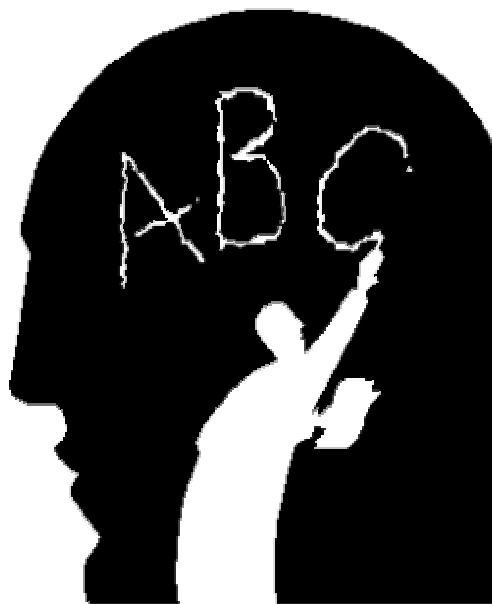


Student Learning Outcomes Institute



**Westerbeke Ranch, Sonoma
August 4, 5, 6, 2003**



Modesto Junior College

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Measuring Student Learning Outcomes

Bill Scroggins -- July 22, 2003

What are measurable student learning outcomes?

Measuring student learning outcomes, or SLOs, means determining if intended learning has actually occurred. Student learning includes the full breadth of education: acquisition of skills, mastery of concepts, and growth in life perspective. Can students titrate an acid? analyze market trends? express themselves creatively? Determining if the desired learning has occurred requires *objectives that are clearly defined in measurable terms*. Evaluating titration ability may be fairly straightforward, but what are the measurable indicators of creative expression? Challenging certainly, but those who teach in the creative arts make these determinations regularly.

Learning outcomes are *direct measures of learning*, distinct from indirect measures such as graduation rates, course completion rates or even course grades. Indirect indicators do have value to an institution, but that value is in evaluating productivity and the extent to which the college is accomplishing related portions of its mission.¹ In contrast, SLOs focus specifically on the individual's skills, knowledge, and values. The assessment process should be able to *distinguish between surface learning and deep learning*. We have all experienced the student who can regurgitate information on a quiz but then is not able to perform when that information must be applied. Being able to describe the factors to be evaluated in analyzing market trends does not show the same level of learning as actually making that analysis successfully using real world information. To effectively evaluate learning, *the tool used should be appropriate to the outcome being measured*. Answering multiple-choice questions to determine critical thinking is not an authentic measure of the student's actual ability to think critically.

SLOs are useful at all levels of the educational process: *individual classroom lessons, courses, programs, and college degrees*. Feedback right during class about the effectiveness of a new lesson plan can be powerful in helping an instructor produce the desired learning. Course outlines specify SLOs, but can we provide evidence of the extent to which students who pass a course have actually met these objectives? Employers expect our students to be ready to perform in the workplace, and universities expect our transfers to be ready to do upper division work. Moreover, for an associate degree we require a breadth of general education courses. What learning do we expect to take place in GE courses, and have we measured whether or not that learning has occurred?

Just gathering this information is not enough. The instructor must use classroom feedback to *improve* the lesson for the next time it is presented and, if the feedback shows that learning has not occurred satisfactorily, must try again until the objective is reached. If our programs do not produce students with the competencies that employers need, we must make adjustments. If we cannot be clear about the expected outcomes produced by general education, how can we expect the associate degree to be valued? Those of us who have devoted our lives to education know in our hearts the value of what we do. While it is daunting to be asked to justify the worth of the educational process, we should enter that domain with the assurance of a positive outcome, particularly when we, the educators, are given the opportunity to make the determination ourselves, rather than having externally imposed measurements shape our fate.

¹ For more on direct and indirect measures of student learning read "Methods of Assessment of Student Learning" by Peggy Maki of the American Association of Higher Education. (See MJC SLO Resource Book.)

What is “assessment of student learning outcomes” and why should we do it?

