Improving Students' Critical Thinking Skills: Strategies for the Classroom

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Workshop Presenter:
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Objectives:
- Clarify Desired Critical Thinking Learning Outcomes
- Discuss and Recognize Patterns of Critical Thinking
- Explore Ways to Scaffold Improved Thinking
- Improve Assignments to Support and Encourage Better Critical Thinking
List Words/Phrases Describing the Critical Thinking Skills You Would like Students to Have or Develop in a Course You Teach (i.e., What Do You Want Students to Do?)
A Developmental Problem Solving Process

**FOUNDATION:** Knowing

**STEP 1:** Identifying

- Identify the Problem, Relevant Information, and Uncertainties (low cognitive complexity)
- Identify problem and acknowledge reasons for enduring uncertainty and absence of single "correct" solution
- Identify relevant information and uncertainties embedded in the information

**STEP 2:** Exploring

- Explore Interpretations and Connections (moderate cognitive complexity)
- Interpret information:
  1. Recognize and control for own biases
  2. Articulate assumptions and reasoning associated with alternative points of view
  3. Qualitative interpret evidence from a variety of points of view
- Organize information in meaningful ways that encompass problem complexities

**STEP 3:** Prioritizing

- Prioritize Alternatives and Implement Conclusions (high cognitive complexity)
- After thorough analysis, develop and use reasonable guidelines for prioritizing factors to consider and choosing among solution options
- Efficiently implement conclusions, involving others as needed

**STEP 4:** Envisioning

- Envision and Direct Strategic Innovation (highest cognitive complexity)
- Acknowledge, explain, and monitor limitations of endorsed solution
- Integrate skills into ongoing process for generating and using information to guide strategic innovation


(You can download this figure under “Educator Resources” at http://www.WolcottLynch.com.)
ACTIVITY #2
Patterns of Thinking

In Groups:

- Refer to the set of 9 cartoons (last page of separate handout).
- Select 1-2 cartoons that characterize each pattern of thinking as summarized on pages 1-2 of the separate handout.
- Be prepared to explain your choices with the large group.
ACTIVITY #3
Patterns of Thinking in Student Writing

Refer to Separate Handout: “Assignments and Examples of Student Writing”

“Restrictions on Gender in Educational Settings” assignment and student responses

Individually:

- Read the assignment and responses of students #1 and #2 (pages 23-27).
- Reach a tentative conclusion about the performance pattern exhibited in each student’s response (pages 25-27).
- After reaching your own conclusion, read the evaluation comments for each student response (pages 28-30).

In Groups:

- Discuss and reach consensus about the performance patterns for each student. Note: You might or might not agree with the evaluation rating.
ACTIVITY #4
Performance Pattern Distribution

In Groups, Discuss the Following Questions:

- Review the following data about student performance patterns.
- In a course you teach, what % of students are likely to operate at each performance pattern?
- What factors are likely to cause the distribution to vary across courses/programs?

Summary of 20 Years’ Empirical Research
Adapted from Table 6.6, King and Kitchener, 1994

<table>
<thead>
<tr>
<th>Mean Performance Pattern</th>
<th>Std Dev</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional-Aged Undergraduate Students:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>0.63</td>
<td>0.53</td>
</tr>
<tr>
<td>Sophomore</td>
<td>0.57</td>
<td>0.43</td>
</tr>
<tr>
<td>Junior</td>
<td>0.74</td>
<td>0.59</td>
</tr>
<tr>
<td>Senior</td>
<td>0.99</td>
<td>0.67</td>
</tr>
<tr>
<td>Nontraditional-Aged Undergraduate Students:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>0.57</td>
<td>0.42</td>
</tr>
<tr>
<td>Senior</td>
<td>0.98</td>
<td>0.74</td>
</tr>
<tr>
<td>Master’s/Early Doctoral</td>
<td>1.62</td>
<td>0.81</td>
</tr>
<tr>
<td>Advanced Doctoral</td>
<td>2.27</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Performance Patterns 0, 1, 2, 3, and 4 correspond to the skills in Reflective Judgment Stages 3, 4, 5, 6, and 7, respectively (means in the table have been adjusted accordingly).

Data from Four Introductory Financial Accounting Classrooms

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Overview of Schema Theory

Student’s Prior Schemata
Abstract and Reorganized Representations of Events, Places, Procedures, Persons, etc.
Including:
- Inferences
- Misconceptions

New Information

Filtering and Transformation by the Student

Student’s New Schemata
Abstract and Reorganized Representations of Events, Places, Procedures, Persons, etc.
Including:
- Inferences
- Misconceptions

New Information Not “Learned”
Includes New Information for Which Student Has:
- No adequate schema
- Little prior knowledge
- Little or no context
- Interfering misconceptions
- An inability to make inferences

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.
## Implications for Student Learning Attitudes and Approaches

<table>
<thead>
<tr>
<th>Less Complex</th>
<th>More Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“Confused Fact-Finder”</strong> Performance Pattern 0</td>
<td><strong>“Pragmatic Performer”</strong> Performance Pattern 3</td>
</tr>
</tbody>
</table>
| **Common Learning Attitudes and Approaches:**
- 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 one’s 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
| **Common Learning Attitudes and Approaches:**
- 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)

| **“Biased Jumper”** Performance Pattern 1 | **“Perpetual Analyzer”** Performance Pattern 2 |
| **Common Learning Attitudes and Approaches:**
- 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
| **Unique to Performance Pattern 2:**
- 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
- Writes overly long papers
- Jeopardizes class discussions by getting stuck on issues such as definitions

| **“Perpetual Analyzer”** Performance Pattern 2 | **“Strategic Re-Visioner”** Performance Pattern 4 |
| **Common Learning Attitudes and Approaches:**
- 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
| **Unique to Performance Pattern 4:**
- Views learning as a process that can be improved strategically over time
- Spontaneously addresses ways to improve learning or performance

| **“Pragmatic Performer”** Performance Pattern 3 | **“Strategic Re-Visioner”** Performance Pattern 4 |
| **Common Learning Attitudes and Approaches:**
- 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

Note: This page can be downloaded under “Educator Resources” at [http://www.WolcottLynch.com](http://www.WolcottLynch.com).
# Epistemological Beliefs and Paul & Elder’s Intellectual Traits

Intellectual traits include intellectual humility, intellectual courage, intellectual empathy, intellectual integrity, intellectual perseverance, faith in reason, and fair-mindedness.

Based on King and Kitchener’s Reflective Judgment Model (see, for example, King & Kitchener, 1994) and Paul & Elder’s Intellectual Traits available at [www.CriticalThinking.org](http://www.CriticalThinking.org).

