

# Overview of Assessment Methods for the Classroom

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WolcottLynch Associates. 2002. American Institute of Certified Public Accountants (AICPA) Core Competency Framework Educational Competency Assessment Web Site. New York: AICPA. Resource & Guidance documents available online in the Library at: <http://eca.aicpaservices.org/>:

- *Competency Assessment Methods*
- *Assessment Context, Validity, and Reliability*
- *Designing Your Own Competency Elements*
- *Focus of Learning Techniques*

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## What Is Assessment?

In their comprehensive review of assessment methods and their use, Palomba and Banta (1999, p. 1) described *assessment* as “a process that focuses on student learning, a process that involves reviewing and reflecting on practice as academics have always done, but in a more planned and careful way.”

In a set of recommendations for educational assessment, Pellegrino, et al (2001, p. 25) argued, “Improvements in learning will depend on how well assessment, curriculum, and instruction are aligned and reinforce a common set of learning goals, and on whether instruction shifts in response to the information gained from assessments.”

### Assessment Versus Grading

Haven't professors always done assessment in their classrooms? Does the recent demand for course-based assessment mean that professors need to adopt all-new procedures?

Grading does not necessarily constitute assessment because grading does not necessarily lead to reflection and improvement of learning. However, grading can be assessment—if the grading process includes systematic collection, analysis, and use of data about student learning (Walvoord and Anderson, 1998, pp. 3-5).

On the other hand, assessments need not involve grading. For example, a professor could ask students to complete an ungraded “Minute Paper” at the end of a class session (see Angelo and Cross, 1993, pp. 148-153). One purpose of the Minute Paper is to provide the professor with timely information about what students have learned and what major questions they have. This activity is an assessment if the information is used to evaluate the success of teaching methods or to facilitate further learning.

### Diagnostic, Formative, and Summative Assessment

Some assessments are designed to be diagnostic—i.e., to provide information about the characteristics of students entering a course. Diagnostic assessments help professors plan or modify courses to better meet student needs. Such assessments might be used to measure required knowledge (e.g., a multiple choice quiz of prerequisite course content) or to identify strengths and weaknesses in specific skills (e.g., an essay requiring demonstration of critical thinking skills).

Other assessments are *formative*—i.e., they facilitate the learning of students as a course progresses. For the Minute Paper discussed in the last section, the professor could use the assessment information to respond to students' questions and help them learn. Formative assessments also include feedback given to students during a course to provide them with information about how well they are currently performing and what they could do to improve. Graded quizzes or midterm exams might or might not provide useful formative assessment information. The best formative assessments provide specific information about strengths, weaknesses, and gaps in student knowledge and/or skills.

Other assessments are *summative*—i.e., they provide information about whether learning objectives have been met. Summative assessments summarize student learning at a point in time, and they are typically done at the end of a course (e.g., a final exam or project).

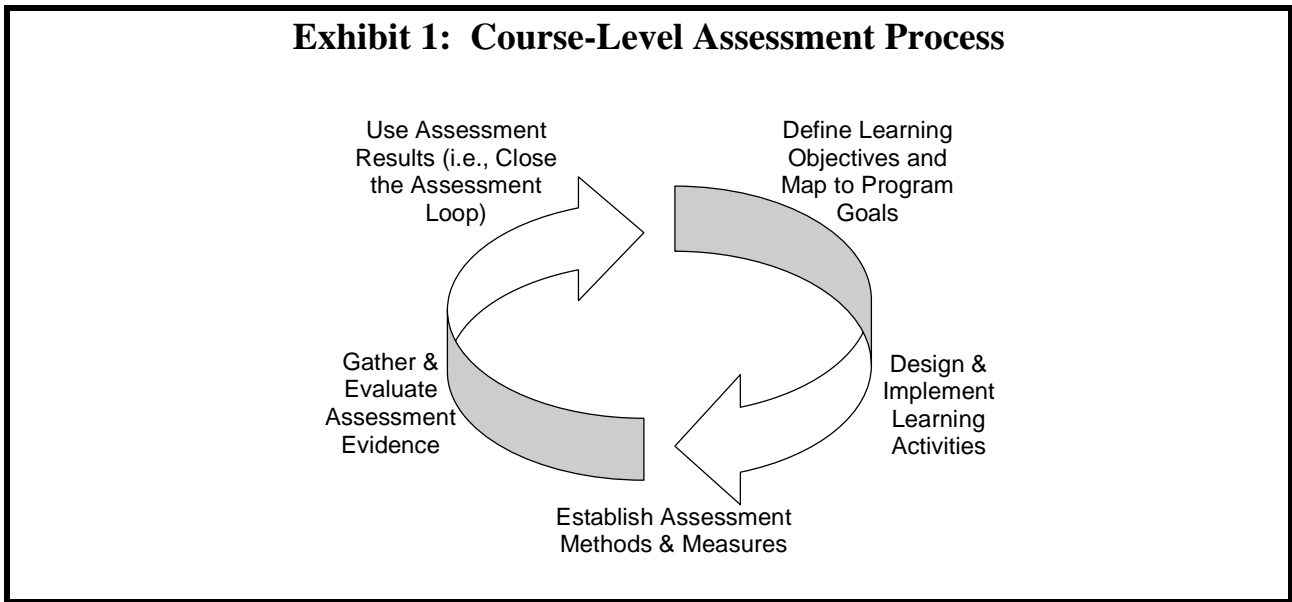
### Program-Level Versus Course-Level Assessment

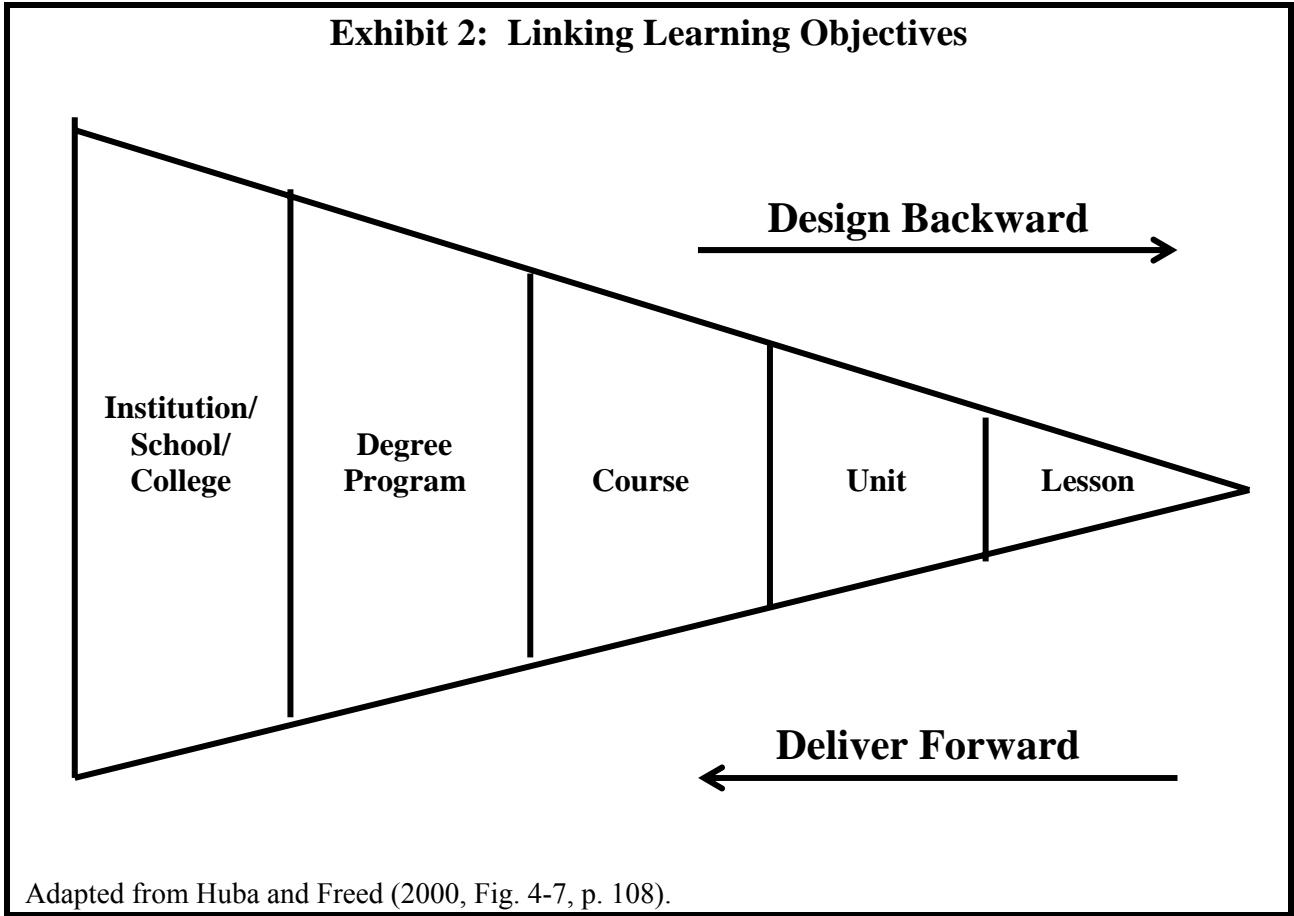
Program-level assessment is concerned with the overall impact of the curriculum on learning, whereas course-level assessment is concerned with the learning that takes place within a given course. The assessments performed within any given course would typically focus on a subset of program-level

objectives. In addition, program-level assessment is usually more concerned with summative information—i.e., whether students have achieved desired learning goals. Course-based assessment more often includes a mixture of summative assessments (e.g., final projects or exams) along with diagnostic and/or formative assessments (e.g., homework, cases, or quizzes), which are designed to stimulate learning and provide regular feedback to students and professors.

### Process for Course-Level Assessment

Exhibit 1 provides an overview of the process for course-level assessment. The process begins with the identification of course learning objectives, which should be explicitly linked to program goals as shown in Exhibits 2 and 3. See page 8 of this document for a discussion about the design of learning objectives. The course learning activities should then be chosen to achieve the course objectives. Exhibit 4 provides a list of common learning activities, and Exhibit 5 illustrates how these activities might be mapped to course learning objectives. The next step is to establish assessment methods and measurements. Pages 11-44 in this document provide information about alternative assessment methods, including examples. The fourth step in the process is to gather and evaluate assessment evidence. Pages 45-52 provide guidance for evaluating assessment context, validity, and reliability. The final—and most important—step is to use the assessment results to engage in continuous improvement, often referred to as “closing the assessment loop.” Pages 53-55 provide more details about this step.





**Exhibit 3: Increasing Detail of Learning Objectives**

<b>School/ College</b>	<b>Degree Program</b>	<b>Course</b>	<b>Unit</b>
Students will be able to speak and write effectively in business settings.	Students will be able to speak and write effectively in an accounting context.	Students will be able to prepare an effective written memorandum recommending an accounting method.	Students will be able to prepare an effective written memorandum recommending a choice of inventory cost flow assumption.

### Exhibit 4: Examples of Course-Level Learning Activities

**Course Materials:**

- Textbooks
- Study guides
- Videos
- Articles
- Instructors' notes or presentation slides made available to students

**Textbook homework:**

- Definitions
- Problems
- Discussion questions
- Cases
- Pre-class assessments (such as online chapter quizzes)

**Other assignments:**

- Essays
- Guided reflections
- Cases
- Research
- Projects
- Simulations

**Classroom or Online Activities:**

- Lectures
- Instructor-led discussions
- Group discussions or exercises
- Role-plays
- Games
- Other collaborative activities
- Guest speakers
- Quizzes
- Examinations
- Other classroom assessment techniques (such as one-minute papers)<sup>a</sup>

**Out-of-Class Activities (other than assignments):**

- Instructor office hours
- Field visits
- Service-learning projects

<sup>a</sup> For numerous examples of classroom assessment techniques, see: Angelo and Cross (1993).

### Exhibit 5: Map of Learning Activities to Course Learning Objectives

Learning Activities:	Learning Objectives			
	Cost Acctg Knowledge	Teamwork	Critical Thinking	Written & Oral Communication
Textbook readings	X		X	
Homework problems	X		X	
Lectures	X		X	
Class discussions	X		X	
Quizzes	X			
One-minute papers	X			
Group project with oral presentation	X	X	X	X
Final exam, including mini case	X		X	X
Instructor office hours	X			

The columns in this chart include only the title for each major learning objective. Each objective should be supported by a more detailed description (see discussion below).

## Importance of Learning Objectives

Establishing clear learning objectives<sup>1</sup> for student performance is critical to assessment because the objectives:

- \* Clarify what professors want students to be able to do at the end of a course
- \* Focus attention on the process of student learning
- \* Encourage evaluation of how well the learning activities tie to desired outcomes
- \* Provide standards against which student performance can be assessed

## Proper Wording of Learning Objectives

Learning objectives should be written in terms of a performance that can be observed or measured. Begin each objective with a verb that describes what students should be able to DO. Use the following general template:

(Verb) what the verb applies to

The best verbs describe observable skills such as those shown in Exhibit 6. Avoid using verbs that describe unobservable skills such as Understand, Know and Appreciate.

Exhibit 7 provides examples of properly worded learning objectives. Exhibit 8 illustrates a way to describe learning objectives in terms of their degree of cognitive complexity. Additional examples are provided in *The Taxonomy of AICPA Core Competencies* on pages 57-80 of this document.

### Exhibit 6: Examples of Verbs for Learning Objectives

analyze	appraise	assess	compare
consider	contrast	criticize	debate
define	demonstrate	describe	diagnose
discuss	distinguish	elucidate	enumerate
evaluate	examine	explain	explore
identify	indicate	illustrate	interpret
hypothesize	justify	list	outline
present	prove	reconcile	relate
review	specify	state	suggest
summarize	support	survey	trace

Adapted from: Miller, et al. (1998, p. 106)

<sup>1</sup> This document uses the term “learning objective” to describe what students should be able to do upon completion of a course. Alternative terms include: learning outcome, desired learning outcome, and learning goal.

### **Exhibit 7: Examples of Wording for Learning Objectives**

- Identify issues to consider when developing a layout appropriate for an organization's operations.
- Use multiple approaches to create forecasts that predict demands on operations systems.
- Evaluate, from a manager's point of view, a choice among alternative financial accounting methods.
- Distinguish between planned and unplanned change, explain how people react differently to these, and describe acceptance/resistance to change and its impacts on the organization.\
- Compare and contrast the management of employees in business organizations, volunteers in a nonprofit organization, and civil servants in a government agency.
- Conduct marketing research and report conclusions that address the issues of customer needs/wants, market share, market demand, appropriate application of the elements of the marketing mix, differentiation, product positioning, etc.
- Describe product mix management strategies that take into account the product life cycle.
- Identify and explain the benefits and risks of global outsourcing.
- Demonstrate ability to communicate the scope and outcome requirements for a specific project/need (e.g., system development cycle, physical database design, stakeholders and decision makers) to a system analyst. This may include participation in the development of an information systems plan.
- Develop hypotheses about the independent impact of market, socioeconomic, governmental, competitor and/or organizational factors on organizational performance, and apply and interpret multiple regression in an appropriate analysis of cross-sectional data.
- Identify claims or conclusions contained within a document that are contradictory or unsupported.
- Evaluate the logic, accuracy and reliability of sources and recognize points of view or biases in a text.
- Revise written messages for clarity, completeness and accuracy and correct errors of grammar, usage and mechanics.
- Identify communication difficulties posed by emotion, poor language skills, cultural differences, speech impairments or talking too quickly or slowly.