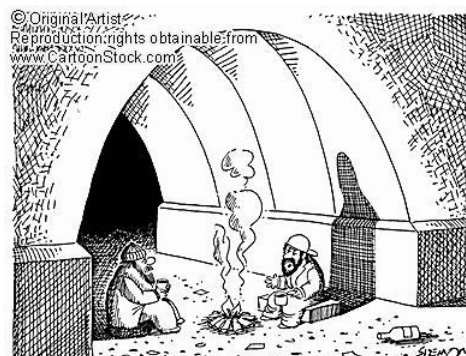
The teaching and learning process has as one of its core elements the assessment of student learning. The traditional focus of assessment has been on particular assignments culminating in a course grade with a collection of courses leading to a degree, credential or certificate. The assessment movement recognizes that assessment starts with individual assignments—but broadens the term to encompass the measurement of learning at the course, program, and college levels. Rather than assuming that knowledge and skills automatically result from the accretion process springing from individual assignments, the assessment movement seeks more global and comprehensive measures of cumulative learning.² How do we know when students finish a course that they have all the skills and abilities intended for that course? How do we know when a student completes a major that they have learned what is needed to succeed in that field? What abilities, talents, and attitudes do we expect students to have when they complete a general education pattern, and how do we know they have those traits?

• Aren't Grades Enough?

- Even if consistent evaluation of minimum course learning objectives was achieved, grades would still depend on factors in the hands of individual instructors (weight for assignments, importance of additional topics, etc.), and on student behavior (missed or late assignments, for example).

Several sources have contributed to the growing assessment movement.

- Our colleges and universities are educating an increasingly higher percentage of our population. These students bring a more diverse set of experiences and learning styles to our classrooms than ever before. Narrowly focused teaching methods are not as effective as they once were; hence the focus on a broader understanding of learning and thus also of teaching and assessment.
- The public and its elected representatives as well as employers are increasingly asking for evidence that education is both effective in producing needed learning and cost effective.
- Students are increasingly viewing themselves as customers and demanding evidence of the value of the educational product they are seeking.



“Personally, I haven't learned a damn thing from failure.”

• Academic Freedom and SLOs

- Course objectives in course outlines of record have been required outcomes for all instructors for some time. By extension, SLOs should also be considered “minimum conditions” for a course. Academic freedom protects free expression in the classroom, allowing instructors to present material in the manner they see fit. The *outcomes* of the learning process, however, remain a responsibility of the institution as a whole.

Within the higher education community, the assessment movement is seen as an educationally sound response to these concerns. Rather than having politicians setting curriculum policy or having funding based on measures not associated with learning, assessment is driven by educators attempting to strike an equilibrium between sound educational practice and evidence of productivity.

² If time permits, read the following book before coming to the Student Learning Outcomes Institute: “Effective Grading: A Tool For Learning and Assessment” by Barbara Walvoord and Virginia Johnson Anderson, Jossey-Bass (1998), ISBN 0787940305. (Chapters 1, 5, and 11 are particularly on point for our discussion.)

Exercise #1. Read the following resource documents and join in the group discussion on “Good Practices for Assessment of Student Learning Outcomes.”

“An Assessment Manifesto” by College of DuPage (IL)

“9 Principles of Good Practice for Assessing Student Learning” by AAHE

“Palomar College Statement of Principles on Assessment” from Palomar College (CA)

“Closing the Loop—Seven Common (Mis)Perceptions About Outcomes Assessment” by Tom Angelo

“Five Myths of ‘Assessment’” by David Clement, faculty member, Monterey Peninsula College

Exercise #2. Participate in the PowerPoint presentation “Accreditation Standards: A Brief Summary with Annotated Suggestions for MJC.” Darlene Pacheco, Associate Director of the Accrediting Commission for Community and Junior Colleges, will join us for a presentation.

What is the process for measuring student learning outcomes?

Several steps are involved in measuring SLOs:

- 1) Create written statements of measurable student learning outcomes.
- 2) Choose the measuring tool.
- 3) Set standards for levels of performance on each objective.
- 4) Identify observable factors that provide the basis for assessing which level of performance has been achieved on each objective.
- 5) Conduct norming sessions to assure acceptable inter-rater reliability.
- 6) Set benchmarks for successful student, course, program, or degree outcomes, including milestones to gradually move from current performance levels to the benchmark goal.
- 7) Evaluate student performance, assemble the data, and report the results.
- 8) Use the results to improve student learning.

These steps apply to designing measurable learning outcomes at the lesson, course, and program level. This series of exercises will begin at the course level and then expand to the program level. In addition, assessment of the teaching process itself is essential to continuously improving student learning. As a final set of exercises, we will explore methods to evaluate pedagogical approaches.

Course-Level Student Learning Outcomes

Creating Written Statements for Measurable Student Learning Outcomes

The first step is to write clear, measurable objectives. To make the point, consider the following objective from a typical course outline:

- Write well-organized, accurate and significant content.

