

STEPS FOR BETTER THINKING

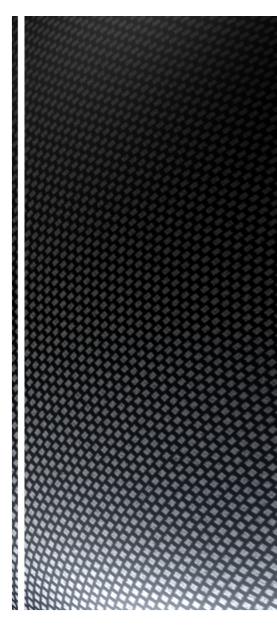


Using the AICPA Critical Thinking Guide to Improve Your Students' **Critical Thinking Skills**

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How to help your / students become better critical thinkers

AICPA Faculty Guide



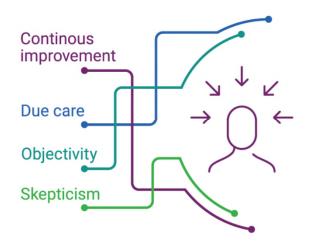
https://www.thiswaytocpa.com/program/ CriticalThinking

Also see: <u>https://wolcottlynch.com/aicpa-resources</u>



AICPA Faculty Guide (p. 6): Critical Thinking Model

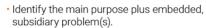
Mindset



Identify

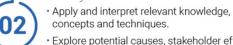
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- Recognize open-ended/ambiguous problem(s).
- Identify relevant information for analysis (e.g., accounting knowledge, concepts, techniques, stakeholder(s) and goals/preferences).

Analyze



- concepts and techniques.
- Explore potential causes, stakeholder effects and interrelationships.
- Question the quality of information and assumptions.
- Summarize pros and cons of viable alternatives.

Conclude

- Identify/develop appropriate decision criteria, and use the criteria to reach convincing conclusion(s).
- · If appropriate, provide additional advice (e.g., identify implementation issues).