Source: Western Governors' University, Bachelors of Science in Business Management, available at: [http://www.wgu.edu/wgu/program\\_info.asp?progID=208](http://www.wgu.edu/wgu/program_info.asp?progID=208).

### Exhibit 8: Examples of Learning Objectives for Ethical Reasoning

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

Sources:

- <sup>a</sup> The Internet Encyclopedia of Philosophy, Ethics, available at <http://www.utm.edu/research/iep/e/ethics.htm>.
- <sup>b</sup> The Markkula Center for Applied Ethics at Santa Clara University, available online at <http://www.scu.edu/ethics/practicing/decision/framework.html>.
- <sup>c</sup> Josephson Institute of Ethics, Making Ethical Decisions, November 2002, available at <http://www.josephsoninstitute.org/MED/MED-intro+toc.htm>.

The levels of cognitive complexity are based on Steps for Better Thinking as described in Wolcott (2006).

## What Does It Mean To Assess Student Learning?

Exhibits 9 and 10 provide examples of different types of assessments that might be used in a classroom. Consider the questions shown at the bottom of each exhibit.

### **Exhibit 9: Assessments With Well-Defined Answers**

Consider the following two sets of assessment observations (from business courses):

#### ***Assessment Example #1: Fill-in-the-Blank***

In classifying a lease as capital or operating, what is the cut-off for the present value test under SFAS No. 13?

Student A's Answer: 90% [correct]

Student B's Answer: 95% [incorrect]

#### ***Assessment Example #2: Multiple Choice***

When decision making is decentralized

- a. Upper management does not make decisions
- b. Decision-making authority is delegated throughout the organization
- c. The important information in an organization is very general
- d. Organizations are less likely to experience agency costs concerning goal congruence

Student C's Answer: b [correct]

Student D's Answer: b [correct]

#### ***DISCUSSION QUESTIONS:***

What does a professor learn from these two assessments? Write down a possible learning objective that is addressed by each assessment.

What are the pros and cons of each assessment method?

## **Exhibit 10: Assessments With Open-Ended Answers**

Consider the following two sets of assessment observations (from business courses):

### ***Assessment Example #3: Theoretical Short Essay***

Explain the meaning of the present value test when classifying a lease as capital or operating under SFAS No. 13.

Student A's Answer: The present value test is one of the four tests for a capital lease.

Student B's Answer: The purpose of the present value test is to determine whether the lessee is paying for substantially all of the value of the asset over the lease term, in other words, whether the lease is in substance a purchase and not a rental. The cut-off percentage is a little below 100%, because the test is trying to measure "substantially all," which isn't very precise. The idea is to look at the substance over form.

### ***Assessment Example #4: Application Short Essay***

[Given a one-page description of the strategy and organizational structure for Company X.] How does Company X's organizational structure assist with the implementation of its strategy?

Student C's Answer: Company X uses a decentralized organization structure because the regional managers can create their own production schedules. They can decide whether to interrupt production for one customer in order to satisfy a rush order from another customer.

Student D's Answer: Company X competes based on customer service, but must also maintain low cost. Sometimes customers need an order filled right-away. The regional managers, who have better knowledge about the needs of individual customers than top management, have the authority to decide whether it is in the best interests of the company to interrupt production for one customer in order to satisfy a rush order from another customer. Thus, the decentralized organization structure allows the division managers to provide good customer service while at the same time keeping costs as low as possible.

### ***DISCUSSION QUESTIONS:***

What does a professor learn from these two assessments? Write down a possible learning objective that is addressed by each assessment.

What are the pros and cons of each assessment method?

## Framework for Assessment Design and Interpretation

This section briefly introduces a conceptual framework that can help professors focus on the link between assessment and student learning. The Assessment Triangle shown in Exhibit 11 is a useful tool for thinking about how assessments should be designed and interpreted. For a more detailed discussion of this framework, see Pellegrino, et al. (2001).

### Cognition

The assessment framework begins with a model of cognition and learning (the bottom corner of the triangle). The idea is to use a model of student learning to guide the design and interpretation of assessments. Ideally, the model of cognition will help professors measure student performance and, more importantly, suggest ways to improve teaching and learning. For example, a model of cognitive development could be used as the basis for defining levels of learning objectives (as shown on pages 10 and 57-80) or assessment (as shown on pages 32 to 43), a model of moral reasoning could be used for assessments of ethics-related objectives, and detailed descriptions of teamwork could be used for teamwork-related objectives (as shown on pages 28 to 30).

### Observation

The next corner of the assessment triangle addresses the need to think about the types of assessment observations that will provide reasonable data about students' competencies. Some assessment methods provide better evidence than other methods, and the choice of method is also affected by the nature of the learning objective. In addition, it is possible to improve the design of any assessment method to provide better evidence. For assessment observations to be most meaningful, they should tie whenever possible to a model of cognition. The following assessment method categories are discussed in this document:

- \* Surveys
- \* Objective examinations
- \* Performances
- \* Proxy indicators

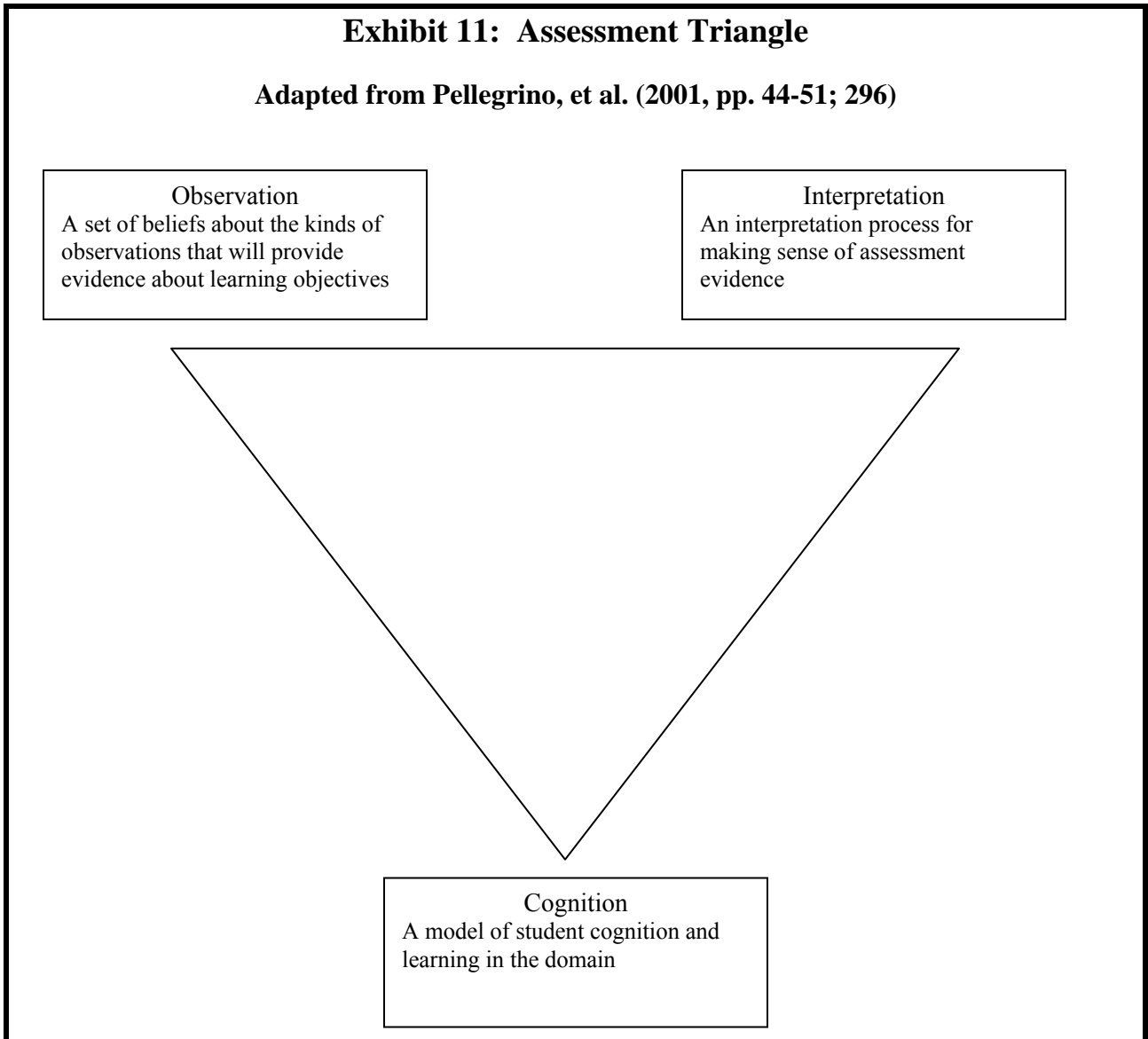
### Interpretation

The final corner of the triangle involves interpretation. As with any other type of evidence, assessment results must be interpreted. The process of making sense out of assessment findings might be formal or informal, depending on the purpose of the assessment. Analysis methods are more likely to be formal if the results will be incorporated into a program-level assessment plan. Formal analyses might include statistical or other quantitative analysis as well as qualitative evaluations of the assessment setting and design.

Interpretation is affected by the quality of the type of observation (the assessment method). An underlying model of cognition assists in the interpretation by pointing to ways in which student learning can be improved.

### Exhibit 11: Assessment Triangle

Adapted from Pellegrino, et al. (2001, pp. 44-51; 296)



## Surveys

### Definition/Description

Surveys obtain information from individuals about their characteristics or opinions. Some surveys require respondents to select from a given set of responses (selected-response surveys), some surveys allow respondents to generate their own responses (constructed-response surveys), and other surveys contain a mixture of selected-response and constructed-response components. Many surveys focus on experiences or perceptions rather than knowledge and skills. Focus groups or pilot studies are often conducted to design and refine survey instruments.

### Typically Focus On

- \* Factual information
- \* Attitudes
- \* Satisfaction
- \* Perceptions
- \* Expectations

### Course-Level Examples

- \* Course evaluations
- \* Questionnaire to gather information about student knowledge or perceptions at the beginning of a course; see example in Exhibit 13
- \* Questionnaire about student perceptions of a course learning activity (such as a project or simulation); see example in Exhibit 12
- \* Surveys to gather information from employers or alumni about course content that students will need in the workplace

### Typically Designed, Conducted, and/or Evaluated By

- \* Professor
- \* Curricular administration (program, school, college, university)
- \* Student services
- \* Third party (commercial or nonprofit)

<b>Major Pros</b>	<b>Major Cons</b>
<ul style="list-style-type: none"> <li>* Can efficiently examine a wide range of topics</li> <li>* Can use well-established practices to evaluate reliability and validity</li> <li>* Inexpensive to administer and evaluate for a large number of respondents</li> <li>* If embedded in courses, allow for more representative or complete student samples</li> <li>* If survey is used multiple times, can obtain longitudinal/trend or pre/post data</li> <li>* May provide valuable types of information other than student learning (e.g., motivation)</li> <li>* Focus groups can help design or interpret results of other assessment methods</li> </ul>	<ul style="list-style-type: none"> <li>* Labor-intensive to develop valid and reliable questions</li> <li>* Do not directly measure student learning</li> <li>* Students may receive minimal or no feedback</li> <li>* Respondent participation rates and motivation levels may be low</li> <li>* Results may be difficult to interpret</li> <li>* What students say may not be a valid measure of what they would do in a professional setting</li> </ul>

## Ability of Student Surveys to Measure Course-Level Learning Objectives

The ability of a student survey to adequately measure achievement of learning objectives depends primarily on: (1) how directly the survey instrument addresses the learning objective (relevance/validity), and (2) the ability of the student to assess his or her own learning (reliability).

The reliability of surveys can be increased by asking direct questions about specific learning objectives. Suppose you wish to survey students to assess whether they believe a course project helped them develop problem solving and decision making skills. You can obtain more reliable responses by describing the aspect(s) of problem solving and decision making you would like students to consider. For example, students might be asked to rate their level of agreement with the following statements:

Less Reliable:

“This project improved my problem solving and decision making skills”

More Reliable:

“This project improved my ability to make valid and reliable evaluations of information.”

This type of survey can be further improved by using a pre/post design (such as the one shown in Exhibit 12). But regardless of how well a survey assessment is designed, it usually provides only an indirect measure of learning. In addition, students are not necessarily capable of evaluating their level of learning, and they may be unable to adequately understand the meaning of learning objectives that require higher-order thinking skills such as the “ability to make valid and reliable evaluations of information.”

Despite these weaknesses, student perception surveys can be useful for identifying factors that influence student motivation and learning. Similarly, beginning-of-course surveys (such as the one shown in Exhibit 13) can be used to anticipate how students are likely to respond to a course. Surveys about student preconceptions (e.g., Exhibit 14) can be used to help students recognize their beliefs and set the stage for deeper learning. Professors can use this type of information to address student concerns and to design more effective learning experiences.

## Survey Resources

Palomba and Banta (1999) provide the following discussions related to surveys:

- \* Use, design, and examples of student surveys, pp. 180-196
- \* Use, design, and examples of alumni and employer surveys, pp. 213-215, 217-222
- \* Focus groups, pp. 196-206; 215-217; 222

Erwin (1991) provides the following discussions related to surveys:

- \* Survey design, including interviews and rating scales, pp. 86-94
- \* Appendices containing sample instruments, pp. 171-175:
  - \* Alumni questionnaire
  - \* Student involvement survey

### Exhibit 12: Pre/Post Survey for a Case Assignment

This survey was given to students in an Executive MBA course before and after they completed a case assignment.

For each of the subjects and concepts below, rate your level of expertise using a ten-point scale as follows:

- 1 = not familiar at all with subject or concept
- 3 = slightly familiar with subject or concept
- 5 = familiar with the subject or concept
- 7 = very familiar with the subject or concept
- 9 = extensively knowledgeable about subject or concept
- 10 = expert on this subject or concept

1) Economic history of the United States	1	2	3	4	5	6	7	8	9	10
2) History of accounting and auditing	1	2	3	4	5	6	7	8	9	10
3) Auditing's role in corporate governance	1	2	3	4	5	6	7	8	9	10
4) Board of directors' responsibilities in corporate governance	1	2	3	4	5	6	7	8	9	10
5) Conflicts ("agency" issues) in the relationship between corporate management and shareholders	1	2	3	4	5	6	7	8	9	10

Source: W. D. Samson, D. L. Flesher & G. J. Previts. (February 2006). Corporate Governance and External and Internal Controls: The Case of the Baltimore and Ohio Railroad, Circa 1831. *Issues in Accounting Education* (21:1). Sarasota, FL: American Accounting Association.

### **Exhibit 13: First Day of Class Questionnaire**

Susan Wolcott gave this questionnaire to students on the first day of an Integrative Accounting Theory course in the Master of Accountancy program at University of Denver.

Name \_\_\_\_\_

(Provide the name you would like used during class sessions. Give me help with pronunciation, if needed)

1. Where did you learn intermediate accounting (U.S. or elsewhere)?
2. What is your work experience?
3. What are your career plans?
4. What do you think “integrative accounting theory” is?
5. To you, what constitutes a “good” class discussion?
6. Do you have fears about class participation? Is there something we can do to help you?
7. What are you expecting to learn during this class?