<table>
<thead>
<tr>
<th>“Confused Fact-Finder” Performance Pattern 0</th>
<th>“Biased Jumper” Performance Pattern 1</th>
<th>“Perpetual Analyzer” Performance Pattern 2</th>
<th>“Pragmatic Performer” Performance Pattern 3</th>
<th>“Strategic Re-Visioner” Performance Pattern 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key Epistemological Beliefs of King &amp; Kitchener Stages 2 &amp; 3:</strong></td>
<td><strong>Key Epistemological Beliefs of King &amp; Kitchener Stage 4:</strong></td>
<td><strong>Key Epistemological Beliefs of King &amp; Kitchener Stage 5:</strong></td>
<td><strong>Key Epistemological Beliefs of King &amp; Kitchener Stage 6:</strong></td>
<td><strong>Key Epistemological Beliefs of King &amp; Kitchener Stage 7:</strong></td>
</tr>
<tr>
<td>- Knowledgeable persons or experts know or will find correct answers to all problems</td>
<td>- Uncertainty is due only to specific limitations such as lost or incorrect reporting of data, limited resources, or inability to correctly predict the future</td>
<td>- Endorsing one alternative denies the legitimacy of other alternatives</td>
<td>- Points of view about specific situations may be judged as better than others only in a very tentative way based on one’s evaluations of experts’ positions or the pragmatics of the situation at hand</td>
<td>- Learning is a life-long process, and generalized principles of inquiry can be employed in that process</td>
</tr>
<tr>
<td>- Uncertainty either does not exist or is merely temporary</td>
<td>- Conflicting points of view for which evidence can be provided are equally valid</td>
<td>- Problem solutions may be justified only within a given context or from a given perspective, making it very difficult to endorse and justify a solution as the best alternative</td>
<td>- There are no generalized principles and procedures that can be used to further investigate one’s resolution to the problem</td>
<td>- As a result of careful inquiry and knowledge building over the course of a single lifetime and across generations, substantial improvements can be made in quality of life and professional practice</td>
</tr>
<tr>
<td>- Until experts can agree, opinions are equally correct or equally biased guesses</td>
<td>- Criticizing an argument is the same as criticizing the person who makes the argument</td>
<td>- There are no overarching criteria by which to choose among competing evidence-based interpretations or solutions</td>
<td>- Taking reasonable risks associated with moving toward desired changes is necessary</td>
<td>- May choose to ignore or violate one or more intellectual traits (e.g. intellectual courage and fair-mindedness)</td>
</tr>
<tr>
<td>- It is sufficient to view problems without attention to realistic ambiguities and complexities</td>
<td>- It is sufficient to simply stack up evidence that supports one’s opinion</td>
<td>- Beliefs are generally consistent with intellectual traits</td>
<td>- There are no generalized principles or the pragmatics of the situation at hand</td>
<td>- Beliefs are consistent with all aspects of the intellectual traits</td>
</tr>
<tr>
<td><strong>Developmental Readiness for Intellectual Traits:</strong></td>
<td><strong>Developmental Readiness for Intellectual Traits:</strong></td>
<td><strong>Developmental Readiness for Intellectual Traits:</strong></td>
<td><strong>Developmental Readiness for Intellectual Traits:</strong></td>
<td><strong>Developmental Readiness for Intellectual Traits:</strong></td>
</tr>
<tr>
<td>- Beliefs conflict with the concepts underlying the intellectual traits; unlikely to demonstrate or consider intellectual traits</td>
<td>- Beliefs often lead to overconfidence in own abilities, conflicting with intellectual traits</td>
<td>- Beliefs encourage intellectual traits such as humility, empathy, and fair-mindedness</td>
<td>- Beliefs are generally consistent with intellectual traits</td>
<td>- Beliefs are consistent with all aspects of the intellectual traits</td>
</tr>
<tr>
<td>- Likely to express confusion when exposed to intellectual traits</td>
<td>- Likely to address intellectual traits superficially</td>
<td>- May struggle with aspects of intellectual perseverance and faith in reason because of personal difficulties endorsing and justifying a solution as the best alternative</td>
<td>- Lacks ability to apply generalized principles needed to engage in systematic self-reflection and continuous improvement</td>
<td>- May choose to ignore or violate one or more intellectual traits (e.g. intellectual courage and fair-mindedness)</td>
</tr>
</tbody>
</table>

This page is not yet available on my web site, but you can email me for an electronic copy of a document showing a more complete cognitive analysis of the Paul-Elder Critical Thinking framework.

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Another Way to Depict Patterns of Thinking: Degree of Complexity

Consider using the diagrams below to help you think about the complexity of student thinking and also the complexity of the questions, assignments, cases, etc. that you use in your courses. A task becomes more complex as more abstractions (e.g. ideas, arguments, pieces of information, issues, assumptions, or priorities) must be coordinated simultaneously.

**Hierarchical Progression of Skills:**

<table>
<thead>
<tr>
<th>Less Complex</th>
<th>More Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Pattern 0</strong></td>
<td><strong>Performance Pattern 4</strong></td>
</tr>
<tr>
<td>Confused Fact-Finder</td>
<td>Strategic Revisioner</td>
</tr>
<tr>
<td>Concrete representations</td>
<td>Systems of abstract systems</td>
</tr>
<tr>
<td>Coordinates two representations (e.g., right vs. wrong, true vs. false, good vs. bad)</td>
<td>Coordinates abstract systems</td>
</tr>
<tr>
<td><strong>Performance Pattern 1</strong></td>
<td><strong>Performance Pattern 3</strong></td>
</tr>
<tr>
<td>Biased Jumper</td>
<td>Pragmatic Performer</td>
</tr>
<tr>
<td>Single abstractions (“stacks”)</td>
<td>Abstract systems</td>
</tr>
<tr>
<td>Coordinates several aspects of two concrete representations</td>
<td>Coordinates several aspects of abstractions</td>
</tr>
<tr>
<td><strong>Performance Pattern 2</strong></td>
<td></td>
</tr>
<tr>
<td>Perpetual Analyzer</td>
<td></td>
</tr>
<tr>
<td>Abstract mappings</td>
<td></td>
</tr>
<tr>
<td>Coordinates abstractions with each other</td>
<td></td>
</tr>
<tr>
<td><strong>Performance Pattern 3</strong></td>
<td></td>
</tr>
<tr>
<td>Pragmatic Performer</td>
<td></td>
</tr>
<tr>
<td>Abstract systems</td>
<td></td>
</tr>
<tr>
<td>Coordinates several aspects of abstractions</td>
<td></td>
</tr>
</tbody>
</table>

See Fischer (1980); Fischer & Bidell (1997); and Fischer, Bullock, Rotenberg, & Raya (1993); and Fischer & Pruyne (2002)
### Next Steps: Learning Activities to Scaffold Stronger Thinking Skills

<table>
<thead>
<tr>
<th>Performance Pattern 0</th>
<th>Performance Pattern 1</th>
<th>Performance Pattern 2</th>
<th>Performance Pattern 3</th>
<th>Performance Pattern 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confused Fact-Finder</td>
<td>Biased Jumper</td>
<td>Perpetual Analyzer</td>
<td>Pragmatic Performer</td>
<td>Strategic Re-Visioner</td>
</tr>
</tbody>
</table>

#### Performance Pattern 0 to 1 (Confused Fact-Finder to Biased Jumper)

- Work on Step 1 Skills:
  - Identify uncertainties including risks
  - Read about conflicting opinions/theories/viewpoints
  - Identify open-ended problems
  - Identify relevant and irrelevant information
  - List potential issues, points of view, and solutions
  - Form own opinion; use evidence/arguments to support it

#### Performance Pattern 1 to 2 (Biased Jumper to Perpetual Analyzer)

- Work on Step 2 Skills:
  - Identify & control own biases
  - Identify stronger & weaker arguments, evidence, etc.
  - Explore & analyze alternatives/viewpoints (pros/cons, strengths/weaknesses)
  - Identify & analyze assumptions
  - Compare & contrast theories/perspectives
  - Organize messy info. into meaningful categories

#### Performance Pattern 2 to 3 (Perpetual Analyzer to Pragmatic Performer)

- Work on Step 3 Skills:
  - Identify most important issues, risks, evidence, stakeholders etc.
  - Select & justify reasonable assumptions
  - Prioritize & clarify values used
  - Establish plan that adequately addresses concerns/needs of others

#### Performance Pattern 3 to 4 (Pragmatic Performer to Strategic Re-Visioner)

- Work on Step 4 Skills:
  - Prioritize and address solution limitations
  - Systematically re-interpret information over time
  - Articulate a strategic, long-term vision
  - Develop viable strategies for generating new knowledge over time
  - Engage in life-long learning