Now compare this to one of the objectives in another course outline in the same department:

Write analytically and critically about assigned readings, demonstrating writing skills appropriate to competent academic expository writing. Students will be able to

1. state theses in demonstration of their understanding of the works read, limiting scope of topic and qualifying thesis statements as needed,
2. support assertions with sufficient and appropriate reference to primary and secondary sources,
3. maintain unity of thought and purpose in the development of their propositions,
4. provide for an organization which contributes to the purpose of the composition,
5. adapt writing strategies to the requirements of the writing occasion (e.g., to essay exam or other timed writing, writing for research papers),

6. exhibit skills of paragraph composition: sufficiency of development, coherence, unity of thought and purpose,
7. exhibit skills of sentence composition: variety of types appropriate to emphasis and thought, logic of conventions of grammar usage appropriate to academic writing,
8. exhibit skills of word use: adherence to conventions of spelling and meaning, use of diction that is precise, economical, and appropriate to academic discourse, and
9. exhibit skills of rewriting: proofreading for error and weakness or imprecision of expression, rethinking and reorganizing for clarity and improved focus.

Note that these objectives convey the basis on which the standard will be evaluated. For example, the adequacy of a sentence is measured by its “sufficiency of development, coherence, unity of thought and purpose.” The instructors of this course have *set standards of performance* that provide the basis to *identify observable factors* which allow the instructors to *assess the level of performance* on this objective. These italicized terms are steps in the SLO process that stem from the course objective.

Outcomes, to be measurable, require that the *conditions of performance* and the *success criteria* be specified. Compare these two statements:

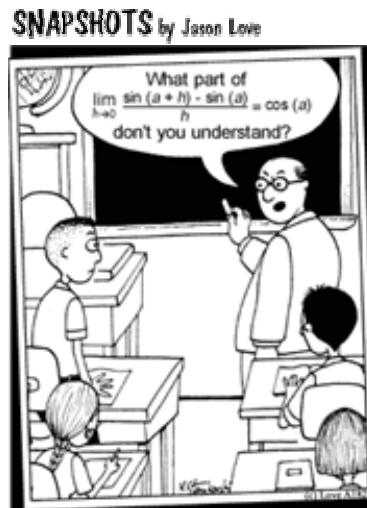
- Be able to successfully perform an acid-base titration. conditions of performance
 - Given appropriate equipment, a known solid standard acid, a standard base solution of approximate concentration, and a pure solid monoprotic acid, 1) standardize the base solution and 2) determine the molar mass of the solid acid. Minimum performance criterion is an accuracy of 10 ppt; 90% will perform at the 5 ppt level. success criteria
- observable factors

The second statement describes what each student will be given to work with (the chemicals and equipment) and the numerical results to be obtained. It also sets benchmarks for minimum individual performance (each student must be accurate to no less than 10 parts per thousand) and for class performance (9 out of 10 students will exceed the minimum standard and will show an accuracy of 5 ppt or better). More on benchmarks later.

Summary of Good Practices for Measurable Learning Outcomes

- Determine if conditions of performance must be specified
- Identify observable, measurable factors for each outcome
- Set standards of performance for each outcome

A note on how SLOs are conveyed for courses is appropriate here. The detail described above does not lend itself to inclusion in the official course outline of record. The information will be too voluminous, will change too frequently, and is much too specific to the subject being taught. It is more appropriate for the course outline to relate the intent of the *course objective*, as is commonly done now, and then have an ancillary document present the detail of the student learning outcomes. The chemistry course outline might have the following course objective about lab skills and then a list of the detailed SLOs attached:



Course Objective (in Course Outline): Students will be able to perform the following laboratory procedures: gravimetric analysis, acid-base titration, calorimetry, qualitative inorganic analysis, spectrophotometry, kinetic rate determination, and simple organic synthesis.

- **Distinction Between Course Objectives and SLOs**
- Course objectives in course outlines of record are global statements of the knowledge, skills, and attitudes students are expected to master upon successful completion of the course. Student Learning Outcomes are bridges to the assessment of learning and are much more detailed in specifying conditions, outcomes, and criteria for evaluation. (Characteristics of course objectives are described in the Academic Senate papers “Components of a Model Course Outline of Record” and “Stylistic Considerations in Writing Course Outlines of Record.”)

Exercise #3. Writing Student Learning Outcomes from Course Objectives³

For each of the following course objectives, write student learning outcomes in measurable terms. (An example is given in Part A.)

- A. Compare and contrast the major theoretical perspectives in psychology.

Given a particular behavior and its context (e.g., playing incessantly with one’s hair when under pressure in the presence of the opposite sex), describe how the perspectives of behaviorism, humanistic, psychoanalytic, and biological psychology would interpret that behavior and what methods might each use to alter that behavior. Include theoretical basis, description of causality, and treatment regimen.