**Exhibit 14: Misconception/Preconception Check**

One of the cases I use in an MBA-level Management Control Systems course involves a cash-flow-based residual income performance measure. I have found that students are often biased favorably toward this measure because they believe that measures based on cash flow information are always superior to measures based on accrual accounting information. This bias prevents students from considering the weaknesses of a cash-flow-based measure or the strengths of an accrual-based measure for performance evaluation. I use the following short survey to uncover students' preconceptions and to set the stage for deeper analysis of the strengths and weaknesses of alternative performance measures.

**Circle your answer to this question:**

In research studies, which of the following measures has been found to explain more of the movement in stock prices?

Changes in net  
income (accrual  
accounting)

Changes in  
operating cash flow

**Circle the best description of your level of confidence about your answer:**

I'm absolutely  
certain this is  
true.

I'm pretty sure  
it is true.

I have no idea  
whether it's true  
or false.

I'm pretty sure  
it is false.

I'm absolutely  
certain it is  
false.

For more information and additional examples of misconception/preconception checks, see Angelo and Cross (1993, pp. 132-137).

## Objective Examinations

### Definition/Description

Objective examinations have traditionally been very common in assessment plans. They include any type of examination where students select from a given set of responses rather than generating their own responses. Some objective examinations are standardized and used nationally, while other examinations are locally written and used only one time.

### Typically Focus On

- \* Course Content knowledge

### Course-Level Examples

- \* Multiple choice
- \* True-false
- \* Matching items
- \* Quantitative problems

### Typically Administered To

- \* Individual students
- \* Groups of students (e.g., group quizzes)

### Typically Designed, Conducted, and/or Evaluated By

- \* Professor
- \* Committee (course, program, school, college, university)
- \* Curricular administration (program, school, college, university)
- \* Professional organization (licensure)
- \* Third party (commercial or nonprofit)

Major Pros	Major Cons
<ul style="list-style-type: none"> <li>* Explicit demonstration of knowledge</li> <li>* Efficiently examines a wide range of content knowledge</li> <li>* Can use well-established practices to evaluate reliability and validity</li> <li>* Inexpensive to administer and evaluate for a large number of students</li> <li>* If embedded in courses, allow for more representative or complete student samples</li> <li>* If test is used multiple times, can obtain longitudinal/trend or pre/post data</li> </ul>	<ul style="list-style-type: none"> <li>* Labor-intensive to develop valid and reliable questions</li> <li>* May be unable to design adequate questions for complex learning objectives</li> <li>* May be unable to generalize performance to other tasks</li> <li>* Less “authentic” because they do not simulate conditions of work</li> <li>* Limited feedback to students if they are not allowed access to results for individual questions</li> <li>* Standardized tests may encourage instructors to ‘teach to the test’ and direct student focus away from learning objectives</li> <li>* Student participation rates and motivation levels may be low for non-graded examinations</li> </ul>

## **Ability of Objective Examinations to Measure Course-Level Learning Objectives**

Because it is very difficult to develop objective examinations that address complex cognitive abilities, this type of assessment generally focuses on course content knowledge. Also, objective examinations typically provide distributions of student performance relative to each other, rather than distributions of student performance relative to absolute standards.

When using an instrument developed by others, it is particularly important to verify the validity of the examination for the learning objectives of the course.

This handout does not include examples for objective examinations because I assume that professors are already familiar with this type of assessment.

### **Objective Examination Resources**

Palomba and Banta (1999) provide the following discussions related to objective examinations:

- \* Objective tests, including design and evaluation of commercially available tests, pp. 150-161
- \* Commercially available critical thinking tests, pp. 252-257

Erwin (1991) provides the following discussions related to objective examinations:

- \* Norm-referenced versus criterion-referenced measures, pp. 53-55
- \* Validity, pp. 65-75
- \* Reliability, pp. 59-65, 94-96

Although aimed primarily at K-12 education, Pellegrino, et al (2001) provides the following discussion relevant to college-level objective examinations:

- \* Limitations of current assessment methods (which would include objective examinations) caused by lack or limitations of underlying learning theories, pp. 26-29

Miller, et al. (1998) provides a chapter on the reporting of assessment results, including statistical adjustment of student scores (pp. 209-220).

## Performances

### Definition/Description

A performance is any activity or product a student demonstrates or creates. Performances can be assessed by faculty or other competent raters, usually with the aid of a rating rubric or scoring form. Oral presentations or other observations might be recorded to permit more reliable rating.

#### *Typically Focus On:*

- \* Demonstration of skills

#### *Examples:*

- \* Constructed response written examination (essays, sentence-completion, products); these might be comprehensive, or they might apply only to a particular course or subject area
- \* Oral examination (structured, semi-structured, open-ended); these might be comprehensive, or they might apply only to a particular course or subject area
- \* Project (individual or team)
- \* Oral presentation
- \* Written case study
- \* Simulation (such as an interview, meeting, memorandum, literature search, or report)
- \* Portfolio
- \* Work product (from employment, internship, service learning)
- \* Journals, diaries
- \* Student peer or self-evaluations

#### *Typically Administered To:*

- \* Individual students
- \* Groups of students

#### *Typically Designed, Conducted, and/or Evaluated By:*

- \* Professor
- \* Committee (course, program, school, college, university)
- \* Curricular administration (program, school, college, university)
- \* Practitioners
- \* Students

<b>Major Pros</b>	<b>Major Cons</b>
<ul style="list-style-type: none"> <li>* Allow faculty to more directly and thoroughly assess complex, integrated skills</li> <li>* More “authentic” because they can more closely simulate conditions of work</li> <li>* Provide students with more information upon which to improve their skills if they receive performance feedback or are allowed to observe other students’ performances</li> <li>* Can increase student motivation if students view them as integral to practical skill development or can choose their own topics or individual tasks</li> <li>* Lead to improved integration of teaching, learning, and assessing</li> </ul>	<ul style="list-style-type: none"> <li>* Labor-intensive to develop and use</li> <li>* May be unable to generalize performance to other tasks</li> <li>* Concerns about reliability and predictive validity if a small number of performances is assessed</li> <li>* Sometimes designed to focus on “authenticity” with inadequate specification of the performance criteria</li> <li>* Assessments might be subjective (unreliable), particularly if raters are untrained, the assessment rubric is imprecise, or no interrater data is obtained</li> </ul>

<ul style="list-style-type: none"> <li>* Provide learning opportunities</li> <li>* Typically embedded in courses, allowing for more representative or complete student samples</li> </ul>	
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### Ability of Performances to Measure Course-Level Learning Objectives

The ability of a performance assessment to adequately measure learning objectives depends primarily on: (1) how directly the performance task relates to desired learning objectives, and (2) the reliability of the assessment rating process.

Suppose students in a junior-level cost accounting course were given the assignment shown in Exhibit 15 on the first day of class. The purpose of the assignment was to evaluate students’ performance of the following learning objectives:

1. Appropriately applies a given measurement method
2. Describes uncertainties about data and how items should be measured
3. Describes the implications of ambiguities when estimates are required

For the assignment given to the students, the first learning objective is fairly straightforward. However, ambiguity exists about the meaning of “Describes uncertainties...” in the second objective. For example, how many uncertainties should a student cite? How complete should the descriptions be? Similarly, ambiguity exists about the meaning of “Describes the implications...” in the third objective. How many implications? How completely should they be described?

Two different cost accounting professors are likely to agree that Student R’s performance is better than Student Q’s performance. However, they might not completely agree on how well each student performed. For example, one professor might believe that Student R’s performance completely satisfied the learning objectives, while another professor might believe that Student R only partially satisfied the learning objectives. The assessment in this case might not be reliable.

The reliability of assessments can be improved by clarifying the learning objectives in the context of a given assignment. For example, the learning objective for the cost accounting assignment might be rewritten as follows:

1. Appropriately applies a given measurement method
2. Describes at least one uncertainty about estimated revenues and at least one uncertainty about estimated costs
3. Describes how uncertainties about revenues and costs affect the ability of the owner to be certain about the expected profit

More detailed learning objectives would improve the likelihood that two raters would agree on the quality of the performances. In addition, the process of developing more detailed learning objectives encourages professors to think more carefully about what they expect students to do. The learning objectives could also be given to students along with the assignment to encourage higher level performance. Often, student performance is lower than desired because students are uncertain about what they are expected to do.

### Use of Rubrics for Performance Assessment

Another way to improve the reliability of performance assessments is to use detailed rating rubrics. Rubrics may be assignment-specific, such as the ones shown in Exhibits 16 and 17. General rubrics such as those in Exhibits 18 through 20 can be used throughout a program to encourage students to develop common learning objectives across courses.

Rubrics not only improve assessment reliability, but they can also provide students with more explicit feedback to help them work toward desired skills.

## Performance Resources:

Angelo and Cross (1993) is devoted entirely to classroom assessment techniques, most of which require student performances.

Walvoord and Anderson (1998) is devoted entirely to the link between educational objectives and grading. It includes detailed instructions for the use of rating scales.

WolcottLynch Associates (2002) created the following two guidance documents to explain how to design, evaluate, and use performance assessments for competency-based learning objectives. Although the guidance is written for accounting education, the methods apply equally well to other disciplines:

- \* *Introduction to Performance Assessment*
- \* *Advanced Performance Assessment*

Wolcott (2006) provides detailed guidance for assessing higher-order thinking skills (such as critical thinking) using the two rubrics shown in Exhibit 20.

Jon Mueller, Professor of Psychology at No Central College sponsors this comprehensive web site about authentic assessment and rubrics: <http://jonathan.mueller.faculty.noctrl.edu/toolbox/rubrics.htm>

Additional college-level rubric examples are available at these web sites:

- <http://fp.dl.kent.edu/fcubed/modules/modules/goalsassessment/examples.html>
- <http://faculty.css.edu/dswenson/web/Gradingrubrics/gradingrubrics.htm>
- <http://www.tltgroup.org/resources/flashlight/rubrics.htm>

This rubric can be used to assess the quality of a rubric:

- <http://www.idecorp.com/assessrubric.pdf>

Palomba and Banta (1999) provide the following discussions related to performance assessments:

- \* Chapter 5 is devoted to performance assessments
- \* Design, validity, performance evaluation, scoring design, assessment of capstone experiences, and use of classroom assignments, pp. 118, 120-129, 161-177
- \* Portfolios, pp. 131-148
- \* Evaluations by supervisors or professionals (juries, field work, internships, service learning), pp. 222-224, 227-228
- \* Classroom assessment techniques, pp. 167-177
- \* Group work and team-building skills, pp. 231-234
- \* Communication skills, pp. 257-259

Erwin (1991) provides the following discussions related to performance assessments:

- \* Evaluations by supervisors or professionals (juries, field work, internships, service learning), p. 58
- \* Rating scales, including common types of rater errors, pp. 83-89

Although aimed primarily at K-12 education, Pellegrino, et al (2001) includes the following discussion relevant to college-level performance assessments:

- \* Performance assessments may fail to meet expectations if they are designed or used inappropriately; assessments must be based on a “solid model of learning” that can provide teachers and students with feedback for guiding instructional efforts, pp. 29-30; 193-196

### **Exhibit 15: Performance Assessment Example**

***Information Given To Students:***

During November and December each year, Margarita produces and sells gift baskets from her home. Most of her customers are businesses that give gift baskets to their employees, customers, and suppliers each year. Around 75% of her customers have ordered baskets from Margarita for two or more years. Margarita performs most of the work herself, but she hires high school students to help make baskets as needed. Also, she pays a service to deliver the baskets. Following is a summary of Margarita's revenues and costs from last year:

Revenues (1,000 baskets)	\$35,000
Gift basket materials	13,000
Delivery service	10,000
Labor	1,200

Margarita believes that she will sell 1,300 baskets this year. She plans to sell the baskets at the same price as last year, but she thinks that the basket material costs will increase to \$14 per basket. She has signed a contract again this year for delivery service at \$10 per basket. Because of the increased volume, Margarita thinks that her labor costs will be twice last year's cost.

***Performance Task Given to Students:***

What amount of profit does Margarita expect to earn this year from selling gift baskets? Also, explain whether Margarita can be certain that she will earn this amount of profit.

***Student Q's Answer:***

Expected profit = \$11,900 [correct]

Margarita plans to sell the baskets at the same price as last year, but she thinks that the basket material costs will increase to \$14 per basket. She has signed a contract again this year for delivery service at \$10 per basket. Because of the increased volume, Margarita thinks that her labor costs will be twice last year's cost.

***Student R's Answer:***

Expected profit = \$11,900 [correct]

There are many reasons why Margarita can't be certain her profit will be \$11,900. She doesn't know for sure that she will sell 1,300 baskets. Even though many of her customers buy year after year, this doesn't guarantee this year's sales. In addition, Margarita probably doesn't know for sure that her materials will cost \$14 per basket. The actual materials might cost more or less than this (although she might be able to modify the basket contents to keep the cost at \$14 each). It sounds like the delivery costs are set at \$10 per basket, so this cost is certain. However, labor costs might be higher or lower than \$2,400 depending on how fast the high school students work and how much work Margarita does. On the other hand, if Margarita has been making these baskets for many years, she might have a fairly good idea of what her revenues and costs will be.

### Exhibit 16: Grading Rubric for Capital Budgeting Assignment

Below is the rubric used by Susan Wolcott to grade a capital budgeting assignment in a junior-level cost accounting course at University of Washington. For each student, the professor circled the relevant descriptions and returned the rubric with the paper (which included additional grading comments).