**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](http://www.WolcottLynch.com).

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

<table>
<thead>
<tr>
<th>Step 1—Identifying</th>
<th>Step 2—Exploring</th>
<th>Step 3—Prioritizing</th>
<th>Step 4—Envisioning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identifying Relevant Information:</strong></td>
<td><strong>Interpreting Information From Multiple Viewpoints:</strong></td>
<td><strong>Prioritizing and Concluding:</strong></td>
<td><strong>Acknowledging Limitations:</strong></td>
</tr>
<tr>
<td>* List data or types of information relevant to ____________</td>
<td>* Describe the pros and cons of ____________</td>
<td>* Develop and use reasonable guidelines for drawing conclusions regarding ____________</td>
<td>* Identify and describe potential future developments in ____________</td>
</tr>
<tr>
<td>* Identify relevant information in ____________ (a textual passage such as a case, article, piece of literature, etc.)</td>
<td>* Analyze the costs and benefits of ____________</td>
<td>* Assess the degree of risk of ____________</td>
<td>* Describe limitations to a recommendation about ____________</td>
</tr>
<tr>
<td>* Access relevant standards or rules for ____________</td>
<td>* Explain how ambiguities affect your analysis of ____________</td>
<td>* Objectively consider ____________ when making a decision about ____________</td>
<td>* Strategically consider contingencies and future developments related to ____________</td>
</tr>
<tr>
<td>* Identify factors related to ____________</td>
<td>* Identify assumptions associated with ____________ (a point of view or alternative)</td>
<td>* Consider ____________ in reaching a conclusion</td>
<td><strong>Creating and Monitoring Strategies</strong></td>
</tr>
<tr>
<td>* Identify various potential solutions to ____________</td>
<td>* Interpret ____________ from the viewpoint of ____________</td>
<td>* Develop reasonable recommendation for ____________</td>
<td>* Develop and monitor strategies for ____________</td>
</tr>
<tr>
<td>* Describe arguments in favor of ____________</td>
<td>* Appropriately use ____________ (a technique) to analyze ____________</td>
<td>* Address the costs and benefits of ____________ in reaching a conclusion about ____________</td>
<td>* Implement appropriate corrective action for ____________ over time</td>
</tr>
<tr>
<td><strong>Identifying Uncertainties:</strong></td>
<td><strong>Interpreting Information From Multiple Viewpoints:</strong></td>
<td><strong>Prioritizing and Concluding:</strong></td>
<td><strong>Acknowledging Limitations:</strong></td>
</tr>
<tr>
<td>* Explain why ____________ cannot completely eliminate risk of ____________</td>
<td>* Explain how alternative solutions might affect ____________ (one or more stakeholders)</td>
<td>* Develop reasonable policies for ____________</td>
<td>* Identify and describe potential future developments in ____________</td>
</tr>
<tr>
<td>* Describe uncertainties concerning ____________</td>
<td>* Analyze the quality of information and evidence related to ____________</td>
<td>* Develop an effective plan for addressing ____________</td>
<td>* Describe limitations to a recommendation about ____________</td>
</tr>
<tr>
<td>* Identify and describe uncertainties about the interpretation or significance of ____________</td>
<td>* Identify own biases and explain how those biases were controlled when ____________</td>
<td>* Effectively involving Others in Implementation:</td>
<td>* Strategically consider contingencies and future developments related to ____________</td>
</tr>
<tr>
<td>* Identify risks associated with ____________</td>
<td>* Interpret ____________ (a point of view or alternative)</td>
<td>* Take actions to implement the best solution to ____________</td>
<td><strong>Creating and Monitoring Strategies</strong></td>
</tr>
<tr>
<td>* Describe why there is no single, &quot;correct&quot; way to ____________</td>
<td>* Organize the effects of ____________ on ____________</td>
<td>* Organize ____________ (a communication) so that it is meaningful to the receiving party</td>
<td>* Develop and monitor strategies for ____________</td>
</tr>
<tr>
<td>* Identify reasons why ____________ might change or vary</td>
<td><strong>Organizing Information:</strong></td>
<td>* Communicate ____________ effectively for ____________ (a given setting and audience)</td>
<td>* Continuously monitor and update ____________ as needed</td>
</tr>
<tr>
<td></td>
<td>* Develop meaningful categories for analyzing information about ____________</td>
<td></td>
<td>* Develop strategic uses of ____________</td>
</tr>
<tr>
<td></td>
<td>* Organize the various aspects of ____________ to assist in decision making</td>
<td></td>
<td>* Manage ____________ under changing or unusual demands</td>
</tr>
</tbody>
</table>

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ACTIVITY #5
Promoting Stronger Critical Thinking Skills

In Groups:

• Return to the assignment and two student examples from the last activity (i.e., “Restrictions on Gender in Educational Settings”).

• Refer to “next steps” and “templates” on pages 11-12 of this handout. Identify 1-2 critical thinking skills that might be most important for each student to develop next—given your assessment of each student’s thinking pattern.

  HINT: For now, assume you have the luxury of teaching each student individually. Later, we will discuss strategies for a typical classroom that contains a distribution of thinking patterns.

• Be prepared to share your ideas with the large group.
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 and risks—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 or some other model 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)
Learning Activities to Scaffold Step 1 Skills:
- Identify and describe uncertainties, including risks
- Read about conflicting opinions/theories/viewpoints
- Identify open-ended problems (versus well-defined problems)
- Identify relevant and irrelevant information
- List potential issues, points of view, and solutions
- Form own opinion; use evidence/arguments to support it

UNCERTAINTIES ARE KEY
- Consider integrating at least briefly into EVERY topic in EVERY course; the degree of sophistication can increase in more advanced courses
- Students often enjoy discussing uncertainties and risks involving current news stories
One-Paragraph Assignment: Identify and Describe Uncertainties/Risks

Ask students to write one paragraph on a question addressing uncertainties about aspects of a homework problem or a course topic. Examples:

- What risks might prevent success if [a course of action is taken]?
- Why does uncertainty/risk exist about whether [a social/business/personal policy or practice] is beneficial?
- Why can’t [a decision maker] know with certainty which [choice] is best?
- Why don’t we know with certainty what [the author of a plan, book, article, or other written work] intended to convey?
- Can we be certain 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 [experts] completely solve [a problem]?

Alternative ways to use this assignment:

- Give students 5 minutes at the end of class to write a paragraph on a question addressing uncertainties about that day’s topic. Quickly review the students’ responses and discuss the results with students at the beginning of the next class.
- Have students write the paragraph as an in-class group activity. The students can help each other explore uncertainties. Have the groups turn in their paragraphs, share and combine their paragraph with another group, or share their paragraph with the whole class.
- Add questions about uncertainties or business risks to textbook homework assignments (textbooks rarely ask explicit questions about uncertainties).

Comments:

Although aimed primarily at the needs of the Confused Fact-Finder, students having more complex critical thinking skills will still benefit from this learning activity; they will identify more uncertainties/risks and provide more complex explanations.

As an added benefit, this activity can also uncover student misconceptions about the related course content.
Additional Ideas for “Step 1” Skills:

Consider using a tool such as the following exhibit to help teach students about different types of business risks. Give the students a business problem or scenario and ask them to identify various types of risks related to the problem.

### EXHIBIT 1.5 Examples of Business Risks

<table>
<thead>
<tr>
<th>Economic and Financial</th>
<th>Political and Social</th>
<th>Reputation</th>
<th>Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic collapse</td>
<td>Government policy or regulation change</td>
<td>Perceived quality</td>
<td>Hurricane, typhoon, tornado, waterspout</td>
</tr>
<tr>
<td>Changes in credit, interest, and currency markets</td>
<td>Confinement or imprisonment of employees or families</td>
<td>Product obsolescence</td>
<td>Earthquake</td>
</tr>
<tr>
<td>Strategic risks (e.g., change in customer tastes, unanticipated competition, joint venture/alliance relations, change in technology)</td>
<td>Lawlessness and hostile demonstration</td>
<td>Government and/or regulatory investigation</td>
<td>Flood</td>
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<tr>
<td>Change in cost/availability of labor or other resources</td>
<td>Civil war or military coup</td>
<td>Public boycott/condemnation</td>
<td>Wildfire</td>
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<td></td>
<td>Expropriation or forced renegotiation of royalties</td>
<td>Human rights abuses</td>
<td>Mudslide</td>
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<td>Tax law changes</td>
<td>Class action lawsuits</td>
<td>Extreme heat or cold</td>
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<td></td>
<td>Foreign market protectionism</td>
<td>Rumors, gossip, libel, slander</td>
<td>Climate change</td>
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<td>Non-compliance with laws, regulations, internal policies</td>
<td>Lightning</td>
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<td></td>
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<td>Sinkhole</td>
</tr>
</tbody>
</table>