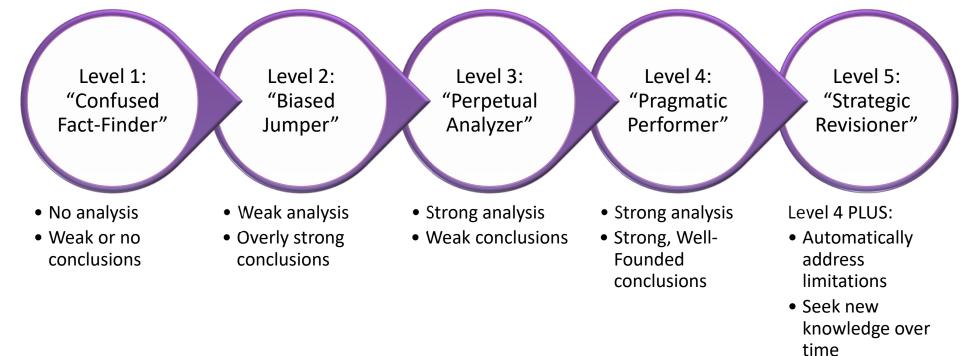
Communications



AICPA Faculty Guide (p. 36): Critical Thinking Skills Rubric

Component of Critical Thinking Model:	Level 1 Little/No Critical Thinking	Level 2 Partial Critical Thinking	Level 3 Emergent Critical Thinking	Level 4 Competent Critical Thinking
Identify	 Recites purpose as given, or Identifies an inappropriate problem 	 Identifies the clearly-evident problem Recognizes that the problem is open-ended/ambiguous 	 Identifies the main purpose Identifies relevant stakeholders and their possible goals/ preferences Identifies relevant accounting knowledge, concepts and techniques 	 In addition to Level 3: Identifies important embedded, subsidiary problem(s)
Analyze	 Applies calculations, definitions, or other "textbook" concepts Presents irrelevant information Misinterprets calculation(s) and/or concept(s) 	 Applies and describes the effects of relevant calculations and/or concepts Partially analyzes alternatives, focusing on information supporting own viewpoint Discounts other viewpoint(s) 	 Thoroughly and objectively applies and interprets relevant calculation(s) and concept(s) Explores causes, stakeholder effects and interrelationships Questions the quality of information and assumptions Thoroughly discusses the pros and cons of viable alternatives 	 Objectively analyzes the most important relevant information, implications, consequences and viewpoints Evaluates the quality of information and assumptions, and adapts interpretations (as needed) Summarizes the most important pros and cons of viable alternatives
Conclude	 Instead of a conclusion, provides facts, definitions, or other "authoritative" statements 	 Reaches a biased conclusion that is consistent with own analyses 	 Reaches no conclusion, or Provides a conclusion with little or no justification 	 Identifies/develops appropriate criteria, and uses the criteria to reach convincing conclusion(s) If appropriate, provides value-added advice (e.g., identifies implementation issues)

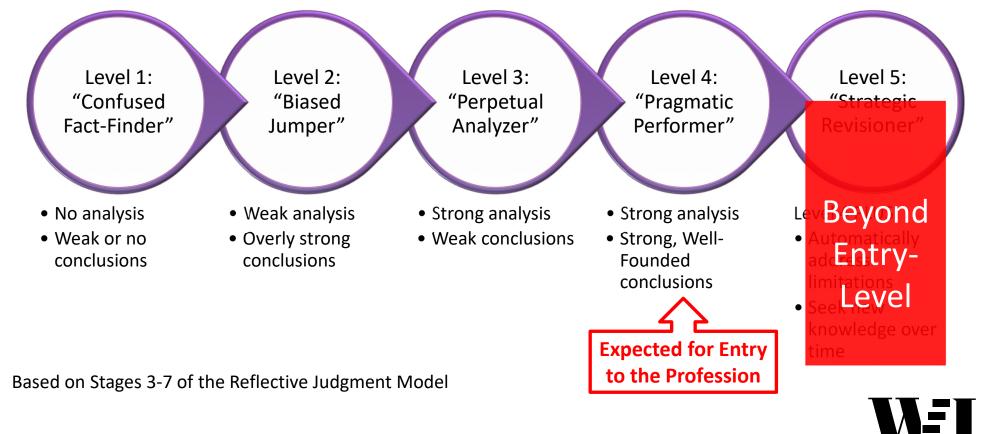
Brief Summary of Critical Thinking Skills By Cognitive Level