- B. Prepare a graphic representation of data.

- C. Identify various drawing media and be able to determine the appropriate tool for the task.

- D. Define the theory of hydraulics as it relates to automatic transmissions.

³ If you brought course outlines from your department for use at the Student Learning Outcomes Institute, you may wish to substitute one or more of the course objectives from these course outlines for this Exercise.

Exercise #4. Student Learning Outcomes at the Lesson Level

Choose a lesson in a course you commonly teach. It can be a single lecture, a section from a chapter of the text, a lab/studio/shop/clinic exercise, or something similar. Be sure the topic is fairly focused. If you are with a colleague from the same department, pick a course and lesson with which you are both familiar, and then carry out the following tasks independently.

Make a list, in just general terms, of what you expect students to get out of that lesson. Now think about how you assess students to see if they learned what you expected. Write out a few questions, no more than 4 or 5, that you might put on a quiz, test, or lab report. Try to make the questions comprehensive of the scope of learning desired for the lesson. What do you typically look for in grading each of these questions? Make a few notes on grading expectations for each question.

Now write learning outcomes for the lesson. Try to pick the most important 2 or 3. First write the objectives in topical format like “be able to perform an acid-base titration.” Then write each in measurable SLO form.

Compare notes with your colleagues.

- Do the objectives you wrote address the same fundamental learning areas?
- Do the sample questions reflect how each of you would ask students to demonstrate their learning? Look for similarities, differences, and approaches you had not thought about.
- For the questions that are similar, do you all grade about the same? If not, do the differences reflect a different level of expected learning?
- Evaluate each others’ written learning outcomes. Are they specific enough? Are they measurable? Do they include performance levels and/or benchmarks for class performance?
- As a group, come to consensus on a set of specific, measurable learning outcomes for the lesson.

Choose the Tool for Measuring Learning

The second step is to determine the tool you will use to measure learning. The method should match the type of learning expected. Several techniques are described below.

Course Embedded Assessment

This strategy acknowledges that most of our courses have specific evaluations of learning outcomes already in our curriculum design. It makes sense to begin with existing assessment of student learning and be sure that the key elements of valid, authentic assessment are present.

Characteristics of Valid and Authentic Assessment of Course Level Learning Outcomes

- The assessment method is comprehensive of the learning outcome.
- The level of learning assessed is appropriate to the learning outcome.
- The evaluation criteria are clear and are consistently applied across sections.
- Multiple methods, varying in learning style, are used to assess the learning outcome.

The embedded method can be standardized questions constituting part of a comprehensive exam, a performance demonstration of a set of skills, a writing assignment, or any of the typical methods of testing student learning. The “value added” to one of these methods in becoming a “course embedded assessment” lies in the clear connection to the course objectives, appropriateness of the tool to the level of learning desired, consistency of evaluation both from student to student and among instructors teaching the same course, and in the ability to report these assessment results to the wider college community.

Tools for Course Embedded Assessment

A variety of methods are available for assessing student learning—from standardized tests to skills demonstrations to portfolios. These tools differ in their evaluation techniques, appropriateness and effectiveness of measuring the type of learning sought, and approaches needed to obtain a degree of consistency in applying the assessment. The following is a partial list of such tools.⁴ (Read “The Case for Authentic Assessment” on the following page.)

Capstone Project/Course—a project or courses which, in addition to a full complement of instructional objectives, also serves as primary vehicle of student assessment for the course or program.

Criterion-Referenced Tests—a measurement of achievement of specific criteria or skills in terms of absolute levels of mastery. The focus is on performance of an individual as measured against a standard or criteria rather than against performance of others who take the same test, as with norm-referenced tests.

Norm-Referenced Test—an objective test that is standardized on a group of individuals whose performance is evaluated in relation to the performance of others; contrasted with criterion-referenced test.

Portfolio—a collection of student work organized around a specific goal, e.g., set of standards or benchmarks or instructional objectives); it can contain items such as handouts, essays, rough drafts, final copies, artwork, reports, photographs, graphs, charts, videotapes, audiotapes, notes, anecdotal records, and recommendations and reviews; each item in the portfolio provides a portion of the evidence needed to show that the goal has been attained.

Performance Assessments—activities in which students are required to demonstrate their level of competence or knowledge by creating a product or response scored so as to capture not just the “right answer”, but also the reasonableness of the procedure used to carry out the task or solve the problem.