**Environmental and Man-made**
- Chemical, biological, radioactive, or nuclear release
- Fire or explosion
- Noise or dust pollution
- Carbon dioxide, other hazardous gas, or liquid emission
- Building, mine, facility condemnation or collapse
- Damage from water, asbestos, or mold
- Animal/insect infestation

**Psychopathic, Criminal and Terrorist**
- Product tampering
- Terrorist acts
- Arson or explosion
- Sabotage, kidnapping, extortion, vandalism
- Fraud, theft, embezzlement
- Workplace violence
- Economic espionage
- Product counterfeiting

**Informational and Operational**
- Theft or other loss of proprietary/confidential data
- Poor information quality
- Technology failure
- Key customer or supplier loss
- Insufficient capacity
- Technology obsolescence
- Project management failure
- Sourcing failures
- Poor sales strategy/execution
- Failure to innovate
- Logistics disruptions
- Uncompetitive cost structure

**People, Legal, Health and Other**
- Disease or health epidemic
- Transportation accident
- Loss of key personnel
- Corporate governance issues
- Labor slowdown or strike
- Sexual harassment, workplace discrimination, wrongful dismissal, or labor law noncompliance
- Executive misdeeds, bribes, or other conduct violations
- Accidents, errors, omissions
- Inability to attract talent


More Ideas for “Step 1” Skills:

- **Expose students to legitimately-held, reasonable differences of opinion.** The Confused Fact-Finder tends to believe that differences of opinion are attributable only to dichotomous explanations; people holding different views are seen as good/bad, right/wrong, smart/stupid, etc. The Confused Fact-Finder needs exposure to examples which contradict these beliefs—i.e., situations in which equally knowledgeable and well-meaning people legitimately disagree about an open-ended problem. Give students a reading assignment which presents conflicting opinions. Alternatively, you may wish to construct a short hypothetical scenario.

- **Help students recognize open-ended problems.** When introducing a new learning task (a homework assignment, project, etc.), consider one of the following: (a) tell students whether the learning task is well-defined or open-ended, (b) hold a brief class discussion about whether the learning task is well-defined or open-ended, or (c) as part of the assignment ask students to identify and explain whether it is well-defined or open-ended.

- **Have students list information.** Give students tasks requiring them to list information and then identify which pieces of information are relevant to a given problem. For an example, see the Casey Hogan assignment later in this handout. This activity might be performed as an in-class activity in small groups.

- **Have students list issues, viewpoints, potential solutions.** Give students one or more readings and have them make lists of potential issues, points of view, and/or alternative solutions. Or, ask small groups of students to brainstorm and create similar lists during class. Ask one or more groups to share their lists with the whole class.

- **Expose Confused Fact-Finders to More Complex Peer Thinking.** When discussing an open-ended problem, have students with stronger critical thinking skills articulate ways in which they determine whether a problem is open-ended, identify uncertainties/risks, or use evidence to support a position. Repeated exposure to a higher level of complexity exhibited by peers can be a powerful source of motivation for the Confused Fact-Finder.

- **Introduce students to evidence and arguments.** Help students learn that evidence/arguments might include facts, descriptions, definitions, opinions, ideas, claims, theories, concepts, observations, statistics, values, perceptions, beliefs, influences, or effects. Also consider discussing with students alternative methods for gathering information such as reading, seeing, hearing, touching, feeling, experiencing, interacting, and thinking. *(Note: Classifying evidence into different categories and evaluating the quality of evidence are Step 2 skills, not Step 1.)*
Learning Activities to Scaffold Step 2 Skills:
- Identify and control own biases
- Identify stronger and weaker arguments, evidence, etc.
- Explore and analyze alternatives/viewpoints (pros/cons, strengths/weaknesses)
- Identify and analyze assumptions
- Compare and contrast theories/perspectives
- Organize information into meaningful categories to facilitate analysis

FOCUS ON DEEPER AND LESS BIASED ANALYSIS
- BEFORE students offer opinions/conclusions, require them to:
  - Demonstrate more thorough analysis
  - Describe multiple perspectives as objectively as possible
- Students (especially traditional-aged students) may be surprised to discover that others in the class formed different viewpoints; take advantage of their curiosity to learn why
- More mature students might have used this pattern of thinking for many years and may be resistant to change
Ideas for “Step 2” Skills:

- **Distinguish between judging evidence/arguments and judging people.** Have students write an essay and/or hold a classroom discussion about the following question: “Why is evaluating an argument different than making a judgment about a person?” The prototypical Biased Jumper believes that different viewpoints arise solely because of personal characteristics (e.g., upbringing, intentional bias, or individualism), so they take criticisms of their work personally. This learning activity is designed to help reduce students’ negative emotional responses to the evaluation of their work.

- **Help students evaluate stronger/weaker support for a position.** Provide students with readings (e.g., student papers or articles) which take the SAME position on an issue, but where one reading provides stronger support than the other. The difference between readings should be qualitative to avoid the Biased Jumper’s tendency to focus only on quantitative factors such as the number of arguments presented. Have students identify which reading provides stronger support and explain why. It would be best for students to address this task as a homework problem and then address it again in small group and/or whole class discussions.

- **Encourage students to explicitly identify arguments for AND against EACH alternative/option/ viewpoint.** Have students create a table such as the one shown below, in which they must explicitly list both the pros and the cons for each alternative. Students may be asked to construct this table individually as a homework task, and then expand the table during class in small groups. A whole-class discussion might help students complete the table even more.

<table>
<thead>
<tr>
<th>Alternative/Option / Viewpoint #1</th>
<th>Pros/Advantages/Strengths</th>
<th>Cons/Disadvantages/Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative/Option / Viewpoint #2</td>
<td></td>
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<td>Etc.</td>
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</table>
More Ideas for “Step 2” Skills:

- **Introduce students to degrees of support for an argument.** Present students with one or more pieces of evidence related to an argument, or have students identify pieces of evidence. Evidence might take a variety of forms, including facts, opinions, ideas, claims, theories, concepts, observations, statistics or other data, values, perceptions, or beliefs. For each piece of evidence, ask students to indicate on a line similar to the one below how much support the evidence provides for the argument, and have them explain the reasons for their choices. Also ask students to evaluate the degree of support for all of the evidence taken together. Hold small or large group discussions about the students’ choices.

- **Ask students to identify and evaluate assumptions.** Ask students to research definitions for the term “assumption” and to explain why assumptions are needed. Here is a possible definition and explanation: *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. Also consider asking students to distinguish between: (a) implicit and explicit assumptions and (b) assumptions and assertions.

- **Help students evaluate the quality of assumptions.** Ask students to develop criteria for evaluating the quality of assumptions, or provide them with the following criteria: *Better assumptions are more reasonable, logical, comprehensive, plausible, likely, rational, impartial, objective, justified, credible, or believable.* It would be best for students to address this task as a homework problem and then address it again in small group and/or whole class discussions.

- **Have students explore alternative viewpoints.** Have students evaluate the concerns and issues that are relevant for various people, organizations, or groups (sometimes called stakeholders) related to a problem. Ask questions such as these: How would other people, organizations, or groups respond to this problem? What influences how you respond to this problem? What would influence how others respond? How might people who disagree about this problem argue their cases?

- **Teach concept mapping (or mind mapping).** Here are examples of web sites with information about this technique:
  - www.mindtools.com/index.html
ACTIVITY #6
Student Performance: Step 2 Skills

In Groups:

- Review the assignment “Homeless Man Case with Worksheet” on pages 2-6 in “Assignments and Examples of Student Writing” handout. The assignment focuses heavily on Step 2 skills.