Based on Stages 3-7 of the Reflective Judgment Model

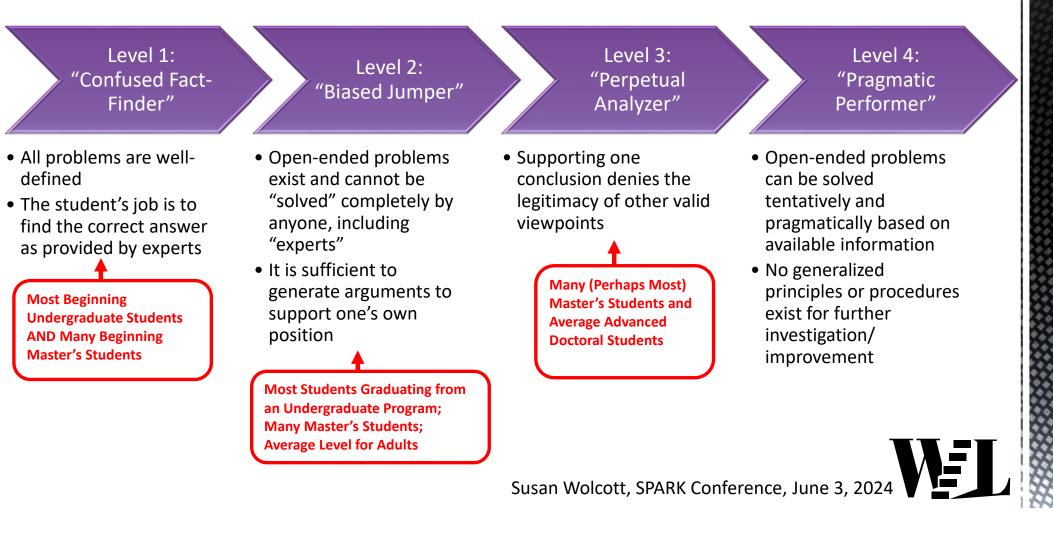


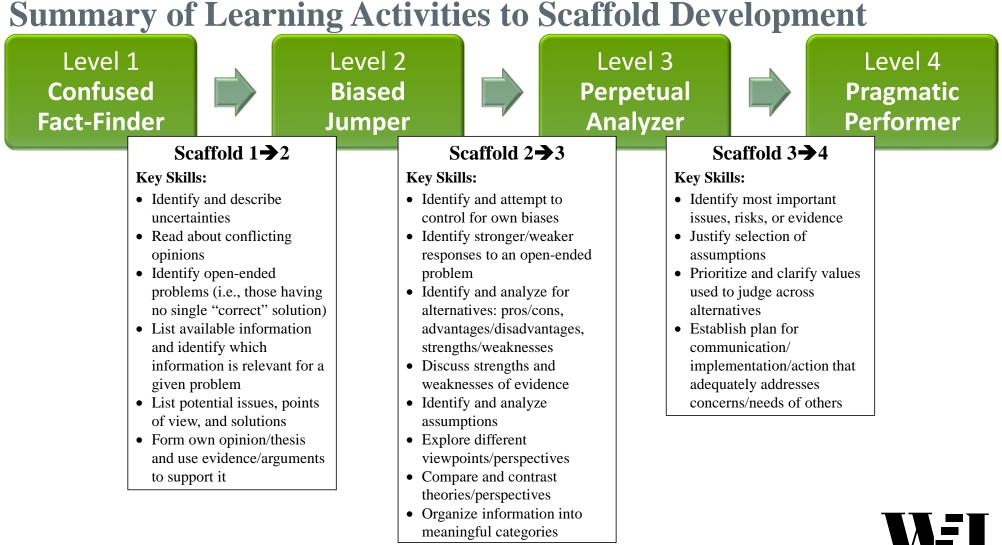
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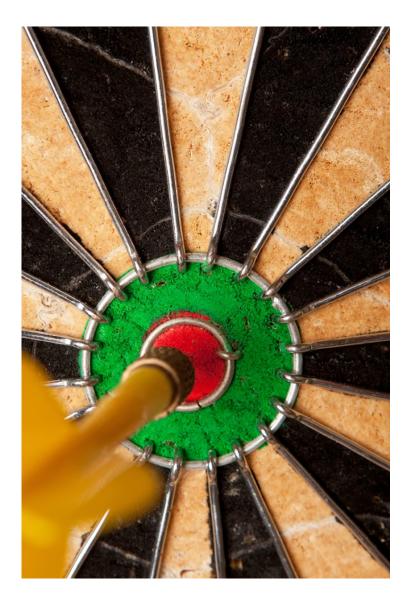
Students' Epistemological Assumptions and Typical Performance

Change in Beliefs is Necessary (But Not Sufficient) for Development to the Next Level