	<b>Weak</b>	<b>Average</b>	<b>Professional</b>
<p><b>Written Communication</b> Maximum 4 points</p> <p>Points Earned: __</p>	<p>0 points</p> <ul style="list-style-type: none"> <li>• Spelling or grammar errors interfere with understandability</li> <li>• Unprofessional language and/or improper memo format</li> <li>• Difficult to understand; poor organization</li> <li>• Inadequate explanation of methods and analyses</li> <li>• Includes irrelevant information</li> <li>• Inadequate focus on the decision maker</li> </ul>	<p>2 points</p> <ul style="list-style-type: none"> <li>• Some spelling or grammar errors</li> <li>• Professionalism needs improvement</li> <li>• Understandable, but needs revision for clarity</li> <li>• Logical organization</li> <li>• Partially explains purpose, methods, and analyses</li> <li>• No recommendation in executive summary</li> <li>• Attempts to focus on the decision maker</li> </ul>	<p>4 points</p> <ul style="list-style-type: none"> <li>• No spelling or grammar errors (or very minor)</li> <li>• Professional language, proper memo format, and useful headings</li> <li>• Concise, easy to understand, and well organized</li> <li>• Clearly explains purpose, methods, and analyses</li> <li>• Addresses decision maker’s priorities</li> </ul>
<p><b>Spreadsheet and Computations</b> Maximum 4 points</p> <p>Points Earned: __</p>	<p>0 points</p> <ul style="list-style-type: none"> <li>• Spreadsheet design is inadequate</li> <li>• Incorrect calculations for the problem</li> </ul>	<p>2 points</p> <ul style="list-style-type: none"> <li>• Spreadsheet contains appropriate information, but is long or difficult to understand</li> <li>• Omits key data</li> <li>• Correct calculations except for minor error(s)</li> </ul>	<p>4 points</p> <ul style="list-style-type: none"> <li>• Spreadsheet is concise and very easy to understand</li> <li>• Correct calculations OR articulated reasonable judgment for deviation from correct solution</li> </ul>
<p><b>Analysis of Case Issues</b> Maximum 12 points</p> <p>Points Earned: __</p>	<p>0 points</p> <ul style="list-style-type: none"> <li>• Focuses primarily on computations and “correctness” of recommendation</li> <li>• Does not compare NPV, IRR, and Payback across options</li> <li>• Makes erroneous statements about costs and/or quantitative techniques</li> <li>• Unable to identify important issues &amp; risks</li> <li>• Appears unaware of assumptions underlying the computations</li> </ul>	<p>6 points</p> <ul style="list-style-type: none"> <li>• Focuses on supporting a single recommendation, OR fails to present a clear recommendation</li> <li>• Describes differences in NPV, IRR, and Payback across options</li> <li>• Identifies some issues &amp; risks; lacks depth</li> <li>• Seems unaware of assertions/limiting assumptions used in analysis</li> <li>• Ignores decision ambiguity in the process of supporting a recommendation</li> </ul>	<p>12 points</p> <ul style="list-style-type: none"> <li>• Presents recommendation along with key limitations and issues to be addressed</li> <li>• Describes cost per unit differences in addition to NPV, IRR, and Payback</li> <li>• Describes a range of important issues &amp; risks</li> <li>• Objectively explores issues &amp; risks</li> <li>• Analyses demonstrate business insight</li> <li>• Clarifies key assumptions and priorities for the decision maker</li> <li>• Provides recommendations for addressing important issues &amp; risks</li> </ul>

### Exhibit 17: Grading Rubric for Ethics Assignment

Below is a rubric used by Susan Wolcott to grade an introductory financial accounting case assignment involving the fraud at WorldCom. The relevant descriptions were circled, and the rubric was returned with each student’s paper (which included additional grading comments).

	<b>Weak</b>	<b>Average</b>	<b>Professional</b>
<b>Part 1: Motivation Behind Fraud</b> Maximum 5 points  Points Earned: __	Points: 0 or 1 • Little or no understanding of the motivation behind the fraud	Points: 2 or 3 • Focus on a small subset of motivations behind the fraud OR copied issues from assignment rather than explain in own words	Points: 4 or 5 • Identify a wide range of reasons for the fraud
Here are motivations cited in the case materials: <ul style="list-style-type: none"> <li>• Link between reported financial results and stock price                             <ul style="list-style-type: none"> <li>◦ Company growth strategy, in which shares of stock were used to acquire other companies, depended on continued increase in stock price</li> <li>◦ Top executives had personal wealth tied to stock price (stock options, borrowings against stock value)</li> </ul> </li> <li>• Industry-wide downturn occurred, impairing ability to meet growth forecasts</li> <li>• Corporate culture that denied reality; Top executive continued to announce high growth forecasts</li> </ul>			
<b>Part 2: Effect on Financial Statements</b> Maximum 7 points  Points Earned: __	Points: 0 or 1 • Unable to properly explain the effect of capitalizing rather than expensing the line costs	Points: 2 to 4 • Explains ONLY the direct effect on the balance sheet and income statement OR copies passages from assignment rather than explaining in own words	Points: 5 to 7 • Properly explains the direct effect on the balance sheet, income statement, and statement of cash flows and ALSO explains: <ul style="list-style-type: none"> <li>• Effects of capitalization on depreciation expense</li> <li>• Effects of capitalization on income taxes</li> </ul>
<b>Part 3: Ethical Reasoning Essay</b> Maximum 13 points  Points Earned: __	Points: 0 to 3 • Identifies only one or two alternatives • Unable to identify uncertainties about how to respond • Provides disconnected or illogical arguments • Does not directly describe effects of decision on others • Describes only the most obvious effects for self • Unable to explain how factors were weighed in proposing a course of action	Points: 4 to 8 • Identifies only a small number of alternatives (usually 2-3) • Identifies only a small number of uncertainties about how to respond (usually 2-4) • Provides logical arguments, focused primarily on supporting the conclusion • Provides little or only superficial discussion of effects of decision on others • Describes effects on self in a superficial way • Conclusion lacks an objective evaluation of alternatives; weighing of factors unclear	Points: 9 to 13 • Identifies a wide range of viable alternatives • Incorporates understanding of uncertainties into evaluation of alternatives • Provides arguments, but also discusses assumptions and implications of uncertainties • Identifies a range of other stakeholders and addresses their interests • Demonstrates complex understanding of how the decision might affect self • Clarifies values and trade-offs made in reaching a conclusion

**Exhibit 18: Rubric for Teamwork<sup>2</sup>**

<i>PLEASE PICK THE BEHAVIOR THAT BEST REPRESENTS YOUR TEAM'S EXPERIENCE</i>						
<b>Criteria</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Score</b>
<b>Attendance</b>	Most, if not all, members attend all meetings, are punctual and stay for the entire meeting.		Most members are present at the majority of meetings. When members have to be absent, they inform the team or an agreed upon member of the team.		One or more members frequently miss meetings and do not inform the team, or an agreed upon member of the team. When they do come, they are often late or leave early.	1 2 3 4 5 N/A
<b>Establishing and Documenting Goals</b>	When appropriate, realistic, prioritized, and measurable goals are agreed upon and documented and all team members share the common objectives/purpose.		Individuals share some objectives but a common purpose may be lacking. When appropriate, goals may be established but some may be too general or unquantifiable. Priorities may be unrealistic. Documentation may be incomplete.		Clear goals are not formulated or documented, thus, all members don't accept or understand the purpose/task of the group.	1 2 3 4 5 N/A
<b>Accountability for Results (Work Products)</b>	The work product is a collective effort; team members have both individual and mutual accountability for the successful completion of their work		Individuals work on separate sections of the work product and have a coordinator(s) that ties the disparate parts together (i.e., they rely on the sum of each individuals' best work).		Individuals work on separate sections of the work product but have no coordinating effort to tie the disparate parts together.	1 2 3 4 5 N/A
<b>Team Cohesion</b>	Team members are committed to the team and show a sense of bonding and camaraderie. A climate of trust and acceptance exists and members feel pride in being part of the team.		Members feel some commitment to the team/group but it is not consistent. Members' behavior range from competitive and individualistic to cooperative and supportive.		Low morale exists; there is little or no cohesion among group members. The team atmosphere is competitive and/or individualistic.	1 2 3 4 5 N/A

(continued)

<sup>2</sup> This rubric was developed by Howard Feldman at University of Portland using some of the material from “*The Wisdom of Teams: Creating the High-Performance Organization*” by J.R. Katzenbach and D.K. Smith. 1993 by McKinsey & Co. p. 214 and Jiles, D., Huba, M., et.al., “Vertically Integrated Design Curriculum,” NSF CRCRD Project, Material Sciences and Engineering, Iowa State University, 2000.

Exhibit 18: Rubric for Teamwork (page 2 of 3)

Criteria	5	4	3	2	1	Score
<b>Communication</b>	Team members communicate openly and treat one another with respect. All members listen to all ideas. The work of each person is acknowledged. Members feel free to seek assistance and information, share resources and insights, provide advice, or to ask questions of each other.		There is a general atmosphere of respect for team members, but some members may not be heard as much as others. Some members may not feel free to turn to others for help. Members may avoid discussing some topics for fear of disrupting the group's work and/or hurting someone's feelings.		Communication is limited among group members (information is not shared with one another and/or important topics are not discussed among the group because a climate of open communication has not been established).	1 2 3 4 5 N/A
<b>Team Decision Making</b>	Clear procedures for making decisions are established and documented, when appropriate. Team members tend to make most decisions through consensus.		Decision making procedures are established informally, leading to some inconsistency in implementation. Majority and minority opinions sometimes exist when decisions are made by the group.		Decisions are made by individuals and may not reflect the thinking or the desires of the team. There is often a failure to involve all members in the decision making process.	1 2 3 4 5 N/A
<b>Adjusting</b>	When working to achieve goals, the team is able to adjust plans as needs arise. There is a clear understanding of the nature of mid-course corrections and why they were needed.		The team is not always able to adjust as needed to meet goals. Realization of the need for mid-course corrections sometimes comes too late.		The team is unfocused and seems to be thrashing about. There is no ability to adjust and make corrections.	1 2 3 4 5 N/A
<b>Team Assessment</b>	Members regularly examine how their team is functioning and discuss their findings together for purposes of maintenance or improvement.		Members engage in occasional discussions about how their group is functioning, but it is not a regular occurrence and not all members may be involved.		Members avoid discussions about how they are functioning as a group.	1 2 3 4 5 N/A
<b>Timely Submission of Work Assignments and Reports</b>	Team members are self-motivated and can complete work assignments and reports in a timely manner without being reminded.		Work assignments and reports are submitted but are sometimes late.		Work assignments and reports are frequently late (submitted inconsistently). The team is not self-motivated and needs constant chasing to get the work submitted on time.	1 2 3 4 5 N/A

Exhibit 18: Rubric for Teamwork (page 3 of 3)

<b>Criteria</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>Score</b>
<b>Leadership</b>	Team members share the leadership role. Each team member feels responsible for helping lead it.		A strong, clearly focused leader develops. This leader sees him/herself more responsible for helping lead the team than the other team members.		The group has no leader nor do its members share the leadership role.	<b>1 2 3</b> <b>4 5 N/A</b>
<b>Managing Conflict</b>	Conflicts are consistently resolved through open discussion and compromise.		Members are generally able to resolve conflicts through open discussion and compromise.		Conflicts that arise are either not dealt with or cannot be resolved. Members tend to hide their true feelings and opinions.	<b>1 2 3</b> <b>4 5 N/A</b>

## Exhibit 19: Holistic Grading Rubric for Writing

**Grade of A.** For a detailed narrative that extensively and accurately uses the concepts, theories, and ideas from the readings, lectures, discussions, interviews, and other research materials to make sense of the research problem. The narrative adequately states and defends a point of view and answers all counterarguments and counterexamples suggested by class discussion, reading assignments (specific arguments and authors are mentioned by name in the commentary), and the common sense of students and scholars. The essay is very well written, consisting of coherent and logical organization, clear and precise use of language, and few technical errors in spelling and grammar.

**Grade of B.** For an occasionally vague or imprecise narrative that frequently and accurately uses the concepts, theories, and ideas from the readings, lectures, discussions, interviews, and other research materials to make sense of the research problem. The narrative states a point of view that is supported by clear arguments and factual evidence. Counterarguments and counterexamples are mentioned but are not adequately answered. Other weaknesses may include factual evidence that is incorrect, missing, or not specific; linking points of view that are either unclear or missing; and counterarguments and counterexamples that are not clearly stated. The narrative may employ a “straw man” argument. The essay is well written, with only occasional imprecise or ambiguous phrases or sentences and occasional but still infrequent technical errors.

**Grade of C.** For a narrative that states a point of view but where supporting arguments and factual evidence are missing, incorrect, or anachronistic; irrelevant; not sufficiently specific; and/or all or partly obscured by errors in language and usage. The narrative is vague or imprecise more often than it is detailed and descriptive; it offers few applications of concepts, theories, or ideas from lectures, readings, interviews, and other research materials; it includes several instances of misapplication or misunderstanding of concepts, theories, or ideas, and it exhibits only an acceptable level of writing. In the upper range of this grade, the narrative states a point of view that is supported by clear arguments and factual evidence, but counterarguments and counterexamples are not mentioned or answered.

**Grade of D.** For a narrative that is generally vague, indicating inadequate participation in the course material and research or inadequate effort invested in the writing process. The narrative exhibits sloppy writing and is generally devoid of application of concepts, theories, or ideas from the course materials or contains frequent errors in their application. The narrative simply lists, narrates, or describes historical data and includes several factual errors. The narrative correctly lists, narrates, or describes observed data but makes little or no attempt to frame a point of view for the writer.

**Grade of F.** For a narrative that is so general it could have been written without the student having been enrolled in the class. The narrative exhibits seriously deficient writing, contains so many errors in applying concepts as to indicate a lack of comprehension of the subject matter, and completely ignores the questions asked. The narrative is incomprehensible due to errors in language or usage, contains serious factual errors, and is plagiarized.

This rubric was developed for the Writing Program at DePaul University. Source: Rotenberg, Robert. 2005. *The Art & Craft of College Teaching: A Guide for New Professors & Graduate Students*. Chicago: Active Learning Book.

## **Exhibit 20: Critical Thinking Assessment Example Segment Reporting Case**

This example includes a short case assignment used in a Master of Accountancy course at University of Denver, 3 illustrative student responses, and 2 completed rubrics for each response. The “Steps for Better Thinking Competency Rubric” is designed for feedback to students, so it focuses on the incremental skill improvements and avoids negative descriptors. The “Steps for Better Thinking Rubric” provides a more complete description of performance patterns (and is, therefore, more reliable), but it uses language that is not accessible to many students.

This example is from Appendix F of:

Wolcott, S. K. (2006). *College Faculty Handbook: Steps for Better Thinking*. The handbook provides detailed guidance for using Steps for Better Thinking in higher education. Includes numerous assessment and assignment examples. To request a copy of the handbook, send email to [swolcott@WolcottLynch.com](mailto:swolcott@WolcottLynch.com).

Exhibit 20 (continued)

## Segment Reporting Case

This case was written by James Appleby. It was used by Susan Wolcott and James Appleby in a master-level integrative accounting theory course at University of Denver. It is based on an actual business situation.

You are the CFO of a public company that went public 11 months ago via an initial public offering (IPO). The company is currently owned 30 percent by the public and 70 percent by management and the founding family. You have just received a notice from the SEC that your company's segment reporting is inadequate. The SEC argues that you should separately report a segment for each of the two product lines your company manufactures and markets.

### **Product Line Background:**

Your company's current segment reporting is limited to one line-of-business consisting of two product lines. Your company has been manufacturing and marketing product line A since the inception of the company. The second product line (B) was a direct outgrowth of product line A. The product lines:

- \* Are developed based on the same technologies, patents and engineering support
- \* Have similar manufacturing processes, are manufactured in the same manufacturing plant, and have 85% of the same component parts.
- \* Are integrated into your customers' machines, which are in turn sold to their end users to enhance the end users' production throughput.
- \* Require that your engineers work closely with the engineers of your customers to ensure your product can be effectively integrated into their machines.
- \* Have a global market and require a significant amount of after-sales service that is a very profitable business
- \* Are stored and shipped out of the same warehouse
- \* Are sold to customers who are classified in the same industry and have been assigned the same SIC code.
- \* Have different sales forces since the customers of each product line sell to very different end users/industries and, since your product is technical, each sales force must be trained in the unique production processes of your customers' end users.

Though sales of each product line are approximately the same, Product line A has a gross margin of 20% whereas Product Line B has a gross margin of 95%. The difference is caused by the selling price, not the cost of manufacturing. Product line B, when integrated into your customers' machines, allows their machines to operate at

(continued)

Exhibit 20 Assessment Example: Segment Reporting Case (continued)

speeds four times faster than without your product. Thus, your customers' machines can be sold to customers at a much higher price since the increase in speed of their machines is a significant production throughput increase to their end users. In addition, the cost of your products is less than 5% of the total cost of your customers' machines.