Rating Scales—subjective assessments made on predetermined criteria in the form of a scale. Rating scales include numerical scales or descriptive scales. Forced choice rating scales require that the rater determine whether an individual demonstrates more of one trait than another.

Simulation—a competency based measure whereby pre-operationalized abilities are measured in most direct, real-world approach. Simulation is primarily utilized to approximate the results of performance appraisal, but when—due to the target competency involved, logistical problems, or cost—direct demonstration of the student skill is impractical.

⁴ From “A Glossary of Measurement Terms” ERIC Digest. <http://ericae.net/edo/ed315430.htm> and the Temple University “Teachers Connection.” www.temple.edu/CETP/temple_teach/ and the “Assessing the Work of E-Teams” by Mary Besterfield-Sacre of the University of Pittsburgh www.nciia.org/CD/public/htmldocs/papers/p_and_j.pdf

The Case for Authentic Assessment by Grant Wiggins (<http://ericae.net/edo/ED328611.htm>)

WHAT IS AUTHENTIC ASSESSMENT?

Assessment is authentic when we directly examine student performance on worthy intellectual tasks. Traditional assessment, by contract, relies on indirect or proxy "items"--efficient, simplistic substitutes from which we think valid inferences can be made about the student's performance at those valued challenges.

Do we want to evaluate student problem-posing and problem-solving in mathematics? experimental research in science? speaking, listening, and facilitating a discussion? doing document-based historical inquiry? thoroughly revising a piece of imaginative writing until it "works" for the reader? Then let our assessment be built out of such exemplary intellectual challenges.

Further comparisons with traditional standardized tests will help to clarify what "authenticity" means when considering assessment design and use:

- Authentic assessments require students to be effective performers with acquired knowledge. Traditional tests tend to reveal only whether the student can recognize, recall or "plug in" what was learned out of context. This may be as problematic as inferring driving or teaching ability from written tests alone. (Note, therefore, that the debate is not "either-or": there may well be virtue in an array of local and state assessment instruments as befits the purpose of the measurement.)
- Authentic assessments present the student with the full array of tasks that mirror the priorities and challenges found in the best instructional activities: conducting research; writing, revising and discussing papers; providing an engaging oral analysis of a recent political event; collaborating with others on a debate, etc. Conventional tests are usually limited to paper-and-pencil, one- answer questions.
- Authentic assessments attend to whether the student can craft polished, thorough and justifiable answers, performances or products. Conventional tests typically only ask the student to select or write correct responses--irrespective of reasons. (There is rarely an adequate opportunity to plan, revise and substantiate responses on typical tests, even when there are open-ended questions). As a result,
- Authentic assessment achieves validity and reliability by emphasizing and standardizing the appropriate criteria for scoring such (varied) products; traditional testing standardizes objective "items" and, hence, the (one) right answer for each.
- "Test validity" should depend in part upon whether the test simulates real-world "tests" of ability. Validity on most multiple-choice tests is determined merely by matching items to the curriculum content (or through sophisticated correlations with other test results).
- Authentic tasks involve "ill-structured" challenges and roles that help students rehearse for the complex ambiguities of the "game" of adult and professional life. Traditional tests are more like drills, assessing static and too-often arbitrarily discrete or simplistic elements of those activities.

Beyond these technical considerations the move to reform assessment is based upon the premise that assessment should primarily support the needs of learners. Thus, secretive tests composed of proxy items and scores that have no obvious meaning or usefulness undermine teachers' ability to improve instruction and students' ability to improve their performance. We rehearse for and teach to authentic tests--think of music and military training--without compromising validity.

The best tests always teach students and teachers alike the kind of work that most matters; they are enabling and forward-looking, not just reflective of prior teaching. In many colleges and all professional settings the essential challenges are known in advance--the upcoming report, recital, Board presentation, legal case, book to write, etc. Traditional tests, by requiring complete secrecy for their validity, make it difficult for teachers and students to rehearse and gain the confidence that comes from knowing their performance obligations. (A known challenge also makes it possible to hold all students to higher standards).

WHY DO WE NEED TO INVEST IN THESE LABOR-INTENSIVE FORMS OF ASSESSMENT?

While multiple-choice tests can be valid indicators or predictors of academic performance, too often our tests mislead students and teachers about the kinds of work that should be mastered. Norms are not standards; items are not real problems; right answers are not rationales.

What most defenders of traditional tests fail to see is that it is the form, not the content of the test that is harmful to learning; demonstrations of the technical validity of standardized tests should not be the issue in the assessment reform debate. Students come to believe that learning is cramming; teachers come to believe that tests are after-the- fact, imposed nuisances composed of contrived questions--irrelevant to their intent and success. Both parties are led to believe that right answers matter more than habits of mind and the justification of one's approach and results.