EXAMPLE Cognitive Levels and Learning Objectives

Financial Statement Ratio Analysis

Level 4 (Entry-Level) Skills: Financial Statement Ratio Analysis

←Less Complex		More Complex →		
Content Knowledge	Identify	Analyze	Conclude	
 Find formulas and calculate ratios Locate financial information used in ratio calculations Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc. Describe the mechanical impact of accounting entries on ratio results Locate information for comparable companies/industry Recognize and adjust calculations for differences in ratio formulas from different sources 	 Identify possible reasons for evaluating financial statement ratios Identify stakeholders who might be interested in ratio information Explain why ratios are not "perfect" measures of profitability, liquidity, stability, activity, etc. Explain why higher/lower ratios do not always indicate better/worse performance or higher/lower risk Identify factors that cause ratio values to differ across companies and across years for the same company Identify relevant information that might be useful for interpreting ratios including competitor/ industry ratios, accounting methods employed, and non-financial information Explain how it is possible for financial experts to reasonably disagree about the interpretation of a company's ratios 	 Identify possible business reasons for ratios to vary across companies and across years Identify possible strengths and weaknesses indicated by the time trend and/or competitor comparison of a company's ratios Describe the pros and cons of using ratios to evaluate a company Explain how different stakeholders might view ratios differently Incorporate non-ratio information in the interpretation of ratios Adjust for and evaluate the impact of alternative accounting methods/ estimates on ratio interpretations Identify and evaluate the quality of assumptions underlying alternative interpretations of a company's ratios Identify and compensate for own biases in ratio interpretation 	 Provide valid conclusion(s) based on analyses Prioritize the strengths and weaknesses of the company's ratios and other data to reach conclusions about the company's profitability, liquidity, stability, activity, etc. Describe limitations to a conclusion resulting from a ratio analysis about a company's profitability, liquidity, stability, activity, etc. 	
This list of sk	ills is long and complicated! How can y	ou prioritize skills to enhance studen	t learning?	

Targeted Skills Level 1 -> Level 2: Financial Statement Ratio Analysis

Content KnowledgeIdentifyAnalyzeConclude• Find formulas and calculate ratiosIdentify possible reasons for evaluating financial statement ratiosIdentify possible reasons for evaluating financial statement ratiosIdentify possible statement ratiosIdentify possible statement ratios• Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc.Identify possible strengths and weaknesses indicated by the time trend and/or competitor comparison of a company's ratios and other lata to reactive the mechanical impact of accounting entries on ratio results• Identify possible trengths and weaknesses or higher/lower ratios do not always indicate better/worse performance or higher/lower ratios to a conclusion or higher/lower ratios to accountion or these stores for the same company• Describe the mechanical impact of accounting entries on ratio results• Describe the encodent of the store store of using ratios to accountion for company's profitability, liquidity, stability, activity, etc.• Describe the encodent of the store store of using ratios to accountion to company's ratios analysis about a company's profitability, liquidity, stability activity, etc.• Describe the encodent of the store store analysis about a company's profitability, liquidity, stability activity, etc.• Describe the encodent of the store store and the state advor company's ratios analysis about a company's profitability, liquidity, stability activity, etc.• Describe the encodent of the store store and the state of the same company store the uncertain of the store store and the store	←Less Complex		More Complex →	
 Locate financial information used in ratio calculations Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc. Describe the mechanical impact of accounting entries on ratio formutator for why higher/lower risk Locate information ror comparable comparity (industry) Locate information for comparable comparity (industry) Locate information for comparable comparity (industry) Locate information for comparable comparity fractions for different sources Locate information for comparable comparity fractions for different sources Locate information for comparable comparable (interpreting ratios information different sources) Locate information for uses for the same company Identify relevant information that might be useful for interpreting ratios information interpretation of ratios Adjust for and evaluate the quality of alternative accounting methods/ estimates on ratio interpretations of a company's ratios Adjust for and evaluate the quality of alternative accounting methods/ estimates on ratio interpretations of a company's ratios Adjust for and evaluate the quality of alternative accounting methods/ estimates on ratio interpretations of a company's ratios in ratio interpretation Explain how it is possible for figancial experts to reasonably disagree about the interpretation of a company's ratios Identify and comparate for our biases in ratio interpretation 	Content Knowledge	Identify	Analyze	Conclude
	 ratio calculations Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc. Describe the mechanical impact of accounting entries on ratio results Locate information for comparable companies/industry Recognize and adjust calculations for offerences in ratio formulas from different sources 	 financial statement ratios Identify stakeholders who might be interested in ratio information Explain why ratios are not "perfect" measures of profitability, liquidity, stability, activity, etc. Explain why higher/lower ratios do not always indicate better/worse performance or higher/lower risk Identify factors that cause ratio values to differ across companies and across years for the same company Identify relevant information that might be useful for interpreting ratios including competitor/industry ratios, accounting methods employed and non-financial information Explain how it is possible for financial expensito reasonably disagree about the interpretation of a company's ratios 	 ratios to vary across companies and across years Identify possible strengths and weaknesses indicated by the time trend and/or competitor comparison of a company's ratios Describe the pros and cons of using ratios to evaluate a company Explain how different stakeholders might view ratios differently Incorporate non-ratio information in the interpretation of ratios Adjust for and evaluate the impact of alternative accounting methods/ estimates on ratio interpretations Identify and evaluate the quality of assumptions underlying alternative interpretations Identify and compensate for own biases in ratio interpretation 	 analyses Prioritize the strengths and weaknesses of the company's ratios and other data to reach conclusions about the company's profitability, liquidity, stability, activity, etc. Describe limitations to a conclusion resulting from a ratio analysis about a company's profitability, liquidity,