- Discuss the following questions:
  - How well would most students perform on this assignment?
  - What learning strategies do you use to help students develop stronger Step 2 skills?
Learning Activities to Scaffold Step 3 Skills:
- Identify most important issues, risks, evidence, stakeholders etc.
- Select and justify reasonable assumptions
- Prioritize and clarify values used
- Establish plan that adequately addresses concerns/needs of others

FOCUS ON PRIORITIZATION
- These students often have a more positive relationship with the professor and are seeking ways to improve
- Allow students opportunities to practice using different priorities to support different conclusions
- Pushing these students to reach and defend conclusions before they have learned how to prioritize might cause them to revert back to Biased Jumper thinking
Additional Ideas for “Step 3” Skills:

- **Ask students to consider which aspects of a problem are most important.** Which issues are most important? Which uncertainties or risks absolutely need to be addressed, and which are less critical? Which evidence is strongest? Is additional research or evidence necessary (as opposed to desirable)?

- **Practice ranking.** Demonstrate and have your students practice ranking the issues, uncertainties/risks, and evidence for open-ended problems.

- **Help students select and justify a reasonable set of assumptions.** Ask students to address questions such as these: Which assumptions have the biggest influence on conclusions in this problem? What does it mean for an assumption to be reasonable versus unreasonable? What is the worst that can happen if it turns out that this assumption (or set of assumptions) is incorrect? For this problem, which criteria are most important for evaluating assumptions?

- **Distinguish between bias and priority.** Ask students to compare and contrast the terms bias and priority. Distinguishing between these two aspects of thinking reduces students’ reluctance to choose one alternative over another.

- **Model the process for your students.** Discuss how you develop priorities/values/criteria/guidelines/frameworks to choose across viable alternatives. The Perpetual Analyzer “can’t see the forest for the trees.” With a little guidance, these students can learn to back away from the details and consider the big picture.

- **Practice choosing and applying priorities/values.** Ask students to practice identifying two or more potential sets of priorities/values for an open-ended problem. Then have students discuss how different sets of priorities/values lead to different conclusions. Also ask students to consider circumstances under which different priorities/values might be more important than others. By identifying more than one set, the Perpetual Analyzer will probably be less concerned about perfection.

- **Discuss concise writing.** Perpetual analyzers tend to write too much and have difficulty prioritizing information for an audience. Provide students with examples and discuss strategies for writing concisely, while at the same time addressing the most important issues.

- **Give students two major requirements.** Consider dividing a written assignment into two parts. In the first part, have students provide a written communication addressing the concerns and needs of a particular audience. In the second part, have students write a memo explaining how they deciding what information they included in the first part. This type of assignment reduces the Perpetual Analyzer’s tendency to include the entire analysis in the first communication. It also provides you with more information about students’ thinking skills.
ACTIVITY #7
Student Performance: Step 3 Skills

In Groups:

- Discuss how different students might address this assignment:
  - Confused Fact-Finders
  - Biased Jumpers
  - Perpetual Analyzers

4.33 Outsourcing, qualitative factors, strategic priorities

Two different retail companies, S-Mart and Galatea, are investigating potential outsource partners to manufacture clothing. S-Mart operates a large chain of discount retail stores. It competes based on low prices, convenience, and a wide selection of consumer goods. Galatea is boutique clothing store owned and operated by a major fashion designer. It competes based on fashion design, high-quality materials and construction, and personal customer relationships.

REQUIRED:

A. From the viewpoint of each customer, rank the following list of outsource partner characteristics from 1 (highest priority) to 9 (lowest priority).

<table>
<thead>
<tr>
<th>S-Mart</th>
<th>Galatea</th>
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B. Explain how you decided which factors were most important for each company. Also identify the assumptions you made.

Learning Activities to Scaffold Step 4 Skills:
- Prioritize and address solution limitations
- Systematically re-interpret information over time
- Articulate a strategic, long-term vision
- Develop viable strategies for generating new knowledge over time
- Engage in life-long learning

FOCUS ON SYSTEMATIC LEARNING
Looking Closely at Course Expectations
Can Students Understand Us?

A Continuous Risk Management Process
(for Enterprise Risk Management)

Identifying the Skills Needed to Perform Well on an Assignment

In financial 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!

<table>
<thead>
<tr>
<th>← Less Complex</th>
<th>Step 1—Identifying</th>
<th>Step 2—Exploring</th>
<th>Step 3—Prioritizing</th>
<th>Step 4—Envisioning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content Knowledge</strong></td>
<td>* Find formulas and calculate ratios</td>
<td>* Explain why ratios aren’t “absolute” measures of profitability, liquidity, stability, activity, etc.</td>
<td>* Identify and compensate for own biases in ratio interpretation</td>
<td>* Describe limitations to a conclusion about a company’s profitability, liquidity, stability, activity, etc. resulting from a ratio analysis</td>
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<tr>
<td></td>
<td>* Locate financial information used in calculation</td>
<td>* Explain why higher/lower ratios don’t always indicate a better/worse company</td>
<td>* Describe possible business reasons why ratios vary across companies and across years</td>
<td>* Identify circumstances that might cause a change in conclusions about a company’s ratios</td>
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<td></td>
<td>* Locate comparative information for comparable companies/industry</td>
<td>* Explain why financial experts might disagree about the interpretation of a company’s ratios</td>
<td>* Identify and evaluate the quality of assumptions underlying alternative interpretations of a company’s ratios</td>
<td>* Develop a plan for monitoring a company’s performance in the future</td>
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<td></td>
<td>* Recognize and adjust calculations for differences in ratio formulas in different sources</td>
<td>* Explain why ratios aren’t the same for all companies.</td>
<td>* Explain how different stakeholders might view ratios differently</td>
<td>* Investigate and work toward implementation of new, superior methods of ratio analysis</td>
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<tr>
<td></td>
<td>* Determine whether higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc.</td>
<td>* Identify factors that cause ratio values to differ across companies and across years for the same company</td>
<td>* Explore the strengths and weaknesses indicated by the time trend and competitor comparison of a company’s ratios</td>
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<td>* Describe the mechanical impact of accounting entries on ratio results.</td>
<td>* Identify information that might be useful in interpreting a company’s ratios, including competitor/industry ratios, accounting methods employed, and non-financial information</td>
<td>* Describe the strengths and weaknesses of using ratios to evaluate a company</td>
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### Examples of Skills, Issues, and Values for Ethical Reasoning

<table>
<thead>
<tr>
<th>←Less Complex</th>
<th>More Complex →</th>
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<tbody>
<tr>
<td><strong>Step 1—Identifying</strong></td>
<td><strong>Step 2—Exploring</strong></td>
</tr>
<tr>
<td>Identify Ethical Problems and Courses of Action:</td>
<td>Objectively Consider Well-Being of Others and Society:</td>
</tr>
<tr>
<td>* Identify reasons why the dilemma is open-ended, such as:</td>
<td>* Explore the interests, assumptions, and values of important stakeholders</td>
</tr>
<tr>
<td>o Conflicts of interest (potential conflict among or harm to people, institutions, society, places, or things)</td>
<td>* Explore the ethical dilemma from more than one moral philosophy, such as:a,b</td>
</tr>
<tr>
<td>o Issues of fairness and honesty (e.g., truthfulness, integrity, trustworthiness, justice, equity, impartiality)</td>
<td>* Teleology approach</td>
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<tr>
<td>* Ask whether this is a topic, issue, or event that cannot be discussed openly without tarnishing one person or party</td>
<td>* Egoism approach</td>
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<tr>
<td>* Discuss why the “ideal” ethical result might be impossible to achieve</td>
<td>* Virtue approach</td>
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<tr>
<td>* Discuss reasons for behaving ethically</td>
<td>* Utilitarian approach</td>
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<td>* Identify potential courses of action</td>
<td>* Deontology or Rights approach</td>
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<td>* Justice or Fairness approach</td>
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<td>* Common good approach</td>
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<td>* Explore potential biases or rationalizations, such as:a</td>
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<td></td>
<td>o “If it’s necessary, it’s ethical”</td>
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<tr>
<td></td>
<td>o “If it’s legal and permissible, it’s proper”</td>
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<td></td>
<td>o “It’s just part of the job”</td>
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<td></td>
<td>o “I was just doing it for you”</td>
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<td></td>
<td>o “I’m just fighting fire with fire”</td>
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<td></td>
<td>o “It doesn’t hurt anyone”</td>
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<td></td>
<td>o “Everyone’s doing it”</td>
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<td></td>
<td>o “It’s OK if I don’t gain personally”</td>
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<tr>
<td></td>
<td>o “I’ve got it coming”</td>
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<tr>
<td></td>
<td>* Evaluate the completeness, reliability, and credibility of information sources</td>
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</tbody>
</table>

**Sources:**

- b The Markkula Center for Applied Ethics at Santa Clara University, available online at www.scu.edu/ethics/practicing/decision/framework.html.
Address All Levels in an Assignment

Typical Format for Requirement(s):

**Wake-Up Coffee: Budgeting Hourly Labor Costs**

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 periodically for changes in sales volumes. In addition, the store manager can send workers home early if sales on a particular day are lower than expected. In previous budgets, hourly labor was treated as a variable cost. 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:**
Your boss wants your recommendation about how hourly labor costs should be treated in next year’s budget.