**Impact on Your Company if Segment Reporting is Changed:**

Your Board of Directors and executive management have the following concerns if you change your segment reporting:

- \* Product Line B customers would likely attempt to force you to give them a price reduction
- \* The information you would be required to report would provide your competitor with too much information and may draw new competitors into your market
- \* Your shareholders could question your IPO disclosures in spite of the fact the disclosures had been scrutinized, reviewed and accepted by your lawyers, public accountants, and the SEC

The Board feels that this disclosure would be very detrimental to the financial wellbeing of the company.

You have been asked to evaluate the situation and provide your recommendation to the Board of Directors. You know from talking with your public accountants and your colleagues in other companies that the SEC has been questioning the segment disclosures of many companies. They have indicated that the increase in these types of SEC inquiries have resulted from "no-name" inquiries made by law firms on behalf of their clients, who were likely your competitors. However, you consider the SEC inquiry as a serious matter.

**Required:**

Develop a recommendation to your Board of Directors, including your analysis of the situation, the alternatives you investigated, and why you came to your recommendation.

Exhibit 20 Assessment Example: Segment Reporting Case (continued)

## Illustrative Response: Student #1

February 17, 2000

TO: Board of Directors  
FROM: [Student Name]  
SUBJECT: Recommendation about Segmentation Reporting

We have just received a notice from the SEC that it feels that our company's disclosure regarding segmentation reporting is inadequate. The SEC feels that we should report separate segments for each of the two product lines our company manufactures and markets. As a CFO, I believe that this would have a negative impact on the company. Therefore, I recommend that you not accept the SEC's inquiry.

First of all, even though the SEC feels that our company's disclosure regarding segmentation reporting is inadequate, our company's current segmentation reporting has been scrutinized, reviewed, and accepted by our lawyers, public accountants and the SEC. This means that our segmentation reporting doesn't have any problems according to GAAP and the SEC. Therefore, we don't have any duty to disclose more information about our segments. In addition, one of the reasons why the SEC has been questioning the segmentation disclosures of our company is that the SEC's inquiry to our company has resulted from "no-name" inquiries made by law firms on behalf of their clients, who are likely our competitors. So, I believe that the SEC's inquiry is a simple inquiry, not an official requirement.

The next reason is that the information we would be required to report would provide our competitors with too much information and may draw new competitors into our market. Both product lines are developed based on the same technologies, patents and engineering support. Also, both have very similar manufacturing processes and both are manufactured in the same plant. However, Product line A has a gross margin of 20%, whereas Product line B has a gross margin of 95%. The reason for the difference relates to the selling price, not the cost of manufacturing. Information about our profit margins could be very important to our competitors. It would be possible for them to use our price policy for their customers. In addition, this information can draw new competitors into our market.

The last reason is related to the second reason. If we have to disclose segment information, our customers will learn that Product line B has a gross margin of 95%. Therefore, our customers for Product line B will not be happy with our pricing policy and will probably force us to reduce our price. If we don't reduce our selling price, our customers might seek new suppliers.

I recommend that the board not accept the SEC's inquiry to disclose segment information for the reasons above. I believe that we should keep our current segment reporting policy.

Exhibit 20 Assessment Example: Segment Reporting Case (continued)

## Illustrative Response: Student #2

**To:** Board of Directors  
**From:** [Student Name]  
**Date:** February 17, 2000  
**Re:** Segmentation disclosures for product line A and product line B

Since going public 11 months ago, the adequacy of our one line-of-business segmentation reporting has been questioned. Discussions with our public accountants and colleagues of mine in other companies has revealed that the SEC is questioning the segmentation disclosures of many companies in response to “no-name” inquiries made by law firms on behalf of their clients, who are most likely competitors.

There are several possible alternatives to consider for the segmentation reporting of our product line A and product line B. The existing segmentation reporting could be continued, the two product lines could be divided and reported separately, or some combination of the previously mentioned two alternatives could be implemented. It is imperative that we comply with SEC requirements as well as follow Generally Accepted Accounting Principles (GAAP) as mandated by the Financial Accounting Standards Board (FASB). Noncompliance could result in damaging consequences for the company. After careful consideration, I recommend further analysis of the two product lines, further investigation of SEC requirements related to the reporting of this matter and consequences of the implementation of any changes.

It is important to identify and consider the key stakeholders in this decision. First, there are standard setters such as the SEC and the FASB to consider. The SEC feels that each specific segment for the two product lines our company manufactures and markets should be reported individually. The FASB addresses this issue in statement 131. This statement defines operating segments and provides the steps necessary to determine the required disclosures. It appears that product line A and B should be reported separately in accordance with statement 131 because of the quantitative thresholds. However, without further research and financial analysis, this cannot be determined with certainty.

Changing our current segmentation reporting could have a significant impact on the company, including the board of directors, management, and existing shareholders and also outside parties such as competitors and customers. For example, the customers of product line B may force a price reduction when they find out that its gross margin is 95%. Also, the disclosed information may draw new competitors into the market and give existing competition access to new, valuable information. It also might cause existing shareholders to question IPO disclosures already made, which is “bad business” for us.

After examining this issue from the points of view of various stakeholders, I recommend that we take the necessary steps to ensure compliance with the requirements of the SEC and GAAP. Further research and analysis are required to determine what the course of action should be. It is important to identify the potential consequences of any changes that are implemented in order to buffer their impact on the company as a whole and also the other stakeholders.

Exhibit 20 Assessment Example: Segment Reporting Case (continued)

## Illustrative Response: Student #3

**Date:** February 17, 2000  
**To:** Board of Directors  
**From:** [Student Name]  
**Re:** Responding to SEC Inquiry Into Segment Reporting

This memo contains my recommendation for responding to the SEC's inquiry into our line-of-business financial accounting practices. I have researched this matter thoroughly and discussed it with our external auditors. Based on my analysis, I believe that our current accounting practice is appropriate and complies with accounting standards. Thus, I recommend that we provide the SEC with our analysis of the accounting standard and argue the appropriateness of our current practice. However, the segment reporting accounting standard is subject to interpretation, and the SEC could make a legitimate case that we should report data separately for product lines A and B. Because the reporting of segment data would most likely cause significant harm to our company, we should develop a contingency plan for addressing this matter further in case the SEC disagrees with our position. I look forward to discussing these issues with you further at the board meeting.

### Background

On February 10, 2000, we received a notice from the SEC that our company's segment reporting is inadequate and that we should report product lines A and B as if they were separate business segments. Based on discussions with my colleagues in other companies and with our auditor, I learned that the SEC has been questioning the segment disclosures of many companies. Many of these inquiries appear to have resulted from "no-name" inquiries made by law firms on behalf of their clients, who are typically competitors of the company being investigated. Thus, the SEC's inquiry into our practices might have been prompted by one of our competitors.

As we discussed during the board's conference call on February 11, segment reporting for product lines A and B would probably cause significant harm to our company and its shareholders. In particular:

- \* Product Line B customers might force us to give them a price reduction.
- \* The information might draw new competitors into our market.
- \* Shareholders could question our IPO disclosures.

### Accounting Rules

The key accounting issue in the SEC inquiry is whether our product lines A and B constitute separate "reportable operating segments" according to FASB Statement 131. The fact that our top management regularly reviews discrete revenue and expense information for each product line and makes business decisions about resources allocated to each product line could be construed to mean that the product lines are separately reportable. However, the two product lines use virtually the same technology, patents, engineering support, manufacturing processes and facilities, component parts, and warehouse facilities. Thus, the two product lines are actually two parts of the same operation. Our auditors agree with this interpretation, and they have promised to provide us with a letter that we can submit to the SEC supporting our position. I am currently drafting a detailed analysis of the provisions of Statement 131 and how they relate to our company's situation. I will be happy to share the details with you, if you would like to see them.

### Contingency Plans

Although we can argue persuasively that our current reporting practice is appropriate, we need to consider the possibility that the SEC might interpret the accounting standard differently than we and our auditors do. Here are some contingency plans for us to discuss during the board meeting:

- \* Develop point-by-point arguments that contradict our own position. This will help us anticipate possible SEC objections, and we can then address those objections in our response to the SEC.
- \* Identify possible actions to take if we are unsuccessful in persuading the SEC. For example, we could consider taking the company private; private companies are not required to report segment data.

**Steps for Better Thinking Competency Rubric**

Student: Exhibit 20 Segment Reporting Case: Student #1 Rater: Susan Wolcott

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

Overall Rating: 0.5

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

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

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

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

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

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**Steps for Better Thinking Competency Rubric**

Student: Exhibit 20 Segment Reporting Case: Student #2 Rater: Susan Wolcott

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

Overall Rating: 2.5

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

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**Steps for Better Thinking Competency Rubric**

Student: Exhibit 20 Segment Reporting Case: Student #3 Rater: Susan Wolcott

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

Overall Rating: 3.5

	<b>Performance Pattern 0 “Confused Fact Finder”</b>	<b>Performance Pattern 1 “Biased Jumper”</b>	<b>Performance Pattern 2 “Perpetual Analyzer”</b>	<b>Performance Pattern 3 “Pragmatic Performer”</b>	<b>Performance Pattern 4 “Strategic Revisoner”</b>
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	Identifies at least one reason for temporary uncertainty <sup>2</sup>	Identifies at least one reason for significant and permanent uncertainty <sup>2</sup>	Addresses significant and permanent uncertainties <sup>2</sup> when interpreting information	Identifies and discusses the significance of the most important uncertainties <sup>2</sup>	Develops viable strategies for minimizing important uncertainties <sup>2</sup> over time
Step 2 Skills Integrate multiple perspectives <sup>3</sup> and clarify assumptions <sup>4</sup> Circle ALL that apply		Acknowledges more than one potential solution, approach, or viewpoint	Analyzes information from multiple perspectives, <sup>3</sup> including assumptions <sup>4</sup> and alternative objectives	Provides reasonable and substantive justification for assumptions <sup>4</sup> used in analysis	Argues convincingly using a complex, coherent discussion of own perspective; Articulates strengths and weaknesses of position
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Step 3 Skills Use guidelines or principles to judge objectively across options Circle ALL that apply			Avoids reaching a biased conclusion	Maintains objectivity while establishing reasonable priorities for reaching a well-founded conclusion	Uses a systematic process of critical inquiry to build a solution; Articulates how problem solving approach and criteria can be refined, leading to better solutions or greater confidence over time
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**Steps for Better Thinking Rubric**

Student: Exhibit 20 Segment Reporting Case: Student #1 Rater: Susan Wolcott

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

Overall Rating: 0.5

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

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**Steps for Better Thinking Rubric**

Student: Exhibit 20 Segment Reporting Case: Student #2 Rater: Susan Wolcott

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

Overall Rating: 3.0

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

Student: Exhibit 20 Segment Reporting Case: Student #3 Rater: Susan Wolcott

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

Overall Rating: 3.5

Steps for Better Thinking ↓ SKILLS ↓	←Less Complex Performance Patterns			More Complex Performance Patterns→	
	"Confused Fact Finder" Performance Pattern 0—How performance might appear when Step 1, 2, 3, and 4 skills are weak	"Biased Jumper" Performance Pattern 1—How performance might appear when Step 1 skills are adequate, but Step 2, 3, and 4 skills are weak	"Perpetual Analyzer" Performance Pattern 2—How performance might appear when Step 1 and 2 skills are adequate, but Step 3 and 4 skills are weak	"Pragmatic Performer" Performance Pattern 3—How performance might appear when Step 1, 2, and 3 skills are adequate, but Step 4 skills are weak	"Strategic Re-Visioner" Performance Pattern 4—How performance might appear when one has strong Step 1, 2, 3, and 4 skills
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## Proxy Indicators

### Definition/Description

Proxy indicators measure competencies indirectly by providing a surrogate for what we would like to measure. For example, participation in a business honor society might be used as a surrogate for the leadership competency. Similarly, student grades in an oral communication course might be used as a surrogate for oral communication skills.

### Typically Focus On

- \* One or more attributes of interest

### Examples

- \* Grades
- \* Course-taking patterns
- \* Participation rates (activities, research projects, professional organizations, internships, service learning)
- \* Judgments of ability (IQ, GMAT, GRE, etc.)

### Typically Administered To

- \* Proxy indicators aren't "administered" in the usual sense; data are collected from available sources (such as student records) or perhaps through a survey of students or others

### Typically Designed, Conducted, and/or Evaluated By

- \* Committee (course, program, school, college, university)
- \* Curricular administration (program, school, college, university)
- \* Student services
- \* Third party (commercial or nonprofit)

Major Pros	Major Cons
<ul style="list-style-type: none"> <li>* Can efficiently examine a wide range of topics</li> <li>* Typically inexpensive to design and perform</li> </ul>	<ul style="list-style-type: none"> <li>* Proxy indicators may not be valid competency measures</li> <li>* Does not provide student feedback</li> <li>* Results may be difficult to interpret</li> </ul>

### Ability of Proxy Indicators to Measure Course-Level Learning Objectives

Proxy indicators are generally used for program or institutional assessment rather than course-level assessment. However, proxy indicators may occasionally be used in course-level assessment. For example, a professor might assess the *rate* of student participation during classroom or online discussions.

### Proxy Indicator Resources

Palomba and Banta (1999) provide brief discussions related to proxy indicators on pp. 76-77.

## Evaluation of Assessment Evidence

Assessment data should be viewed just like any other type of evidence. Uncertainty exists about whether the assessment methods provide the best information possible. In addition, some assessment methods are much more costly (time and money) than other assessment methods. Cost/benefit trade-offs often influence the choices among potential assessment methods.

### Importance of Context, Validity, and Reliability

The context, validity, and reliability of assessment methods affect the interpretation and usefulness of the resulting data. Judgments regarding assessment context, validity, and reliability help to answer this central question: How well do the data gathered with a particular assessment method represent students' actual learning?

### Documenting and Evaluating Assessment Context

The assessment *context* for a particular assessment is a description of how data are gathered and compiled and how support for student or other respondent performance is provided. Suppose a professor is assessing communication skills using a memorandum written by students in a course assignment. The professor would expect students to perform better if they have been given several previous opportunities to practice writing memoranda and have been given feedback on their prior performances than if this is the first time they have been asked to perform this task.

Exhibit 21 provides a form that can be used to evaluate the context for examination or performance assessments (e.g., written or oral examinations, homework assignments, oral presentations, and projects). Exhibit 22 provides a form that can be used to evaluate the context for survey or proxy indicator assessments (includes any assessment activity other than a student performance, such as questionnaires, focus groups, interviews, participation rates, and grades).

Ideally, it is best to complete the context form before conducting an assessment. This type of documentation can help in planning the activity and provide more valid and reliable data. However, the context form could also be used ex-post to help professors reflect upon and document how an assessment was conducted.

### Evaluating Assessment Validity

The concept of *validity* focuses attention on the big picture: To what degree does the assessment method measure what we want it to measure—i.e., the course learning outcomes? With the assessment context in mind, professors can think more clearly about the validity of the assessment method. Judgments of validity must take into consideration the particular purpose and particular group with which the assessment method is used.

Exhibit 23 can be used to document and evaluate the validity of assessment activities.

### Evaluating Assessment Reliability

The concept of *reliability* focuses attention on fine-tuning the assessment method: To what degree does the method maximize the ability to (a) consistently measure what we want it to measure and (b) understand and, when possible, deal with extraneous factors that affect the measurements? Thinking

about reliability helps professors answer this question: To what degree are measurement errors minimized so that variance in scores can be attributed to actual differences in student learning?