Targeted Skills Level 2 → Level 3: Financial Statement Ratio Analysis

←Less Complex		More Complex →	
Content Knowledge	Identify	Analyze	Conclude
Find formulas and calculate ratios Locate financial information used in ratio calculations Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc. Describe the mechanical impact of accounting entries on ratio results Locate information for comparable companies/industry Recognize and adjust calculations for differences in ratio formulas from different sources	 Identify possible reasons for evaluating financial statement ratios Identify stakeholders who might be interested in ratio information Explain why ratios are not "perfect" measures of profitability, liquidity, stability, activity, etc. Explain why higher/lower ratios do not always indicate better/worse performance or higher/lower risk Identify factors that cause ratio values to differ across companies and across years for the same company Identify relevant information that might be useful for interpreting ratios including competitor/ industry ratios, accounting methods employed, and non-financial information Explain how it is possible for financial experts to reasonably disagree about the interpretation of a company's ratios 	 Identify possible business reasons for ratios to vary across companies and across years Identify possible strengths and weaknesses indicated by the time trend and/or competitor comparison of a company's ratios Describe the pros and cons of using ratios to evaluate a company Explain how different stakeholders might view ratios differently Incorporate non-ratio information in the interpretation of ratios Adjust for and evaluate the impact of alternative accounting methods/ estimates on ratio interpretations Identify and evaluate the quality of assumptions underlying alternative interpretations Identify and compensate for own biases in ratio interpretation 	 Provide valid conclusion(s) based on analyses Prioritize the strengths and weakness of the company's ratios and other dat to reach conclusions about the company's profitability, liquidity, stability, activity, etc. Describe limitations to a conclusion resulting from a ratio analysis about a company's profitability, liquidity, stability, activity, etc.



Targeted Skills Level 3 -> Level 4: Financial Statement Ratio Analysis

←Less Complex		More Complex →	
Content Knowledge	Identify	Analyze	Conclude
 Locate financial information used in ratio calculations Explain why higher/lower ratios are generally associated with greater: profitability, liquidity, stability, activity, etc. Describe the mechanical impact of accounting entries on ratio results Locate information for comparable companies/industry Recognize and adjust calculations for differences in ratio formulas from different sources 	 Identify possible reasons for evaluating financial statement ratios Identify stakeholders who might be interested in ratio information Explain why ratios are not "perfect" measures of profitability, liquidity, stability, activity, etc. Explain why higher/lower ratios do not always indicate better/worse performance or higher/lower risk Identify factors that cause ratio values to differ across companies and across years for the same company Identify relevant information that might be useful for interpreting ratios including competitor/ industry ratios, accounting methods employed, and non-financial information Explain how it is possible for financial experts to reasonably disagree about the interpretation of a company's ratios 	 Identify possible business reasons for ratios to vary across companies and across years Identify possible strengths and weaknesses indicated by the time trend and/or competitor comparison of a company's ratios Describe the pros and cons of using ratios to evaluate a company Explain how different stakeholders might view ratios differently Incorporate non-ratio information in the interpretation of ratios Adjust for and evaluate the impact of alternative accounting methods/ estimates on ratio interpretations Identify and evaluate the quality of assumptions underlying alternative interpretations Identify and compensate for own biases in ratio interpretation 	 Provide valid conclusion(s) based on analyses Prioritize the strengths and weaknesse of the company's ratios and other data to reach conclusions about the company's profitability, liquidity, stability, activity, etc. Describe limitations to a conclusion resulting from a ratio analysis about a company's profitability, liquidity, stability, activity, etc. stability, activity, etc.