Provide Support Aimed at Steps 1, 2, 3, & 4 If You Want to:
- Expose students to future skills
- Challenge all students in a course
- Gather assessment information

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

**Modified Requirements for Wake-Up Coffee Assignment:**

**Required:**
Your boss wants your recommendation about how hourly labor costs should be treated in next year’s budget.

**Hint:** Consider the following issues before arriving at your recommendation
- What are the definitions of fixed and variable costs, and how do those definitions apply to the situation at Wake-Up Coffee?
- Is there any uncertainty about the behavior of labor costs or about how labor costs should be classified in the budget?
- What are the pros and cons of alternative classifications of labor costs in the budget?
- What additional information would you like to have?
Additional Benefit of Asking Open-Ended Questions

I used the Wake-Up Coffee assignment at the beginning of a third-year cost accounting course at University of Washington. My review of student papers uncovered the following common student misconceptions, which provided me with valuable information for helping students correct their misconceptions prior to examinations.

Most students in a typical cost accounting course fail to recognize when they are making assumptions, making it difficult for them to evaluate the reasonableness of their assumptions or to consider how the assumptions affect their analyses and conclusions.

Erroneous Student Assumptions for Wake-Up Coffee Assignment

- *The business will continue to operate in the relevant range of activity.* Students should consider the possibility of business activity moving outside a single relevant range, altering the fixed and/or variable components of the cost function.

- *If labor costs are classified as fixed, then work schedules cannot be changed.* Students often confuse the meaning of “fixed costs,” and they often believe that costs classified as fixed cannot be changed by management.

- *To classify hourly labor costs as fixed, the same number of employees must work each day and each hour.* Students need to learn that a “fixed” work schedule could include different numbers of employees at different times of day or on different days of the week.

- *Only committed costs can be classified as fixed costs.* Students need to learn that fixed costs are classified based on INTENT in a budget. If managers intend to adopt a fixed work schedule, then it would be appropriate to classify the costs as fixed. However, this intent does not mean that the managers are committed to maintaining the budgeted work schedule.

- *Part-time employee hours cannot be classified as fixed.* Students need to learn that the wages of part-time employees who work a regularly defined work schedule would be classified as fixed.

- *The store manager will automatically create a work schedule that matches the budget (fixed, variable, or mixed).* This assignment provides an opportunity to discuss the difference between the budgeted and actual operations of a business. Budgets can be used as a tool to encourage managers to take certain actions. But having a budget does not in and of itself force a specific type of worker scheduling.

(continued)
• If labor cost is likely to vary, then it should be classified as a variable cost. Students need to learn that the cost classification depends on what CAUSES the cost to vary. If labor costs vary proportionately with sales activity, then the cost would appropriately be classified as variable. However, factors unrelated to a cost driver can cause labor costs to vary. Examples include changes in wage rates or employment taxes, overtime paid to one employee to fill in for a sick employee, or temporary cost reduction because an employee has left and the position has not yet been filled.

• Fixed costs are known, whereas variable costs are estimated. Students need to learn that both types of cost must be estimated when creating the budget. Actual costs can vary from the budget because staff scheduling varies from the budgeted plan or because of other variations in cost factors (discussed above).

• Classification of labor cost on the budget determines the classification of labor cost on the income statement. For a retail business, both fixed and variable store labor costs would be classified either as part of cost of goods sold or as an operating expense.

• By including variable labor in the budget, the store can avoid being understaffed. As mentioned above, the budget does not automatically translate into actual operations. Here’s an example that professors can share with students: Suppose an unexpected rush of customers comes in to the coffee shop at 3 pm. Would it be possible to instantaneously add variable-labor staff to meet this rush? It might be possible to obtain additional staff within an hour, but by then the rush might be over.

• Costs are overstated if there is excess fixed labor. Students often use the term “overstated” inappropriately. Explain that “overstated” implies some type of error in accounting, such as reported costs higher than actual costs. This term should not be used to describe the cost of excess/idle labor.
### Levels of Cognitive Development for Wake-Up Coffee Assignment:

<table>
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<tr>
<th>←Less Complex</th>
<th>Step 1—Identifying</th>
<th>Step 2—Exploring</th>
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<tbody>
<tr>
<td><strong>Content Knowledge</strong></td>
<td></td>
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</tr>
<tr>
<td>• Correctly apply the <strong>definitions</strong> of fixed and variable costs to the <strong>situation</strong> at Wake-Up Coffee</td>
<td>• <strong>Approach</strong> the budget classification as an <strong>open-ended problem</strong> having more than one potentially reasonable solution</td>
<td>• <strong>Describe the potential effects</strong> of the budget classification on operational decisions made by managers</td>
<td>• <strong>Objectively weigh the pros and cons when selecting and recommending</strong> a budget classification</td>
<td>• <strong>Acknowledge the implications of limitations in the recommended labor cost budget classification</strong></td>
</tr>
<tr>
<td>• <strong>Determine</strong> that the wages of part-time employees who work a regular work schedule would generally be classified as a fixed cost</td>
<td>• <strong>Identify three potentially viable alternatives</strong> for classifying labor costs in Wake-Up Coffee’s budget: fixed, variable, or mixed (i.e. semi-variable)</td>
<td>• <strong>Recognize that managers might alter work schedules based on changing business conditions</strong>, causing a change in the behavior of future labor costs</td>
<td>• <strong>Identify additional information that might lead to a better budget classification</strong></td>
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<td>• <strong>Recognize that unanticipated fluctuations</strong> in business volume and other factors are likely to prevent absolutely accurate budgeting of labor costs</td>
<td>• <strong>Distinguish between analyzing the classification of labor costs in the budget and analyzing the actual behavior</strong> of labor costs</td>
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<td>• <strong>Use only relevant information</strong> when discussing the budgetary classification of labor costs</td>
<td>• <strong>Discuss the potential costs and benefits of alternative budget classifications</strong></td>
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<td>• <strong>Focus on justifying one reasonable labor cost classification</strong></td>
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Shorter Assignments

4.34  Q2, Q5
Special order, capacity constraint, qualitative factors  Rightway Printers, a book printing shop, is operating at 95% capacity. The company has been offered a special order for book printing at $8.50 per book; the order requires 10% of capacity. No other use for the remaining 5% idle capacity can be found. The average cost per book is $8.00, and the contribution margin per book for regular sales is $1.50.

REQUIRED:
A. Which type of decision is involved here? What are the managers’ decision options?
B. What information is relevant for this decision? Does the problem give you all of the information the manager needs to make a decision? What other information is needed?
C. Using the quantitative decision rule, what premium is the manager willing to pay (per book) to relax the constrained capacity, assuming no qualitative factors are relevant?
D. Explain how capacity affects the quantitative analysis for this decision.
E. What qualitative or risk factors could affect this decision?

Creating Assignments from News Stories

Not-for-profit bequest, strategic management, participative budgeting During late 2003, National Public Radio (NPR) announced a $200 million bequest from the estate of Joan B. Kroc. Mrs. Kroc, widow of McDonald’s founder Ray A. Kroc, was a long-time supporter of public radio. NPR is a not-for-profit organization that produces and distributes news, talk, and entertainment programming for a worldwide network of over 770 independent public radio stations.