Exhibit 23 provides a form to help professors document and evaluate reliability for assessment activities.

## **Comparison of Validity and Reliability**

Theoretically, high validity and high reliability go hand in hand, but this is not always the case. Bers (2001, p. 29) argued that assessing “competencies requires new and innovative processes” that “will not integrate well with traditional systems for recording and reporting student learning outcomes.” For example, data from an objective examination that is machine-scored might be considered very reliable, but we must also consider validity. If the test items do not provide evidence about desired learning objectives, then validity for this purpose is poor and the resulting data are not very useful. In other words, an assessment can be very reliable without being valid. On the other hand, an assessment cannot be very valid if it is extremely unreliable, so professors must consider both aspects simultaneously and be aware of potential trade-offs in coordinating validity and reliability.

## **References on Assessment Context, Validity, and Reliability**

See the following publications to learn more about assessment context, validity, and reliability:

- \* Erwin (1991, 59-75; 94-96). Explains three traditional types of validity (criterion or prediction, content, and construct) and also introduces more complex ways to consider validity. Focuses primarily on validity of objective examinations and surveys. Describes common reliability problems. Explains types of reliability and how to evaluate reliability of an assessment. Focuses primarily on reliability of objective examinations and surveys.
- \* Palomba and Banta (1999, 88-91; Chapters 5-8). Provide overviews of assessment validity and reliability. Discuss validity and reliability for a range of assessment methods and student outcomes.
- \* WolcottLynch Associates (2002). The library document *Assessment Context, Validity, and Reliability* provides more details about the factors included in Exhibits 21 through 24.

## **Exhibit 21: Assessment Context Form for Student Performances**

Faculty member or other contact person for this assessment: \_\_\_\_\_

Course or point in the curriculum where this assessment is used: \_\_\_\_\_

Attach a copy of the examination or assignment. Note on the examination or assignment which items/tasks provide data about which learning objectives.

ATTACH ADDITIONAL PAGES AS NEEDED FOR THE FOLLOWING INFORMATION

### ***Student Preparation***

1. Length of time allowed for preparation and performance
2. Timing of performance within the course or program
3. Description of the setting in which students perform—classroom, take home, library, etc.
4. Guidance and other resources available to students (including written instructions, professor demonstrations, access to work of previous student work, and so on)
5. Previous opportunities for students to practice or build toward this performance (including work in prior courses and previous assignments or activities in this course)

(continued on next page)







**Exhibit 23: Questionnaire for Evaluating Assessment Validity**

<p style="text-align: center;"><b>Assessment Activity:</b> _____</p> <p><b>Briefly describe the assessment activity</b> (see Exhibits 21 and 22 for more complete descriptions)</p>	
<p>Learning Objectives:</p>	
<p>Group of students or other source of data:</p>	
<b>VALIDITY:</b>	<b>Rating</b> <b>High, Moderate, Low</b>
<p>To what degree is the assessment activity related to the learning outcomes that are specified for the program or course? Rating notes:</p>	
<p>To what degree is the assessment activity grounded in a model of cognition and learning? To what degree will results provide useful information for improving student learning? Rating notes:</p>	
<p>To what degrees are the tasks/items meaningful to students or other respondents? Do students perceive the tasks as related to their future work performance? Is there evidence that students or other respondents understand the tasks/questions in the way the assessment designer(s) intended? Rating notes:</p>	
<p>To what degree is the assessment activity likely to be viewed as credible to people who will use the results (such as legislators, administrators, faculty, employers, alumni, accrediting organizations, students, other stakeholders)? Rating notes:</p>	

### Exhibit 24: Questionnaire for Evaluating Assessment Reliability

<p style="text-align: center;"><b>Assessment Activity:</b> _____</p> <p><b>Briefly describe the assessment activity</b> (see Exhibits 21 and 22 for more complete descriptions)</p>	
<p>Learning objectives assessed:</p>	
<p>Group of students or other source of data:</p>	
<p><b>RELIABILITY:</b></p>	
	<p><b>Rating</b> High, Moderate, Low</p>
<p><b>Assessment Context</b> Is the assessment context adequately planned and controlled so that differences in performance/response can be attributed to differences in student learning? Rating notes:</p>	
<p><b>Test-Retest Reliability</b> If assessment context and personal characteristics of students/respondents are held constant, to what degree are responses likely to be similar if the assessment is performed twice within a relatively short period of time? Rating notes:</p>	
<p><b>Interrater Agreement</b> When applicable, to what degree do multiple raters evaluate a specific response to the assessment method consistently? To what degree do different evaluators interpret and apply the rating criteria in similar ways? Rating notes:</p>	

## Closing the Assessment Loop

According to Gainen and Locatelli (1995, 97-8):

*The greatest benefits of [assessment] are likely to come when faculty examine students' work collectively—not only from the familiar perspective of judging individual performances but also from the perspective of how well students, taken as a whole and in appropriate subgroups, meet faculty expectations and are prepared to meet the needs of a dynamically changing profession."*

This last section discusses briefly how the assessment findings can be used to “close the assessment loop”—in other words, to use assessment results for continuous improvement.

In their individual courses, professors can use assessments to identify the strengths, weaknesses, and gaps in their students' knowledge and skills. Once these are identified, professors can employ teaching methods to address weaknesses or gaps and reduce effort aimed at students' strengths. Although any given classroom is likely to be populated with students exhibiting a range of abilities, information about the distribution of student performances can help professors prioritize how best to use limited class time.

Another important use of course-level assessments is to provide students with feedback. As argued by Gainen and Locatelli (1995, 58) and others, students who participate in assessment should receive some immediate benefit. With more explicit information about the strengths, weaknesses, and gaps in their learning, students are in a much better position to take corrective actions.

When course assessments are used as part of a program assessment plan, professors can use their assessments to develop profiles of students' abilities in different courses or at different points in the curriculum, as shown in Exhibit 25. This type of data will help the faculty make more informed decisions about how and where in the curriculum different skills should be addressed. It can also help them identify places in the program where students might “stall out” in their development, suggesting a need for intervention.

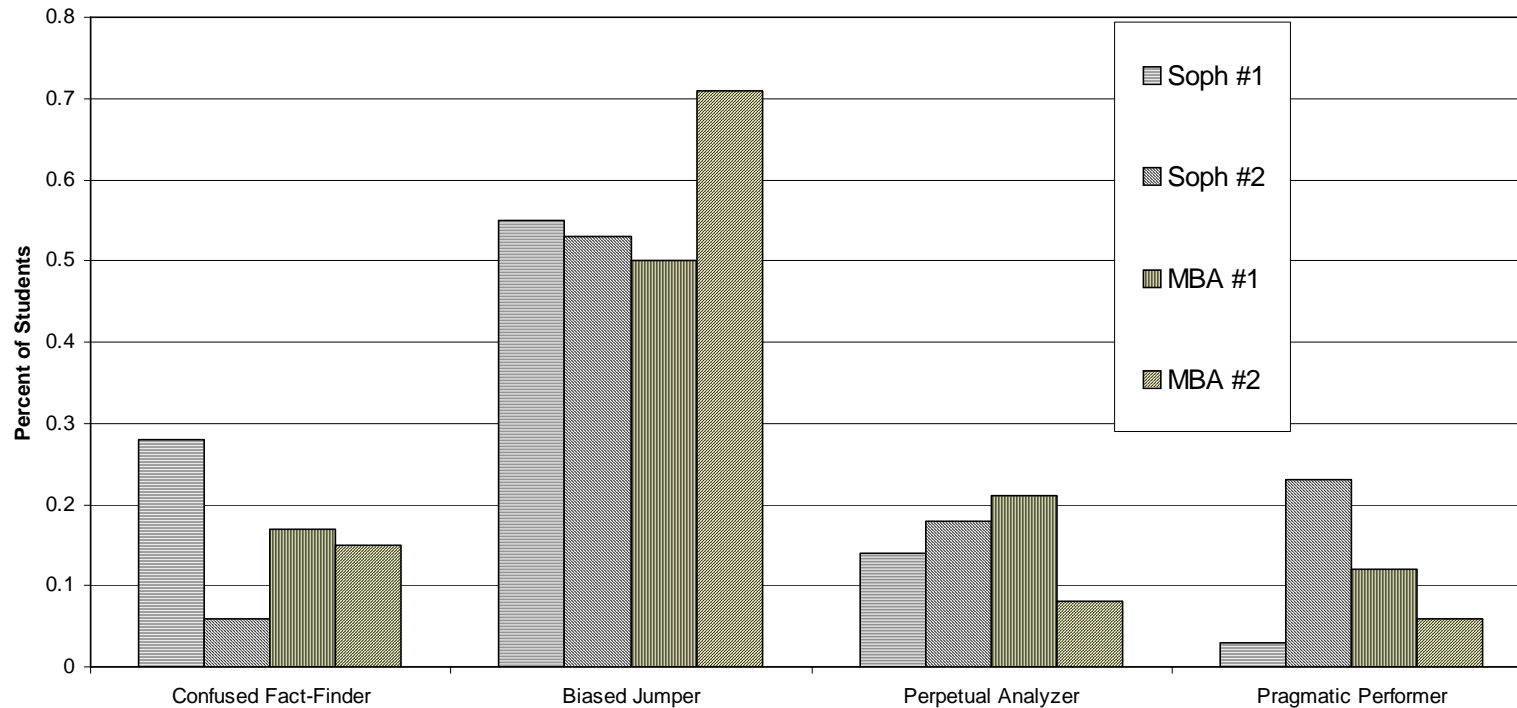
The use of rating rubrics, particularly when multiple raters are used, encourages professors to engage in discussions about teaching and learning. The rating process can prompt reevaluations of individual instructional techniques as well as overall program design.

Problems are usually encountered the first time a new type of assessment activity is used. Problems might include unratable performances, student dissatisfaction with the task, or surprisingly poor results. Sometimes experience with a performance task provides the information needed to revise the task for future use. Other times, professors may decide that a task should be replaced by something different. With practice, professors can become better at designing assessment tasks that are more likely to work well the first time they are used.

### Example of Assessment Activity Documentation

Exhibit 26 demonstrates documentation that might be used for a single assessment activity. The documentation includes consideration of factors related to the assessment context, validity, and reliability (according to Exhibits 21, 23, and 24). The documentation ends with recommendations for future action—i.e., for closing the assessment loop.

**Exhibit 25: Performance Patterns in Four Accounting Classrooms**



The data shown in this chart are based on essay assignments that were independently rated by two raters using the Steps for Better Thinking Rubric. The sophomore student data, reported in Wolcott & Lynch (1997), are from a third-quarter introductory financial accounting course taken only by accounting majors. Particularly for “Soph #2,” the data demonstrate higher than typical sophomore-level performance according to the body of reflective judgment research. The MBA student data are from evening (MBA #1) and daytime (MBA #2) introductory financial accounting courses and are typical of master-level performance according to the body of reflective judgment research. No performances in these classes were rated at Performance Pattern 4 (Strategic Re-Visioner). See Wolcott (2006) for descriptions of the performance patterns.

## Exhibit 26: Example of Assessment Documentation

### Identification of a Course Learning Activity for Assessment:

Learning Activities:	Learning Objectives			
	Cost Acctg Knowledge	Teamwork	Critical Thinking	Written & Oral Communication
Textbook readings	X		X	
Homework problems	X		X	
Lectures	X		X	
Class discussions	X		X	
Quizzes	X			
One-minute papers	X			
Group project with oral presentation	X	X	X	X
Final exam, including mini case	X		X	X
Instructor office hours	X			

### Specification of Detailed Learning Objectives and Assessment Methods:

Cost Accounting Knowledge	Critical Thinking	Written & Oral Communication
<p>Detailed Objective:</p> <ul style="list-style-type: none"> <li>* Properly identifies and applies cost accounting knowledge</li> </ul>	<p>Detailed Objectives:</p> <ul style="list-style-type: none"> <li>* Identifies relevant information</li> <li>* Identifies and addresses uncertainties</li> <li>* Qualitatively interprets information</li> <li>* Establishes priorities for choosing among viable options</li> </ul>	<p>Detailed Objective:</p> <ul style="list-style-type: none"> <li>* Expresses information and concepts with conciseness and clarity when writing</li> </ul>
<p>Assessed as percent correct answers to objective-style calculation and definition questions; Data analyzed for 9 topic areas and for overall scores</p>	<p>Assessed using “Steps for Better Thinking Competency Rubric”; Data analyzed based on overall rating for each student</p>	<p>Assessed using “Holistic Grading Rubric for Writing”</p>

Exhibit 26 (continued)

**Documentation of Assessment Results: Critical Thinking Objective**

Assessment Activity	Mini case in final exam, Spring 2006, Cost Accounting				
Learning Objective	Critical Thinking				
Description of Activity	The final exam included an open-ended mini case that required students to recommend changes to the allocation of overhead for a job costing system. Critical thinking performance was rated using the “Steps for Better Thinking Competency Rubric” by the course professor				
Number of Observations	26 students, all accounting majors				
Targeted Performance	The School of Accountancy has established the following target for critical thinking performance: 100% of accounting majors will achieve at least Performance Pattern 1 on the “Steps for Better Thinking Competency Rubric” at the end of the junior year				
Results (% of students)	Perf. Pattern 0	Perf. Pattern 1	Perf. Pattern 3	Perf. Pattern 3	Perf. Pattern 4
	45%	43%	10%	2%	0%
Assessment Context	<p><i>Setting:</i> Students completed this task as part of a 2-hour, in-class, closed-book final exam.</p> <p><i>Performance Support:</i> The students had prior practice performing and discussing open-ended cost accounting problems during the course including homework assignments, class discussions, and a group project. Students had previously received feedback using the rubric applied to the group project assignment, and the rubric had also been used during the students’ Intermediate Accounting I and II courses.</p> <p><i>Student Motivation:</i> The mini case was worth 20 out of 100 points on the final exam, and the final exam accounted for 30% of the total course grade. The case involved a real company, so the students probably perceived the task as relevant to the “real world,” although most of the students express an interest in careers in public accounting and they often perceive cost accounting tasks as irrelevant to their future careers.</p>				
Assessment Validity	The assessment task required students to make a recommendation for a realistic open-ended problem—i.e., it required students to exhibit the types of skills described in the assessment rubric. The rubric is grounded in a model of developmental psychology, so results describe both the strengths and weaknesses in student skills and provide guidance about the skills students need to develop.				
Assessment Reliability	Stress and time pressure during the exam might have impaired the performance of some students. I had not previously used this case with students, but the nature of the task was similar to ones the students had previously addressed. Although the ratings were done only by me, I have been using the rubric for 2 years and participated in a 2-day rating working.				
Conclusions	Most of the students achieved the desired level of performance, but 45% did not. Performance of critical thinking in exam settings is often lower than performance in other settings, so the observed performances might not reflect the students’ abilities in a less stressful setting. Nevertheless, the results suggest that nearly half of the students are failing to achieve the department’s goal for the end of the junior year.				
Recommendations	<p><i>Modifications to Cost Accounting Course:</i> During the course, I might have devoted too much emphasis in the homework and during classroom discussions on skills at Levels 2 and 3 (e.g., qualitative evaluations of information, multiple perspectives, critique of assumptions, and prioritizations). In general, students are not capable of understanding skills that are more than one level higher than their current performance. In the future, more time should be devoted to skills at Level 1 (e.g., identification of relevant information and uncertainties and using evidence to support a point of view).</p> <p><i>Discuss Performance With Assessment Committee:</i> I plan to share the assessment results with the department assessment committee. These results should be compared with the results of the Intermediate I and II courses to identify possible program-level issues.</p>				