Pick One Topic from Your Subject and Try the Preceding Type of Analysis



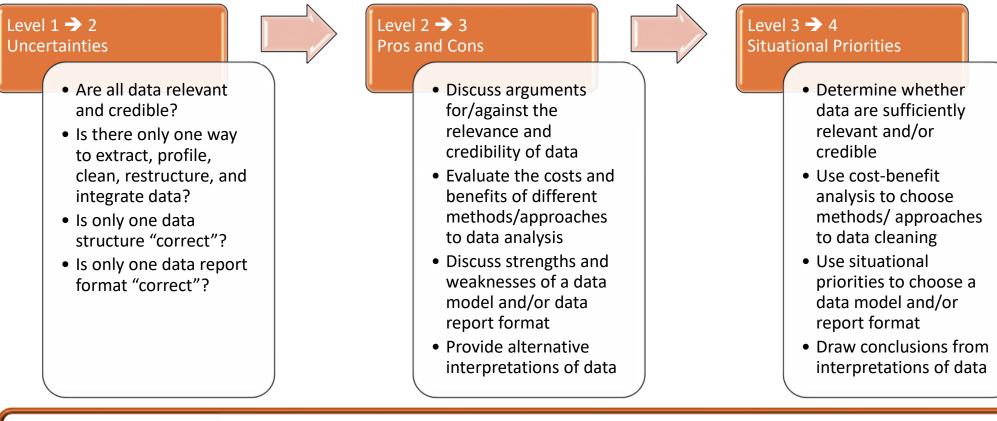
EXAMPLE

Cognitive Levels and Assignment/ Discussion Questions

Data Analytics



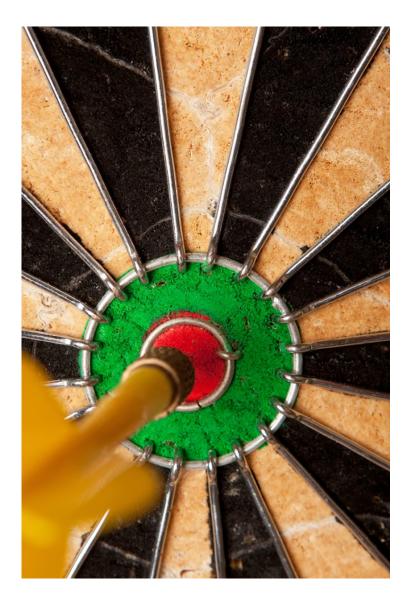




Level 2: Progress to Level 3 is slow and unstable, with many reversions \rightarrow Most students graduate at Level 2

Level 3: Progress to Level 4 is fast once students learn to prioritize





EXAMPLE

Modifying a Well-Defined Textbook Problem

Cost Accounting



Tennant Vintage Trucks

Tennant Vintage Trucks produces and sells to retailers a line of 25 collectible metal toy trucks that are vintage truck replicas. Sales have deteriorated during the economic recession resulting in negative cash flows, and the company's managers are seeking ways to increase sales. One proposal is to launch a series of limited-edition trucks to increase sales to collectors.

The first limited edition would consist of 200 Ready Red classic fire trucks for a wholesale price of \$150 each. Manufacturing costs per unit are as follows:

Direct materials\$25Direct labor45Variable overhead20Fixed overhead65

The per-unit costs include variable overhead licensing fees of \$13 for use of the Ready Red name. Fixed overhead includes \$55 per unit for truck design, manufacturing specifications, and customized die-cast molds. Traditionally, the company has used each die-cast mold set to manufacture only one product.