A move toward more authentic tasks and outcomes thus improves teaching and learning: students have greater clarity about their obligations (and are asked to master more engaging tasks), and teachers can come to believe that assessment results are both meaningful and useful for improving instruction.

If our aim is merely to monitor performance then conventional testing is probably adequate. If our aim is to improve performance across the board then the tests must be composed of exemplary tasks, criteria and standards.

WON'T AUTHENTIC ASSESSMENT BE TOO EXPENSIVE AND TIME-CONSUMING?

The costs are deceptive: while the scoring of judgment-based tasks seems expensive when compared to multiple-choice tests (about \$2 per student vs. 1 cent) the gains to teacher professional development, local assessing, and student learning are many. As states like California and New York have found (with their writing and hands-on science tests) significant improvements occur locally in the teaching and assessing of writing and science when teachers become involved and invested in the scoring process.

If costs prove prohibitive, sampling may well be the appropriate response--the strategy employed in California, Vermont and Connecticut in their new performance and portfolio assessment projects. Whether through a sampling of many writing genres, where each student gets one prompt only; or through sampling a small number of all student papers and school-wide portfolios; or through assessing only a small sample of students, valuable information is gained at a minimum cost. And what have we gained by failing to adequately assess all the capacities and outcomes we profess to value simply because it is time-consuming, expensive, or labor-intensive? Most other countries routinely ask students to respond orally and in writing on their major tests--the same countries that outperform us on international comparisons. Money, time and training are routinely set aside to insure that assessment is of high quality. They also correctly assume that high standards depend on the quality of day-to-day local assessment--further offsetting the apparent high cost of training teachers to score student work in regional or national assessments.

WILL THE PUBLIC HAVE ANY FAITH IN THE OBJECTIVITY AND RELIABILITY OF JUDGMENT-BASED SCORES?

We forget that numerous state and national testing programs with a high degree of credibility and integrity have for many years operated using human judges:

- the New York Regents exams, parts of which have included essay questions since their inception--and which are scored locally (while audited by the state);
- the Advanced Placement program which uses open-ended questions and tasks, including not only essays on most tests but the performance-based tests in the Art Portfolio and Foreign Language exams;
- state-wide writing assessments in two dozen states where model papers, training of readers, papers read "blind" and procedures to prevent bias and drift gain adequate reliability;
- the National Assessment of Educational Progress (NAEP), the Congressionally-mandated assessment, uses numerous open-ended test questions and writing prompts (and successfully piloted a hands-on test of science performance);
- newly-mandated performance-based and portfolio-based state-wide testing in Arizona, California, Connecticut, Kentucky, Maryland, and New York.

Though the scoring of standardized tests is not subject to significant error, the procedure by which items are chosen, and the manner in which norms or cut-scores are established is often quite subjective--and typically immune from public scrutiny and oversight.

Genuine accountability does not avoid human judgment. We monitor and improve judgment through training sessions, model performances used as exemplars, audit and oversight policies as well as through such basic procedures as having disinterested judges review student work "blind" to the name or experience of the student--as occurs routinely throughout the professional, athletic and artistic worlds in the judging of performance.

Authentic assessment also has the advantage of providing parents and community members with directly observable products and understandable evidence concerning their students' performance; the quality of student work is more discernible to laypersons than when we must rely on translations of talk about stanines and renorming.

Ultimately, as the researcher Lauren Resnick has put it, What you assess is what you get; if you don't test it you won't get it. To improve student performance we must recognize that essential intellectual abilities are falling through the cracks of conventional testing.

Exercise #5. Course Embedded Assessment

Read the resource document “Course Embedded Assessment” by Larry Kelley. Within your discipline group, discuss the “Assessment Measures and Techniques in the Program Assessment Plan Samples” in this document. Answer each of the following questions, each time addressing why the criterion is or is not met and, if not met, how you would change the method.

- Do they thoroughly cover the stated Intended Outcome?
- Is the tool appropriate to the outcome and will deep learning be measured?
- Does the method specify how consistency will be assured?
- Will the method allow for multiple methods of assessment?