At the time of the announcement, NPR management stated that most of the bequest would be placed in an endowment fund and only the annual earnings would be spent. However, NPR’s board of directors had not yet made specific plans about how the funds would be used. The bequest would significantly affect NPR’s finances. The current endowment fund contained $35 million, and the organization’s annual budget was around $104 million. NPR and its affiliate stations were continually faced with tight operating budgets.

The announcement triggered speculations about how NPR would spend the money. Some people argued that NPR should reevaluate its major strategies, with possible expansion into the Internet or other platforms. A number of public radio station managers wanted part of the funds to support their operations, perhaps through a reduction in NPR programming fees. Approximately half of NPR’s annual budget was financed through programming fees. An independent producer wanted to see pay increases for the freelance workers who create NPR programming. Various groups voiced opinions about ways to improve the quality of NPR programming. Some observers were concerned that the large bequest might cause the organization’s management to become overly conservative, reducing the likelihood of innovative new programming.

Some people were concerned that the bequest would discourage listener and other support to NPR and its affiliate stations. Others believed that the bequest would have the opposite effect.


Required:

1. A. Discuss why NPR’s management should clarify the organization’s vision, core competencies, and strategies before deciding how to budget the bequest funds.

2. B. Explain how NPR’s budget plans for the bequest could relate to each of the four levers of control: beliefs, boundaries, diagnostic controls, and interactive controls.

3. C. Participative budgeting usually relates only to participation within an organization; however, it might also apply to NPR’s negotiations with affiliate stations and freelance workers. Discuss the pros and cons of a participative budgeting approach for NPR’s use of the bequest.

4. D. Suppose NPR decides to use the funds primarily to improve programming quality. Describe how this strategy might be translated into specific items in an annual master budget.

### More Examples of Open-Ended Problems and Potential Questions

<table>
<thead>
<tr>
<th>Topic (Subject) and Potential Scenario Given to Students</th>
<th>Examples of Open-Ended Questions Addressing Different Aspects of Steps for Better Thinking</th>
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<tr>
<td><strong>Accounting for Bad Debts:</strong> 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.</td>
<td><strong>Step 1</strong>&lt;br&gt;• Identify and explain possible reasons why management might not foresee an increase in bad debts.&lt;br&gt;• Explain why credit reports can’t be used to know for sure which customers will pay and which will become bad debts.</td>
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<tr>
<td><strong>Education—Effectiveness of the Public Schools:</strong> 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.</td>
<td><strong>Step 1</strong>&lt;br&gt;• How is it possible for two national experts to give very different recommendations for evaluating public school effectiveness?&lt;br&gt;• Identify resources that will help you evaluate the two recommendations.</td>
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<td><strong>Military Law</strong> 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 &quot;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.&quot; MSgt Big tells TSgt Small, SSgt Loser's supervisor, to have SSgt Loser report to your office in 10 minutes. Welcome to North Dakota! 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. 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. SSgt Loser does not show up for work the next day and is nowhere to be found. Pertinent sections of the UCMJ and maximum punishment tables are appended to your textbook. Adapted from a problem developed at the U.S. Air Force Academy</td>
<td>- What are your options? - What else do you need to know before making your recommendation and why do you need to know it? - 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? - What is your recommendation? What is the basis for your recommendation? How did you decide between the various options available to you? - What are the limitations of your recommendation? Is it possible to minimize the effects of those limitations?</td>
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<td><strong>Health Care—Elderly Patient</strong>&lt;br&gt;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?”</td>
<td><strong>Step 1</strong>&lt;br&gt;• What have you observed about Miss Ruth and her situation?&lt;br&gt;• What is currently being done to care for Miss Ruth?&lt;br&gt;• What does current literature say about caring for people like Miss Ruth?&lt;br&gt;• What theories and evidence are available?&lt;br&gt;• 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?&lt;br&gt;• Who has input into the care Miss Ruth receives?&lt;br&gt;• Why might these people view her needs and care differently?&lt;br&gt;• What factors might you need to consider as you explore this problem?&lt;br&gt;<strong>Step 2</strong>&lt;br&gt;• What biases and assumptions might affect how you view this situation, and how might you compensate for your biases?&lt;br&gt;• 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.&lt;br&gt;• What are the similarities/differences across the different perspectives about how to care for Miss Ruth?&lt;br&gt;• How might you organize your analyses to help you reach a conclusion about the best way to care for Miss Ruth?&lt;br&gt;<strong>Step 3</strong>&lt;br&gt;• What priorities have you given to different factors that must be considered in deciding how to care for Miss Ruth?&lt;br&gt;• Why do you believe those priorities are most appropriate?&lt;br&gt;• Given those priorities, what do you recommend regarding Miss Ruth’s care?&lt;br&gt;• How will you present your ideas to those who are interested in her care?&lt;br&gt;• 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?&lt;br&gt;• Do you anticipate any disagreement? If so, how will you deal with that?&lt;br&gt;<strong>Step 4</strong>&lt;br&gt;• As you work with Miss Ruth, what additional information do you want to gather?&lt;br&gt;• Why is this information important?&lt;br&gt;• How can you go about getting that information in a systematic fashion?&lt;br&gt;• What might cause you to reconsider Miss Ruth’s care plan?</td>
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<td>Hong Kong Dollar—Introduction to Business Course</td>
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<td>Read the following two articles:</td>
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<td>• “What’s in a Peg?” The Economist, October 31, 2002.</td>
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<td>Step 1</td>
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<td>Identify and discuss uncertainties about whether the HK dollar should be delinked from the US dollar.</td>
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<td>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.</td>
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<td>Identify and describe possible alternative actions you could take to this ethical dilemma.</td>
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<td>Identify uncertainties about how you should respond.</td>
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<td><strong>Self-Made Man—History course</strong>&lt;br&gt;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. 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 &quot;self-made man&quot; theory, (also commonly known as the theory of &quot;rugged individualism.&quot;)</td>
<td><strong>Step 1</strong>&lt;br&gt;• In one paragraph, explain why there are uncertainties about whether theories such as the &quot;self-made man&quot; theory provide good descriptions of historical events. <strong>Step 2</strong>&lt;br&gt;• In two-to-three paragraphs discuss the validity of the &quot;self-made man&quot; theory by noting both the praise and the criticism made of it. <strong>Step 3</strong>&lt;br&gt;• In one page, discuss how your own personal work history (or someone in your family) relates to the principles of the &quot;self-made man&quot; theory. Do you find the theory to be accurate or not? Why? <strong>Step 4</strong>&lt;br&gt;• In one page, cite the principles of the &quot;self-made man&quot; theory which are the most or least valid. Explain.</td>
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<tr>
<td><strong>Communication (Any Course):</strong> Give students a scenario in which they need to prepare a written communication for a specific audience.</td>
<td><strong>Step 1</strong>&lt;br&gt;• Prepare a list of information that might be appropriate to include in the communication. <strong>Step 2</strong>&lt;br&gt;• Explain why uncertainties exist about the best way to communicate to the audience. <strong>Step 3</strong>&lt;br&gt;• Describe the information needs of the audience. <strong>Step 4</strong>&lt;br&gt;• Describe the pros and cons of including one or more pieces of information in the written communication for this audience. <strong>Step 1</strong>&lt;br&gt;• Create a written communication for the audience that provides appropriate information prioritized for the setting and audience. <strong>Step 2</strong>&lt;br&gt;• Describe the pros and cons of including one or more pieces of information in the written communication for this audience. <strong>Step 3</strong>&lt;br&gt;• 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.</td>
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<td>Study Habits (any course)</td>
<td>Step 1</td>
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<tr>
<td>As a part of this course, you have maintained a study journal to help you reflect on your grading habits, course performance, and feelings. As you approach the final exam in this course, you must prepare a one to two page (single-spaced) essay on the following question:</td>
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<td>How effective have your study habits been in this course?</td>
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<td>In your essay, you must address each of the following issues:</td>
<td>Step 2</td>
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<tr>
<td>• Does one “perfect” way to study exist?</td>
<td>Step 3</td>
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<tr>
<td>• What, if anything, have you learned about your study habits this semester?</td>
<td>Step 4</td>
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<tr>
<td>• Have you made any changes this semester in how you study, take tests, or think/feel about your schoolwork?</td>
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<tr>
<td>– If no, why not?</td>
<td>– If yes, what changes have you made and why?</td>
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<td>– With what results?</td>
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### Topic and Potential Scenario

