levels as students develop new skills
- Student Performance for Ethical Dilemmas Might Be One Level Lower Than for Other Types of Open-Ended Problems

Advice for Assessment

Assessment Using a Developmentally-Designed Rubric Helps Faculty:

- Quickly gain insights about student competency strengths and weaknesses.
- Identify the “next steps” in building student competencies.
- Provide students with:
 - More appropriate feedback for student learning.
 - More consistent feedback across courses.
- Achieve high interrater reliability with other faculty members.
- Work toward common learning outcomes with other faculty members.

Getting Started With Critical Thinking Assessment:

1. Give your students a written assignment to address an OPEN-ENDED problem.
2. Consider giving students specific instructions for tasks at each developmental step (1, 2, 3, and 4). For ideas, see examples provided later in this handout.
3. Practice using a developmental rubric to assess student responses. Use the assessment rubric for giving feedback to your students.
4. After collecting and assessing a set of student responses, modify the assignment as needed to obtain better assessment information in the future.
5. Begin to make changes in your teaching aimed at weaknesses you observe in student responses.

What Comes After Assessment?

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

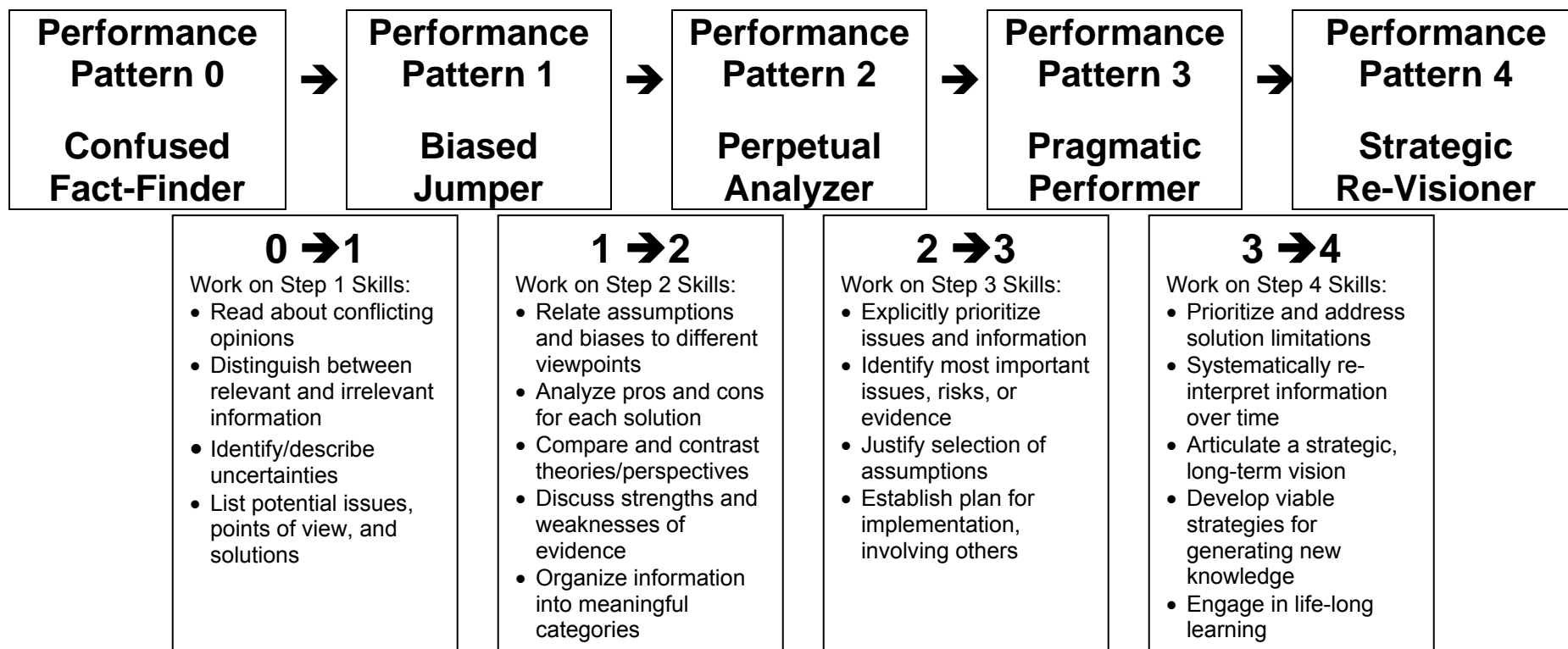
Most professors expect too much too soon; Keep in mind that development takes much time and practice

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 Move Students 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>.