Required: (Typical Well-Defined Textbook Problem) Should the company launch the limited edition of Ready Red trucks? Provide appropriate calculations and explain your answer.









Promote Level 2 Thinking: *For each component of your calculations, identify and* briefly explain at least one reason why actual results might differ from the estimate.

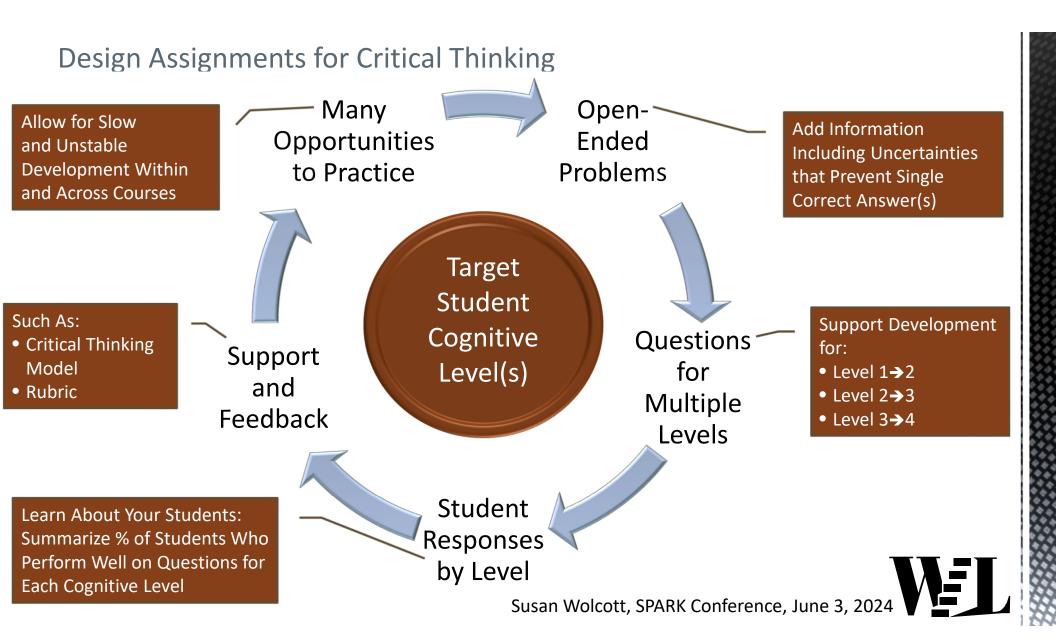
Promote Level 3 Thinking: The company is in a small town and views employees as part of the "family." Accordingly, the company has a no-layoff policy and guarantees production workers a fixed work schedule. The production manager estimates that the 200 Ready Red trucks can be produced using currently idle labor. However, the production manager warns that direct labor could increase to \$66 per unit (including overtime) if demand increases for existing products. *Discuss whether* direct labor costs are relevant for this decision.

Promote Level 3 Thinking: Based on the advice of five long-time customers, the marketing manager established an initial wholesale price of \$150. These five customers also made preliminary commitments to purchase 50 limited-edition Ready Red trucks. The marketing manager is confident that the remaining 150 trucks can be sold easily. Discuss the reasons for and implications of possible bias in setting the wholesale price for Ready Red.

Promote Level 4 Thinking: Company managers believe that vintage truck replicas are more important to the company's customer-oriented strategy than the company's existing lines of metal toy trucks. *Discuss whether/how this information* affects the decision criteria in the Ready Red decision.

Tenant Vintage Trucks: Additional Information and Open-Ended Questions







During the last 5 minutes of a class session, ask students to write one paragraph about why something in that day's content is uncertain. Collect and read the responses (see next slide).