## Taxonomy of AICPA Core Competencies

Prepared for the AICPA by WolcottLynch Associates, December 2001

### General Descriptions of Competency Levels

The general descriptions below outline the sequence of increasingly complex generic thinking skills used to organize the AICPA Core Competency Elements into levels. This taxonomy sets the stage for building student competencies across the curriculum and allows for consistent specification of competencies across institutions. See “Competency Levels” (resource & guidance document available online at <http://eca.aicpaservices.org/>) for more complete descriptions of each competency level and information about how to use these levels in programs and courses.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying Low Cognitive Complexity	Level 2—Exploring Moderate Cognitive Complexity	Level 3—Prioritizing High Cognitive Complexity	Level 4—Integrating Highest Cognitive Complexity
UNDERLYING COGNITIVE SKILLS (Adapted from Steps for Better Thinking <sup>1</sup> )	<p><b>Identify the Problem, Relevant Information, and Uncertainties</b></p> <p>A—Identify problem and acknowledge reasons for enduring uncertainty and absence of single "correct" solution</p> <p>B—Identify relevant information and uncertainties embedded in the information (may include "stacking up" to support some solution or conclusion)</p>	<p><b>Explore Interpretations and Connections</b></p> <p>C—Interpret information:</p> <ol style="list-style-type: none"> <li>1. recognize and control for own biases</li> <li>2. articulate assumptions and reasoning associated with alternative points of view</li> <li>3. qualitatively interpret evidence from a variety of points of view</li> </ol> <p>D—Organize information in meaningful ways to encompass problem complexities</p>	<p><b>Prioritize Alternatives and Involve Others</b></p> <p>E—After thorough analysis, develop and use reasonable guidelines for prioritizing factors to consider and choose among solution options</p> <p>F—Effectively involve others, as needed, in implementing the best solution.</p>	<p><b>Integrate, Monitor, and Refine Strategies Over Time</b></p> <p>G—Acknowledge and explain limitations of endorsed solution</p> <p>H—Integrate skills in on-going process for generating and using information to monitor strategies and make reasonable modifications</p>

<sup>1</sup> Adapted from C. L., Wolcott, S. K., & Huber, G. E. (2001). Steps for Better Thinking: A Developmental Problem Solving Process [On-line]. Available: <http://www.WolcottLynch.com>.

Taxonomy of AICPA Core Competencies (page 2 of 24)

## **Functional Competencies**

Functional competencies relate to the technical competencies which are most closely aligned with the value contributed by accounting professionals.

Functional Competencies Include:

- Decision Modeling
- Risk Analysis
- Measurement
- Reporting
- Research
- Leverage Technology to Develop and Enhance Functional Competencies

Below are a definition and a taxonomy of elements for each functional competency

Taxonomy of AICPA Core Competencies (page 3 of 24)  
 Functional Competencies (continued)

**Decision Modeling**

Individuals preparing to enter the accounting profession must be able to use strategic and critical approaches to decision-making. They must objectively consider issues, identify alternatives, and choose and implement solution approaches in order to deliver services and provide value.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Decision Modeling</b>	<ul style="list-style-type: none"> <li>Identifies problems, potential solution approaches, and related uncertainties</li> </ul>	<ul style="list-style-type: none"> <li>Objectively identifies strengths, weaknesses, opportunities, and threats associated with a specific scenario, case, or business activity</li> <li>Uses quantitative techniques to explore the likelihood of alternative scenarios</li> <li>Organizes and evaluates information, alternatives, cost/benefits, risks and rewards of alternative scenarios</li> <li>Employs model-building techniques to quantify problems or test solutions</li> </ul>	<ul style="list-style-type: none"> <li>Links data, knowledge, and insights together for decision-making purposes</li> </ul>	<ul style="list-style-type: none"> <li>Engages in continuous improvement and constructs new models over time</li> <li>Makes decisions over time as a result of engaging in continuous improvement and constructing new models</li> </ul>

Taxonomy of AICPA Core Competencies (page 4 of 24)  
 Functional Competencies (continued)

**Risk Analysis**

Risk analysis and control is fundamental to professional service delivery. The identification and management of audit risk (that is, the risk that the auditor will fail to detect a misstatement, caused by inadvertent error or fraud, that is material to financial statements) is the basis for the conduct of a GAAS audit. The understanding of business risk (that is, the risk that an entity—either a client or the prospective accounting professional’s employer—will fail to achieve its objectives) affects how business strategy is created and implemented.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Risk Analysis</b>	<ul style="list-style-type: none"> <li>Explains why controls cannot completely eliminate risk of negative outcomes</li> </ul>	<ul style="list-style-type: none"> <li>Identifies risks of negative outcomes (including fraud) for particular scenarios</li> <li>Describes the pros and cons of controls that mitigate risk of negative outcomes through prevention or detection and correction</li> </ul>	<ul style="list-style-type: none"> <li>Assesses and controls unmitigated risks through, for example, designing, applying, and drawing conclusions from tests</li> <li>Communicates the impact of identified risks and recommends corrective action</li> </ul>	<ul style="list-style-type: none"> <li>Develops and monitors strategies for managing risk over time</li> <li>Implements appropriate corrective action over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 5 of 24)  
 Functional Competencies (continued)

**Measurement**

Measures used should be both relevant (that is, bear on the decision to be made) and reliable (consistently measure what they purport to measure). Various measurement and disclosure criteria used by accounting professionals—such as GAAP, OCBOA (Other Comprehensive Basis of Accounting) and tax reporting—have been codified to some degree. Other performance measures (such as Economic Value Added) or stated criteria (for example, investment performance) are used for special purposes. Some measurement criteria (such as effectiveness of internal control) are measured qualitatively, rather than quantitatively.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Measurement</b>	<ul style="list-style-type: none"> <li>Identifies what needs to be measured</li> <li>Describes uncertainties about data and how items should be measured</li> <li>Appropriately applies a given measurement method</li> </ul>	<ul style="list-style-type: none"> <li>Describes the pros and cons of alternative methods of measurement</li> <li>Describes the implications of ambiguities when estimates are required</li> </ul>	<ul style="list-style-type: none"> <li>Determines an appropriate, relevant and reliable measure for the intended use</li> <li>Presents the measurement results objectively using applicable standards of disclosure or reporting</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes changing circumstances and reconsiders measurement methods and estimates as appropriate</li> </ul>

Taxonomy of AICPA Core Competencies (page 6 of 24)  
 Functional Competencies (continued)

**Reporting**

Communicating the scope of work and findings or recommendations is an integral part of a professional service. An accounting professional in public practice might issue an audit or attestation report, recommendations for improved services, or tax or financial planning advice. An accounting professional in business, industry, or government might analyze operations or provide communications to the board of directors. Communicating clearly and objectively the work done and the resulting findings is critical to the value of the professional service. Some forms of communication are governed by professional standards (such as the form and content of the standard auditor’s report or the required communications to audit committees) or law. Others are based on the service applied and the needs of those to whom the accounting professional reports.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Reporting</b>	<ul style="list-style-type: none"> <li>• Lists types of information relevant to a given report</li> </ul>	<ul style="list-style-type: none"> <li>• Considers the pros and cons of alternative contents and formats in preparing written and oral presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Using appropriate media, prepares reports with objectivity, conciseness and clarity</li> <li>• Describes work performed and conclusions reached in a manner that enhances the reports’ usefulness</li> </ul>	<ul style="list-style-type: none"> <li>• Serves as spokesperson for an organization</li> <li>• Continuously monitors and updates reports, as needed</li> </ul>

Taxonomy of AICPA Core Competencies (page 7 of 24)  
 Functional Competencies (continued)

**Research**

Although accounting professionals need a foundation in standards and other relevant rules, such guidance is constantly evolving. Many accounting profession functions depend on obtaining information from within and outside of an entity. Accordingly, the individual preparing to enter the accounting profession needs to have strong research skills to access relevant guidance or other information, understand it, and apply it.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Research</b>	<ul style="list-style-type: none"> <li>• Employs relevant research skills for locating data</li> <li>• Identifies relevant information such as industry trends, internal performance history, benchmarks, and best practices</li> <li>• Accesses relevant standards, rules, and other information</li> <li>• Explains why there are uncertainties about the interpretation of information, including existing rules</li> </ul>	<ul style="list-style-type: none"> <li>• Articulates assumptions and reasoning associated with application of existing rules to a given problem</li> <li>• Qualitatively interprets research findings from a variety of viewpoints</li> </ul>	<ul style="list-style-type: none"> <li>• Articulates general concepts from existing rules and explains how those concepts apply across a range of problems, including problems not explicitly described</li> <li>• Develops and uses reasonable guidelines for drawing conclusions in light of conflicting or ambiguous data</li> </ul>	<ul style="list-style-type: none"> <li>• Employs relevant research skills over time to generate new information</li> </ul>

Taxonomy of AICPA Core Competencies (page 8 of 24)  
 Functional Competencies (continued)

**Leverage Technology to Develop and Enhance Functional Competencies**

Technology is pervasive in the accounting profession. Individuals entering the accounting profession must acquire the necessary skills to use technology tools effectively and efficiently. These technology tools can be used both to develop and apply other functional competencies.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Leverage Technology to Develop and Enhance Functional Competencies</b>	<ul style="list-style-type: none"> <li>• Accesses appropriate electronic databases to obtain decision-supporting information</li> <li>• Identifies risks associated with technology and automated business processes</li> </ul>	<ul style="list-style-type: none"> <li>• Uses technology assisted tools to assess and control risk and document work performed</li> <li>• Appropriately uses electronic spreadsheets and other software to build models and simulations</li> </ul>	<ul style="list-style-type: none"> <li>• Assesses the degree of risk of technology and automated business processes</li> </ul>	<ul style="list-style-type: none"> <li>• Develops strategic uses of technology for enhancing work performance</li> <li>• Adopts new technology over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 9 of 24)

## **Personal Competencies**

Personal competencies relate to the attitudes and behaviors of individuals preparing to enter the accounting profession. Developing these personal competencies will enhance the way professional relationships are handled and facilitate individual learning and personal improvement.

Personal Competencies Include:

- Professional Demeanor
- Problem Solving and Decision Making
- Interaction
- Leadership
- Communication
- Project Management
- Leverage Technology to Develop and Enhance Personal Competencies

Below are a definition and a taxonomy of elements for each personal competency

Taxonomy of AICPA Core Competencies (page 10 of 24)  
 Personal Competencies (continued)

**Professional Demeanor**

The accounting profession is committed to maintaining a public reputation for excellence in the performance of important roles in business and society. Individuals entering the accounting profession should behave in a manner that is consistent with the character and standards of the discipline of accounting, as well as the norms of the environment in which they interact. This competency involves demonstrating objectivity, integrity, and ethical behavior. It also includes a commitment to stable work performance, as well as a commitment to continuously acquire new skills and knowledge.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Professional Demeanor</b>	<ul style="list-style-type: none"> <li>• Commits to confidentiality, quality, efficiency, growth in personal conduct and capabilities, and ethical behavior</li> <li>• Accepts professional development as an uncertain and life-long process</li> <li>• Identifies career and personal goals</li> <li>• Identifies ethical dilemmas</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluates information, including others’ professional criticism and evaluation, in a manner free of distortions, personal bias or conflicts of interest</li> <li>• Relates lessons learned from prior mistakes to new situations</li> <li>• Considers the impact of alternative solutions on various stakeholders in an ethical dilemma</li> </ul>	<ul style="list-style-type: none"> <li>• Conducts oneself with honesty</li> <li>• Objectively considers others’ professional criticism or evaluation when making decisions</li> <li>• Adheres to a level of personal appearance appropriate to the environment</li> <li>• Recognizes situations where professional ethical standards apply and behaves accordingly</li> <li>• Uses appropriate ethical values in making decisions</li> <li>• Prioritizes career and personal goals</li> </ul>	<ul style="list-style-type: none"> <li>• Measures oneself against evolving standards and meets or exceeds those standards</li> <li>• Manages stress and performs reliably under changing or unusual demands</li> <li>• Takes appropriate action to gain competencies</li> </ul>

Taxonomy of AICPA Core Competencies (page 11 of 24)  
 Personal Competencies (continued)

**Problem Solving and Decision Making**

Accounting professionals are often asked to discern the true nature of a situation and then determine the principles and techniques needed to solve problems or make judgements. Thus, individuals entering the accounting profession should display effective problem solving and decision-making skills, good insight and judgement, as well as innovative and creative thinking.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Problem Solving and Decision Making</b>	<ul style="list-style-type: none"> <li>• Lists information and evidence that is relevant for a problem</li> <li>• Identifies uncertainties about the interpretation or significance of information and evidence</li> </ul>	<ul style="list-style-type: none"> <li>• Makes valid and reliable evaluations of information, including the significance of evidence or facts for problem definition and solution</li> <li>• Considers unconventional approaches and solutions to problems</li> <li>• Analyzes the impact, pros, and cons of potential solutions or actions</li> <li>• Analyzes the quality of information and evidence, including validity, reliability, and significance</li> </ul>	<ul style="list-style-type: none"> <li>• Synthesizes novel or original definitions of problems and solutions as circumstances dictate</li> <li>• Uses experience and comparison in forming opinions</li> <li>• Seeks consensus where appropriate</li> <li>• Reasons carefully and thinks effectively in abstract terms or generalizations</li> <li>• Knows when to follow directions, question plans or seek help</li> </ul>	<ul style="list-style-type: none"> <li>• Strategically considers contingencies and future developments</li> <li>• Adapts to new contexts and promotes constructive change</li> </ul>

Taxonomy of AICPA Core Competencies (page 12 of 24)  
 Personal Competencies (continued)

**Interaction**

Accounting professionals must be able to work with others to accomplish objectives. This requires them to act as valuable business partners within organizations and markets and work in teams to provide business solutions. Thus, individuals entering the accounting profession should demonstrate an ability to work productively with individuals in a diversity of roles and with varying interests in the outcome.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Interaction</b>	<ul style="list-style-type: none"> <li>• Accepts suggestions and guidance of team leaders and other members</li> <li>• Commits to achievement of common goals when working on a team</li> <li>• Identifies uncertainties about interactions with others</li> </ul>	<ul style="list-style-type: none"> <li>• Recognizes and accommodates the protocols and expectations of teams</li> <li>• Recognizes the value of working within diverse, cross-functional teams</li> <li>• Interacts and cooperates productively and maturely with others</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitates free expression and constructive activities of others</li> </ul>	<ul style="list-style-type: none"> <li>• Coaches or mentors in appropriate circumstances</li> </ul>

Taxonomy of AICPA Core Competencies (page 13 of 24)  
 Personal Competencies (continued)