Examples of Open-Ended Problems and Potential Questions

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>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 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>	<ul style="list-style-type: none"> • What are my 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 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, Dow Jones Newswires, January 30, 2003. • “What’s in a Peg?” The Economist, 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"> • Explain what was most important in reaching your conclusion about whether the HK dollar should be delinked. 	<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 In two of his classes, Larry’s professors said that he could work homework problems with other students as long as he turned in his own answers. In another class the professor said that students could not work with other students. Each time the professor collected homework, students were required to write a statement at the bottom of their assignment that assured the professor that the homework had been the student’s own effort.</p> <p>Half an hour before class, Larry’s girlfriend Annie asked if Larry would help her finish the last three homework problems so she could hand them in on time. Larry asked her how she would feel about signing the statement if he helped her.</p>	<ul style="list-style-type: none"> • What is the ethical issue here? • What alternatives are available to Larry? • If the professor discovers that Annie and Larry’s answers are similar in ways that reflect the fact that they worked together, what might happen? What risks are involved? • What information is relevant to Larry’s decision? • Does this problem have a single correct solution? Why or why not? 	<ul style="list-style-type: none"> • Explore this problem from different perspectives: <ol style="list-style-type: none"> 1. Annie 2. Larry 3. The professor 	<ul style="list-style-type: none"> • How important is it for students to behave ethically? 	<ul style="list-style-type: none"> • By exploring the ethics of this situation, what could Larry and Annie learn about professional ethics?

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. 	

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"> • 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? 	

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 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.

Teaching Ethical Reasoning as a Problem Solving Process

Consider the Following Definitions:

Ethics refers to principles that define behavior as right, good and proper. Such principles do not always dictate a single “moral” course of action, but provide a means of evaluating and deciding among competing options.

Excerpt from Josephson Institute of Ethics, *Making Sense of Ethics*.
Available online at:
<http://www.josephsoninstitute.org/MED/MED-1makingsense.htm>.

Ethics is two things. First, ethics refers to well based standards of right and wrong that prescribe what humans ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues... Ethics also means... the continuous effort of studying our own moral beliefs and our moral conduct, and striving to ensure that we, and the institutions we help to shape, live up to standards that are reasonable and solidly-based.

Excerpt from Manuel Velasquez, Claire Andre, Thomas Shanks, S.J., and Michael J. Meyer, *What Is Ethics?* Markkula Center for Applied Ethics, University of Santa Clara. Available at:
<http://www.scu.edu/ethics/practicing/decision/whatisethics.html>

Issues and Values for Ethical Reasoning

(In Addition to the Skills Described in Steps for Better Thinking)

←Less Complex		More Complex →	
Step 1—Identifying	Step 2—Exploring	Step 3—Prioritizing	Step 4—Envisioning
<p>Identify Ethical Dilemmas:</p> <ul style="list-style-type: none"> * Identify reasons why the dilemma is open-ended, such as: <ul style="list-style-type: none"> o Conflicts of interest (potential conflict among or harm to people, institutions, society, places, or things) o Issues of fairness and honesty (e.g., truthfulness, integrity, trustworthiness, justice, equity, impartiality) * Ask whether this is a topic, issue, or event that cannot be discussed openly without tarnishing one person or party * Discuss why the “ideal” ethical result might be impossible to achieve * Discuss reasons for behaving ethically 	<p>Explore the Situation, Perspectives, and Alternatives</p> <ul style="list-style-type: none"> * Explore the interests, assumptions, and values of important stakeholders * Explore the ethical dilemma from more than one moral philosophy, such as:^{a,b} <ul style="list-style-type: none"> o Teleology approach o Egoism approach o Virtue approach o Utilitarian approach o Deontology or Rights approach o Relativist approach o Justice or Fairness approach o Common good approach * Explore potential biases or rationalizations, such as:^c <ul style="list-style-type: none"> o “If it’s necessary, it’s ethical” o “If it’s legal and permissible, it’s proper” o “It’s just part of the job” o “I was just doing it for you” o “I’m just fighting fire with fire” o “It doesn’t hurt anyone” o “Everyone’s doing it” o “It’s OK if I don’t gain personally” o “I’ve got it coming” * Evaluate the completeness, reliability, and credibility of information sources 	<p>Clarify Priorities and Apply Ethical Values</p> <ul style="list-style-type: none"> * Identify the best option and identify the values associated with that choice * Consider alternative ways to identify the best choice, such as: <ul style="list-style-type: none"> o Prioritize the moral philosophies explored in Step 2 o Ask what the most ethical person would do in this situation o Ask which values are most important for addressing this problem o Ask how important it is to maintain high standards for values and principles * For the best solution, describe the trade-offs that are made among the interests of important stakeholders 	<p>Re-Vision Personal, Organizational, and Social Ethics</p> <ul style="list-style-type: none"> * Ask what the decision maker or others could learn from this dilemma * Describe methods for monitoring and continuously improving ethical values and principles * Identify types of ethical problems might occur in the future and plan how might they be addressed * Discuss why it is important to seek continuous improvement in ethical decision making

Sources:

^a The Internet Encyclopedia of Philosophy, Ethics, available at <http://www.utm.edu/research/iep/e/ethics.htm>.

^b The Markkula Center for Applied Ethics at Santa Clara University, available online at <http://www.scu.edu/ethics/practicing/decision/framework.html>.

^c Josephson Institute of Ethics, Making Ethical Decisions, November 2002, available at <http://www.josephsoninstitute.org/MED/MED-intro+toc.htm>.

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 Paper Above. Additional References:

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 Learning in Business Schools: Issues and Challenges*. AACSB International and Association for Institutional Research. 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.

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.

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

Next Steps

Activity:

List ideas from this session that you could implement:

Review the above list and select ONE idea that you could implement right away.