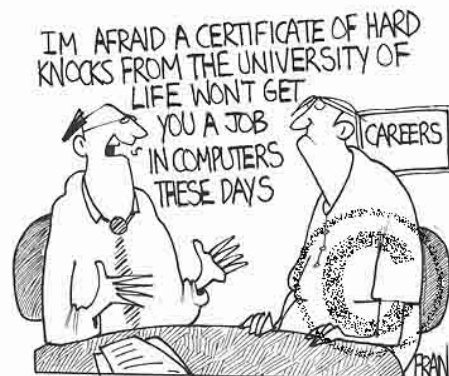
Exercise #6. Embedding Assessment in Your Course

Within your discipline group, choose a course with which you are all familiar.⁵ Identify a learning objective for that course and discuss how you evaluate student learning for that objective. Create a partial “Assessment Plan” for that course by describing the “Assessment Measure(s) and Technique(s)” and the “Assessment Criteria” as in the Larry Kelly examples. For your assessment method, answer the same questions as posed above in Exercise #4.

Approval Process for Assessment Plans
Consideration should be given to a formal approval process for course assessment plans. Options include the curriculum approval process, departmental approval, or use of the program review process. Assessment plans should be considered part of the course curriculum and thus policies and procedures for Assessment Plans are academic and professional matters subject to collegial consultation with the academic senate.

Rubrics

When we grade a student assignment, we look for particular elements that the student has demonstrated and evaluate the extent to which the student has presented that element. The element of the answer may be present or absent and, if present, may be excellent, good, satisfactory, or unsatisfactory. Based on this analysis, we award points or grades or in some other way identify how this particular assignment contributes to the overall course grade. We attempt to grade “fairly” by applying this grading method, or *rubric*, consistently to all student work.



⁵ If you did not have an opportunity to bring course outlines from your department for use at the Student Learning Outcomes Institute, your facilitator will have a collection of course outlines from several departments for you to use in this Exercise.

In attempting to improve the use of rubrics in our classes, we have several goals:

- Assuring that the methods and criteria for assessment are good matches to the learning objective we are attempting to measure. This is a matter of improving faculty skills in designing testing devices and the accompanying evaluation processes. (These are the first two bullets in “Characteristics of Valid and Authentic Assessment of Course Level Learning Outcomes.”)
- Assuring that students are evaluated consistently no matter which section of a course they are taking. This is a matter of improving consistency of grading among faculty teaching the same course. (This is the third bullet in the list.)
- Obtaining feedback on the effectiveness of our teaching. Knowing the areas in which students struggle to learn helps us to focus on improving our teaching in those areas.
- Measuring the extent to which program level learning outcomes are being achieved. The results of course assessments can be connected to global objectives which we feel are essential for students to complete a program and be competent at the next level, be that in the workplace or at the transfer college.
- Meeting external standards such as regional accreditation, program certification, and public awareness of and confidence in community colleges.

SNAPSHOTS by Jason Love



"And later today we'll have a surprise test."

Exercise #7. The Basics of Rubrics

Read “Using Scoring Rubrics” (developed by CSU Fresno). Then review these examples:

- The rubrics at the end of “Course Embedded Assessment” by Larry Kelley.
- “Grading Standards: Written Work for ‘The Living Environment’” from Southern Illinois University.
- “Assessment Modeling Projects in Calculus and Precalculus” by C. E. Emenaker of the University of Cincinnati.

If you are viewing this document online, look at the following **examples of rubrics**:

Persuasive Research Report	Essay / Report / Panel Discussion
Collaboration	Music Composition
HyperStudio Stack	Journal
Web page	Performance Assessment
Firsthand Biography	Online Newspaper

In your small groups, discuss an assignment for which you would use a rubric to assess student learning. Construct that rubric and share it with the entire group.

Inter-Rater Reliability

The goal of consistency of evaluation means that instructors need to reach consensus on the observable traits in a student assignment and how they relate to the criteria for assessment established in the rubric. In other words, the scoring of student work using the rubric should reliably produce the same result. This standard is known as “inter-rater reliability.” A word of caution is worth noting here. While this process produces agreement on the results of assessing student assignments, it does not impose uniformity of grading. The correlation of the rubric result with points assigned as well as the weight that each instructor gives to the assignment in determining the final course grade are both up to the individual instructor.

Faculty Participation in Use of Normed Rubrics

- The effectiveness of normed rubrics depends to some degree on the extent to which faculty across sections of a course use them consistently. Not all faculty will “buy in” to the process, but several steps can be taken to reduce resistance.
- Rubrics and norming should be faculty driven processes.
- While grading is a basic task in the job descriptions of all faculty, reasonable compensation should be provided for the faculty leadership necessary to carry through on the task.
- Adjunct faculty participation in extra duty tasks such as norming session should be expected and compensated.