**Leadership**

Individuals entering the accounting profession should be able to effectively lead in appropriate circumstances. This involves acquiring the skills needed to influence, inspire, and motivate individuals and groups to achieve results.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Leadership</b>	<ul style="list-style-type: none"> <li>• Describes why there is no single, “correct” way to perform as a leader</li> <li>• Identifies the various leadership styles</li> </ul>	<ul style="list-style-type: none"> <li>• Recognizes and controls for own biases when receiving input from others</li> <li>• Analyzes potential ways to reach a consensus or compromise from alternative points of view</li> <li>• Relates leadership styles to different situations</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitates decisions that involve consensus or compromise as appropriate</li> <li>• Persuades and rallies the support of others to a course of action by reasoning or incentive</li> <li>• Motivates others to achieve excellence</li> </ul>	<ul style="list-style-type: none"> <li>• Practices principles of effective governance over time</li> <li>• Effectively chairs teams or volunteers for projects</li> </ul>

Taxonomy of AICPA Core Competencies (page 14 of 24)  
 Personal Competencies (continued)

**Communication**

Accounting professionals are called upon to communicate financial and non-financial information so that it is understood by individuals with diverse capabilities and interests. Individuals entering the accounting profession should have the skills necessary to give and exchange information within a meaningful context and with appropriate delivery. They should have the ability to listen, deliver powerful presentations and produce examples of effective business writing.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Communication</b>	<ul style="list-style-type: none"> <li>Expresses information and concepts with conciseness and clarity when writing and speaking</li> <li>Identifies uncertainties about the best way to communicate</li> </ul>	<ul style="list-style-type: none"> <li>Places information in appropriate context when listening, reading, writing and speaking</li> <li>Selects appropriate media for dissemination or accumulation of information</li> </ul>	<ul style="list-style-type: none"> <li>Organizes and effectively displays information so that it is meaningful to the receiving party</li> <li>Receives and originates direct and indirect messages as appropriate when listening, reading, writing and speaking</li> </ul>	<ul style="list-style-type: none"> <li>Uses interpersonal skills to facilitate effective interaction over time</li> <li>Communicates decisions appropriately over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 15 of 24)  
 Personal Competencies (continued)

**Project Management**

Accounting professionals must successfully manage a diversity of projects throughout their career. Individuals entering the accounting profession should demonstrate the ability to effectively control the course of a multi-dimensional, multi-step undertaking. This includes managing project assets, including human, financial, property, and technical resources.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Project Management</b>	<ul style="list-style-type: none"> <li>• Lists information relevant to managing a project</li> <li>• Identifies uncertainties related to time and resource requirements for a project</li> <li>• Identifies project goals</li> </ul>	<ul style="list-style-type: none"> <li>• Develops alternative estimates of time and resource requirements for a project</li> <li>• Utilizes methods to measure project progress</li> <li>• Organizes the various aspects of a project in order to allocate resources for optimum results</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritizes and delegates as needed</li> <li>• Recognizes situations where prompt and determined actions are needed and responds accordingly</li> <li>• Sees projects through to completion or orderly transition</li> </ul>	<ul style="list-style-type: none"> <li>• Effectively manages human resources that are committed to the project</li> <li>• Effectively facilitates and controls the project process and takes corrective action as needed</li> </ul>

Taxonomy of AICPA Core Competencies (page 16 of 24)  
 Personal Competencies (continued)

**Leverage Technology to Develop and Enhance Personal Competencies**

Technological adaptability is a requirement for today’s accounting professional. As technology advances, the accounting professional must acquire new skills and determine how new technologies should be best incorporated into their practices. This commitment to continual technological learning will enhance the development and application of other personal competencies.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Leverage Technology to Develop and Enhance Personal Competencies</b>	<ul style="list-style-type: none"> <li>Exchanges information using appropriate communication technologies such as e-mail, discussion boards and video-conferencing</li> <li>Acquires skills through technology-based learning modules when available and appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Describes risks and other issues about privacy, intellectual property rights and security issues related to electronic communications</li> <li>Explores the implications of uncertainties when adopting a new technology</li> </ul>	<ul style="list-style-type: none"> <li>Uses technology appropriately to interact with others</li> </ul>	<ul style="list-style-type: none"> <li>Explores new technologies and their application to business and accounting scenarios</li> <li>Adopts new technologies over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 17 of 24)

## **Broad Business Perspective Competencies**

Broad business perspective competencies relate to the context in which accounting professionals perform their services. Individuals preparing to enter the accounting profession should consider both the internal and external business environments and how their interactions determine success or failure. They must be conversant with the overall realities of the business environment.

Broad Business Perspective Competencies Include:

- Strategic/Critical Thinking
- Industry/Sector Perspective
- International/Global Perspective
- Resource Management
- Legal/Regulatory Perspective
- Marketing/Client Focus
- Leverage Technology to Develop and Enhance a Broad Business Perspective

Below are a definition and a taxonomy of elements for each broad business perspective competency

Taxonomy of AICPA Core Competencies (page 18 of 24)  
 Broad Business Perspective Competencies (continued)

**Strategic/Critical Thinking**

Critical thinking encompasses the ability to link data, knowledge, and insight together from various disciplines to provide information for decision-making. Being in tune with the “big picture” perspective is a necessary component for success. Individuals entering the accounting profession should be able to communicate to others the vision, strategy, goals, and culture of organizations.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Strategic/Critical Thinking</b>	<ul style="list-style-type: none"> <li>• Articulates the principles of the strategic planning process</li> <li>• Identifies and gathers data from a wide variety of sources for decision-making</li> <li>• Identifies uncertainties about an organization’s strengths, weaknesses, opportunities, and threats</li> </ul>	<ul style="list-style-type: none"> <li>• Transfers knowledge from one situation to another</li> <li>• Analyzes strategic information (e.g., market share, customer satisfaction, competitor actions, product innovation, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Considers strengths, weaknesses, opportunities, and threats in reaching conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• Develops, monitors, implements, and transforms business strategies over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 19 of 24)  
 Broad Business Perspective Competencies (continued)

**Industry/Sector Perspective**

Individuals entering the accounting profession should be able to identify (through research and analysis) the economics and broad business financial risks and opportunities of the industry and economic sector in which a given organization operates. Identification of these risks and opportunities should include both issues specific to the enterprise, as well as those pervasive throughout the industry/sector.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Industry/Sector Perspective</b>	<ul style="list-style-type: none"> <li>Identifies the economic, broad business, and financial risks of the industry/sector</li> </ul>	<ul style="list-style-type: none"> <li>Describes market forces that make a given organization a candidate for merger, acquisition, and/or strategic alliance</li> <li>Identifies and describes competitive advantages and disadvantages</li> </ul>	<ul style="list-style-type: none"> <li>Recommends courses of action that take advantage of an organization's key competitive advantages and disadvantages</li> <li>Communicates the financial and nonfinancial performance of an organization's operational processes</li> </ul>	<ul style="list-style-type: none"> <li>Effectively addresses changes in the economic, broad business, and financial risks of the industry/sector over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 20 of 24)  
 Broad Business Perspective Competencies (continued)

**International/ Global Perspective**

Individuals entering the accounting profession should be able to identify and communicate the variety of threats and opportunities of doing business in a borderless world. The accounting professional of the future must provide services to support and facilitate commerce in the global marketplace.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>International/ Global Perspective</b>	<ul style="list-style-type: none"> <li>Identifies global issues relevant to a business decision</li> <li>Describes uncertainties about the cultural and financial impacts of moving into new markets, and expanding existing markets</li> </ul>	<ul style="list-style-type: none"> <li>Identifies and analyzes the social costs and benefits of relevant decisions, including human and financial resource management, in the global marketplace/ environment</li> <li>Analyzes global customer and supplier demographics</li> <li>Analyzes the cultural and financial impacts of moving into new markets, and expanding existing markets</li> </ul>	<ul style="list-style-type: none"> <li>Modifies communications as appropriate for global settings</li> <li>Objectively considers and prioritizes global issues in reaching business decisions</li> </ul>	<ul style="list-style-type: none"> <li>Develops, implements, and monitors global business strategies</li> </ul>

Taxonomy of AICPA Core Competencies (page 21 of 24)  
 Broad Business Perspective Competencies (continued)

**Resource Management**

The ability to appreciate the importance of all resources (human, financial, physical, environmental, etc.) is critical for success. Individuals entering the accounting profession should be able to apply management and human resources development theories to human resource issues and organizational problems. Individuals preparing to enter the accounting profession should be able to identify sources of capital, and analyze the impact of participation in the global capital markets.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Resource Management</b>	<ul style="list-style-type: none"> <li>Identifies resources available to an organization</li> <li>Explains why there are uncertainties about the availability and alternatives uses of resources</li> </ul>	<ul style="list-style-type: none"> <li>Articulates how organizations make decisions to allocate scarce resources, including recognition of both quantitative and qualitative constraints on these decisions (Specific examples include decisions regarding capacity and resource utilization.)</li> <li>Identifies the effects of market forces on organizations’ costs of capital, labor, commodities, etc.</li> <li>Analyzes the implications of an organization’s lack of access to supply sources, financial markets, and intellectual capital (barriers to entry, expansion, or survival)</li> </ul>	<ul style="list-style-type: none"> <li>Articulates how resource availability affects the organization’s business functions, processes and administrative procedures</li> <li>Identifies both traditional and non-traditional performance criteria and measurement methods by selecting appropriate success factors and measures of their achievement (see functional competencies)</li> <li>Identifies and addresses the social costs and benefits of business decisions and evaluates the fiduciary performance of public sector and not-for-profit management</li> </ul>	<ul style="list-style-type: none"> <li>Facilitates analysis of the organization and applies continuous improvement principles to the organization</li> </ul>

Taxonomy of AICPA Core Competencies (page 22 of 24)  
 Broad Business Perspective Competencies (continued)

**Legal/Regulatory Perspective**

Regulatory forces are being shaped by collaboration, migration, and reform as the various stakeholders globalize, share information, and force their particular needs and viewpoints onto political agendas. Individuals preparing to enter the accounting profession need to be capable of describing the legal and regulatory environment and analyzing the impact of changes in relevant requirements, constraints, and competitive practices.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Legal/Regulatory Perspective</b>	<ul style="list-style-type: none"> <li>Identifies reasons why the legal/regulatory environment might change</li> <li>Identifies uncertainties about how an organization should respond to a legal/regulatory issue</li> </ul>	<ul style="list-style-type: none"> <li>Describes the legal and governmental/regulatory environment in which entities operate and the significant costs and benefits of regulation</li> <li>Identifies and explains the political and environmental forces impacting both the accounting standard setting process and the regulation of the profession; articulates the dynamic nature of these processes and recognizes their implications for organizations and the ways in which they operate</li> </ul>	<ul style="list-style-type: none"> <li>Develops reasonable policies and responses for legal/regulatory matters</li> </ul>	<ul style="list-style-type: none"> <li>Develops, monitors, and implements strategies for addressing potential threats and opportunities for the organization from changing legal requirements</li> </ul>

Taxonomy of AICPA Core Competencies (page 23 of 24)  
 Broad Business Perspective Competencies (continued)

**Marketing/Client Focus**

Individuals who are marketing- and client- focused are better able to anticipate and meet the changing needs of clients, employers, customers, and markets. This involves both the ability to recognize market needs and the ability to develop new markets.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Marketing/Client Focus</b>	<ul style="list-style-type: none"> <li>Identifies factors that motivate internal and external customers to enter into relationships or continue doing business with an organization</li> <li>Articulates uncertainties about relationships with internal and external customers</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes and understands employer/client protocol and expectations</li> </ul>	<ul style="list-style-type: none"> <li>Develops an effective plan for addressing a particular employer/client need</li> </ul>	<ul style="list-style-type: none"> <li>Builds good working relationships over time</li> <li>Generates new engagements for services over time</li> </ul>

Taxonomy of AICPA Core Competencies (page 24 of 24)  
 Broad Business Perspective Competencies (continued)

**Leverage Technology to Develop and Enhance a Broad Business Perspective**

Technology alters how organizations operate. To provide the greatest value, today’s accounting professional must understand and appreciate the effects of technology on the broader business environment.

	←Less Complex Elements		More Complex Elements→	
	Level 1—Identifying	Level 2—Exploring	Level 3—Prioritizing	Level 4—Integrating
Examples of Elements for: <b>Leverage Technology to Develop and Enhance a Broad Business Perspective</b>	<ul style="list-style-type: none"> <li>Recognizes commonly used information architectures</li> <li>Recognizes business opportunities and risks associated with electronic commerce</li> </ul>	<ul style="list-style-type: none"> <li>Mines electronic data sources for business and industry information</li> </ul>	<ul style="list-style-type: none"> <li>Develops and communicates reasonable recommendations for technology use in an organization</li> </ul>	<ul style="list-style-type: none"> <li>Uses technology to develop and present strategic information</li> <li>Adopts new technology over time</li> </ul>

## 9 Principles of Good Practice for Assessing Student Learning

*American Association for Higher Education (AAHE) ASSESSMENT FORUM*

1. **The assessment of student learning begins with educational values.** Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve. Educational values should drive not only *what* we choose to assess but also *how* we do so. Where questions about educational mission and values are skipped over, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.
2. **Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.** Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore firmer bases for improving our students' educational experience.
3. **Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.** Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations -- those derived from the institution's mission, from faculty intentions in program and course design, and from knowledge of students' own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.
4. **Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.** Information about outcomes is of high importance; where students "end up" matters greatly. But to improve outcomes, we need to know about student experience along the way -- about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.
5. **Assessment works best when it is ongoing not episodic.** Assessment is a process whose power is cumulative. Though isolated, "one-shot" assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the process of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.
6. **Assessment fosters wider improvement when representatives from across the educational community are involved.** Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians,

administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus understood, assessment is not a task for small groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. **Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.** Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.
8. **Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.** Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and worked at. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.
9. **Through assessment, educators meet responsibilities to students and to the public.** There is a compelling public stake in education. As educators, we have a responsibility to the publics that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation -- to ourselves, our students, and society -- is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

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## Resources

### Conferences and Workshops

AACSB International—Assessment seminars:

[http://www.aacsb.edu/resource\\_centers/assessment/professional-development.asp](http://www.aacsb.edu/resource_centers/assessment/professional-development.asp).

Assessment Institute—Indiana University-Purdue University Indianapolis:

<http://www.planning.iupui.edu/conferences/conferences.html>.

Alverno College Institute—seminars, workshops, and publications:

[http://www.alverno.edu/educators/ed\\_index.html](http://www.alverno.edu/educators/ed_index.html). Alverno's faculty and staff draw on more than 20 years experience with performance-based assessment and program and institutional assessment.

### Articles/Publications

American Institute of Certified Public Accountants (AICPA) Core Competency Framework Educational Competency Assessment Web Site. New York: AICPA. Available online: <http://eca.aicpaservices.org/>.

Note: You must register to access resources on this Web site; however, there are no restrictions or cost for registration. After registering and logging in, click on the Resources & Guidance button. Although these documents are oriented toward accounting competencies, the guidance can easily be adapted to other disciplines. If you would like to receive an email copy of any of the following individual documents, contact Susan Wolcott: [swolcott@WolcottLynch.com](mailto:swolcott@WolcottLynch.com):

- \* Overview of assessment methods
- \* Introduction to performance assessment
- \* Advanced performance assessment
- \* Assessment context, validity, and reliability
- \* Competency levels
- \* Designing your own competency elements
- \* Establishing desired learning outcomes
- \* Achieving competencies in a program
- \* Coursework design for competencies
- \* Focus of learning techniques

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*Assessment Update*—examples of assessment in practice and discussions of assessment trends (see: <http://www.planning.iupui.edu/publications/publications.html>).

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