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<td><strong>Cost Variance (Management or Cost):</strong> Give students a scenario in which a company has experienced a significant cost variance. Cost variance information is used to help develop next year’s budget.</td>
<td><strong>Step 1</strong></td>
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<td>• Identify and explain possible reasons why managers might not foresee a significant cost variance.</td>
<td>• Explain how different assumptions about the cost variance affect how it might be used in developing next year’s budget.</td>
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<td>• Describe methods that can be used to learn about the reason(s) for a significant cost variance.</td>
<td>• Discuss the pros and cons of using cost variance information to develop next year’s budget.</td>
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| **Capital Budgeting (Management or Cost):** Give students information for a capital budgeting project where the investment decision is open-ended. | **Step 1** | **Step 2** | **Step 3** | **Step 4** |
| • List information that is relevant to the company’s investment decision. | • Describe the pros and cons of the investment decision. | • Provide a recommendation about whether the company should invest in the project. | • Develop a plan to monitor performance of the project after the investment is made. |
| • Identify aspects of the information that are subject to uncertainties. | | | |

| **Tax Deduction (Income Taxes):** Give students a scenario where an individual is trying to decide whether to take an income tax deduction. If audited or in court, the deduction might or might not be allowed. | **Step 1** | **Step 2** | **Step 3** | **Step 4** |
| • Explain why there are uncertainties about whether this deduction would be allowed. | • Discuss the arguments for and against taking this income tax deduction. | • Provide a recommendation about whether the individual should take the income tax deduction. | • Describe the limitations of a decision to take the income tax deduction and describe the implications of those limitations for the individual’s tax planning strategies. |
| • Explain why Congress doesn’t write income tax laws that clearly define when a deduction can and can’t be taken. | • Compare and contrast the points of view for this deduction for an individual who is willing to assume risk with an individual who wishes to avoid risk. | | |
| | • Explain why there might be differences between whether this deduction would be allowed in an audit versus tax court. | | |

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<tr>
<td><strong>Step 1</strong></td>
<td><strong>Step 2</strong></td>
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| Contingent Liabilities (Financial Accounting or Auditing): Give students copies of the financial statements and contingent liability footnotes for two companies in the same industry. The footnotes are qualitatively different. | - Identify and describe the contingent liabilities for each company.  
- Explain why there are uncertainties about how the contingent liabilities for each company will be resolved.  
- Explain why there are uncertainties about the classification of contingent liabilities under SFAS No. 5.  
- Discuss the possible incentives of managers to increase or decrease the amount of accrual and/or disclosure provided for contingent liabilities.  
- Compare and contrast the evidence of significant unrecognized contingent liabilities for the two companies.  
- Evaluate the contingent liability information for the two companies and determine which company has the greater contingent liability risk.  
- Develop a process for a financial analyst to monitor and consider contingent liability risk in evaluating the value of a company over time. | | |
| Internal Controls (Auditing or Systems): Give students a description of the internal controls for one cycle of a company’s business. | - Prepare a list of internal controls that might be appropriate for this business cycle.  
- Prepare a list of errors or irregularities that might be prevented or detected by a particular internal control.  
- Explain why companies cannot adopt “perfect” internal controls.  
- Explain why there are uncertainties about the effectiveness of a particular internal control.  
- Describe the costs and benefits of a particular internal control.  
- Explain the implications to the company for a particular internal control that the company does not employ.  
- Identify ways in which errors or irregularities that might occur in the absence of a particular internal control might become evident.  
- Describe the incentives of managers related to a particular internal control.  
- After considering both costs and benefits, prepare a recommendation to management for improvements in internal controls.  
- Draw a conclusion about the risk of a negative outcome from the absence of a particular internal control.  
- Prepare a strategy for redesigning internal controls given potential changes in the way technology is used in the company’s business. | | |
Classroom Discussions of Open-Ended Problems

Sequence from least complex to most complex aspects of the problem

Allow students having less complex thinking skills to “stay with the conversation” as long as possible

Do not allow the Biased Jumpers, more outspoken students, or students having more complex thinking skills to drive the discussion

Organize discussion visually (e.g., on the board); make lists and show connections

Use Groups to Promote Better Thinking

Should group members be diversified by complexity of thinking?

How to ensure that all group members are able to contribute?
Figure 10.4. Building a new skill: repeated regression and reconstruction. In building a new skill, a person drops down to a low skill level, builds up a more complex, adequate skill, then repeats the process over and over, as shown in this smoothed graph based on the research of Granott (1994, 2002).

Source: Fischer & Pruyne (2002, p. 175)
Effects of Support and Challenge on Development

![Graph showing the effects of support and challenge on development. The graph is divided into four quadrants: High Support, Low Support, High Challenge, and Low Challenge. The quadrants are labeled as follows: Low Support, Low Challenge (Stasis); Low Support, High Challenge (Retreat); High Support, Low Challenge (Confirmation); and High Support, High Challenge (Growth).]

Potential Targets for Skill Progression

Adapted from Exhibit 7 in Wolcott, S. K., 2011, Professional attributes: Teaching the fine arts of being a professional accountant, pages 58-86 in E. M Wiecek and G. Beal (editors), Leveraging Change -- The New Pillars of Accounting Education, Toronto: The Canadian Institute of Chartered Accountants and University of Toronto.
The problem solving process involves application of cognitive skills (Steps 1, 2, 3, and 4) to a problem. The skills used depend on abilities as well as decisions made by the individual, and are often influenced by emotions. Skills may be applied in any sequence, can be iterative, and might or might not be adequate in the circumstances.

The boundary for all information and experience in the universe is permeable to allow the creation of new knowledge.

The boundary for personal cognition and emotion is dynamic and is influenced by the person. Filters include personal experiences, emotions, and energy to act.
What Is a Rubric?

RUBRIC: SET OF SCORING GUIDELINES

General Types of Rubrics:
• Holistic: Evaluate set of criteria taken as a whole
• Analytical: Evaluate performance on 2 or more criteria
• Combination Analytical & Holistic

Choosing a Rubric:
• Adopt Existing Rubric
  o Saves time
  o Can use across courses and assignments for consistent program assessment
  o Provide students with consistent feedback across assignments and/or courses
  o Might not address the specific skills needed in an assignment
  o Less specific, requiring professor and students to connect the specifics of an assignment to a generalized set of criteria

• Create an Assignment-Specific Rubric (Versus Using a General Rubric)
  o Easier to specifically link grading & assessment
  o Customized for the assignment; easier for professor & students to use and understand
  o Requires time and expertise to develop a well-designed rubric
  o Less generalized; students are less likely to recognize that the rubric criteria apply to other assignments and/or courses

See Separate Handout:
  o Customized Rubric with Examples
To-Do List for Getting Started

Pick one thinking/judgment aspect of your class in which students typically have difficulty, and:

- Quickly gain useful information about students’ thinking/judgment skills by using the “One-Paragraph Assignment: Identify and Describe Uncertainties/Risks” (page 16 of this handout).

- Consider what your students must know and do to perform well on an assignment (see pages 28-29 of this handout).

- Modify an existing case/assignment or create a new assignment to give students structure for better performance. Keep in mind that students will NOT develop better thinking/judgment skills if tasks are:
  - Too simple (e.g., not open-ended)
  - Too complex or contain too little guidance

- Work toward giving students improved feedback, perhaps using a rubric.

- Avoid penalizing students for poor performance on skills that are above reasonable targets for the course.

- Remember that development of thinking takes time; students need MANY practice opportunities.