Examples:

- Describe uncertainties concerning.
- List and describe uncertainties about the interpretation or significance of ______
- Explain why risk is associated with ______
 (e.g., a business decision)
- Describe why there is no single, "correct" way to
- Explain reasons why _____ might change or vary (e.g., over time or across companies)
- Is it possible for managers to know with certainty whether _____



USING THE UNCERTAINTIES ASSESSMENT

Sort Student Responses Into 3 Categories and Calculate Percentages:

- Level 1: Does not seem to understand the question and/or uncertainties
- Level 2: Provides 1 or 2 valid ideas
- Level 3+: Provides a reasonably comprehensive response

Questions I Have Asked My Students:

- Introductory Financial Accounting (in addition to other questions about a small company's allowance for bad debts). Explain why even the manager of the company might not know for sure what the allowance for bad debts should be.
- Intermediate Financial Accounting (given short case involving an SEC inquiry). Explain why application of the segment reporting rules is uncertain for this company.
- Cost Accounting (given short case requiring use of cost information). Identify uncertainties in the cost information collected by Janet and:
 - a. Determine whether each cost is likely to be: (i) known for sure, (ii) estimated with little uncertainty, or (iii) estimated with moderate or high uncertainty.
 - b. For each cost that is known for sure, explain where Janet would obtain the information.
 - c. For each cost that must be estimated, explain why the cost can't be known for sure.
- Strategic Performance Management (given short case about a company's use of a balanced scorecard). Explain why uncertainties exist about the best balanced scorecard measures for Frieda's Fizz.



AICPA Faculty Guide (p. 36): Critical Thinking Skills Rubric

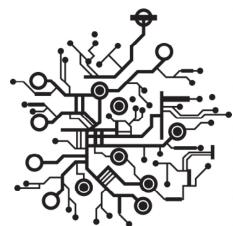
Component of Critical Thinking Model:	Level 1 Little/No Critical Thinking	Level 2 Partial Critical Thinking	Level 3 Emergent Critical Thinking	Level 4 Competent Critical Thinking
Identify	 Recites purpose as given, or Identifies an inappropriate problem 	 Identifies the clearly-evident problem Recognizes that the problem is open-ended/ambiguous 		 In addition to Level 3: Identifies important embedded, subsidiary problem(s)
Analyze	 Applies calculations, definitions, or other "textbook" concepts Presents irrelevant information Misinterprets calculation(s) and/or concept(s) 	K	bunting lent	 Objectively analyzes the most important relevant information, implications, consequences and viewpoints Evaluates the quality of information and assumptions, and adapts interpretations (as needed) Summarizes the most important pros and cons of viable alternatives
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Challenge Your Students—But Don't Overwhelm Them!

Component of Pathways Vision	Appropriate Amount of Complexity for Students Operating At:			
Model:	Level 1 Little/no critical thinking	Level 2 Partial critical thinking	Level 3 Emergent critical thinking	
Good Decisions	 Few stakeholders and uncomplicated decisions 	 Multiple stakeholders and decisions involving multiple factors 	 Many stakeholders with divergent interests and complex decisions 	
Useful Information	 Information is either useful or not useful (i.e., relevant or irrelevant) 	 Questions exist about the degree of information usefulness 	 Many questions exist about information usefulness 	
Accounting Judgments	 Few accounting judgments 	 Several accounting judgments 	 Many accounting judgments 	
Shades of Gray	 Few sources of uncertainty 	 Multiple sources and degrees of uncertainty 	 Many sources and degrees of uncertainty 	
Economic Activities	 Straightforward, easily understood events and circumstances 	 Moderate scope and interaction of events and circumstances 	 Realistic scope of activities that may be highly complex 	
Consequences	 Few consequences with clear- cut cause and effect relationships 	 Some uncertain cause and effect relationships 	 Many complex and uncertain cause and effect relationships 	





Final Word: Focus on Critical Thinking to Create the Future of Accounting!!





Additional Questions/ Discussion

Access Resources for This Session on My Website (www.WolcottLynch.com):



See these tabs:

- AICPA ResourcesAAA Spark 2024
 - These slides
 - Additional critical thinking resources, including references to underlying literature and more course examples

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