Exercise #8. Using Rubrics: Inter-Rater Reliability

Back in your small groups, prepare a lesson of approximately 10 minutes duration which culminates in a short assignment to be evaluated using the rubric you developed in Exercise #7. Select one of your group to present the lesson and the assignment to one of the other small groups. Now have each member of your group assess the completed assignments using the rubric. Share your evaluations with one another and attempt to resolve any differences. Make an oral report on this process to the entire group.

Program Level Student Learning Outcomes

Programs are more than a collection of random courses. Each program prepares students for a goal, such as transfer to a university or entering the workforce, with a definite set of skills, knowledge, and attitudes. Program level student learning outcomes state these results in measurable terms.

Program SLOs are typically broader than those at the course level. In addition, they tend to emphasize integrating skills into an interrelated set and often put more stress on real world applications that provide a bridge to the student’s next experience on the job or in upper division study. Two examples will illustrate these points.



Theatre, Parkland Community College (IL)

- Outcome** Theatre students will demonstrate foundation skills necessary to successfully complete a bachelor’s degree in theatre at a college or university with competitive juried acceptance provisions.
- Criteria** 100% of theatre transfer students will demonstrate audition skills that will be evaluated as satisfactory or above by Parkland Theatre faculty and an external panel of two guest representatives of 4-year institutions.
- Method** The Parkland Theatre student audition evaluation form will be used for audition assessments.

an example of performance assessment

Mathematics, California State University San Bernardino

Outcome	Students can analyze problems using mathematical definitions and criteria.
Criteria	Students must demonstrate knowledge of mathematical definitions associated with such mathematical concepts as groups, rings, homomorphisms, automorphisms, open and closed sets, accumulation points, continuity and the theory of differentiation. They must be able to identify relevant definitions, and use them in the logical construction of a valid solution.
Method	The assessment procedure for undergraduates for the above objectives will be based primarily on the principle of "embedded questions" in the final examinations in a number of core courses. Designated departmental committees will draw up a list of at least 10 problems for each of these courses. At least one of these questions will be included in the final of the corresponding course. The questions will be chosen so that their solutions reflect the students' achievements in the appropriate objectives. In order to ensure consistency of grading, the committees will predetermine a detailed grading scheme for each of the questions in the lists.

an example of use of rubrics

an example of embedded test questions

These two examples use assessment tools that were discussed in the section on “Tools for Course Embedded Assessment” above. Because program level assessment looks at outcomes at the end of the student’s educational experience, additional tools are available, some as direct measures of student learning and some indirect.⁶

Commercial, Norm-Referenced, Standardized Exams—are group administered, mostly or entirely multiple-choice, “objective” tests in one or more curricular areas. Scores are based on comparison with a reference or norm group. Typically must be obtained (purchased) from a private vender.

External Exams for Credentials and Licenses—are required by the state to perform professional services in nursing, cosmetology, auto repair and the like.

Exit Interviews—ask individuals to share their perceptions of their own attitudes and/or behaviors or those of others. Evaluating student reports of their attitudes and/or behaviors in a face-to-face interrogative dialogue.

Surveys and Questionnaires—ask individuals to share their perceptions of their own attitudes and/or behaviors or those of others. Includes direct or mailed, signed or anonymous.

In addition, many professional associations have provided guidance to departments on learning objectives for the undergraduate major. The American Psychological Association has recently produced a report outlining ten goals with detailed objectives for each.

Undergraduate Psychology Major Learning Goals and Outcomes

Knowledge, Skills, and Values Consistent with the Science and Application of Psychology

Goal 1. Knowledge Base of Psychology

Students will demonstrate familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology.

Goal 2. Research Methods in Psychology

Students will understand and apply basic research methods in psychology, including research design, data analysis, and interpretation.

⁶ Definitions are from “Assessing the Work of E-Teams” by Mary Besterfield-Sacre of the University of Pittsburgh. This paper also evaluates each of these assessment methods, giving advantages, disadvantages, ways to reduce disadvantages, examples, references, and a “bottom line” summary.

Goal 3. Critical Thinking Skills in Psychology

Students will respect and use critical and creative thinking, skeptical inquiry, and, when possible, the scientific approach to solve problems related to behavior and mental processes.

Goal 4. Application of Psychology

Students will understand and apply psychological principles to personal, social, and organizational issues.

Goal 5. Values in Psychology

Students will be able to weigh evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinnings of psychology as a discipline.

Knowledge, Skills, and Values Consistent with Liberal Arts Education that are Further Developed in Psychology**Goal 6. Information and Technological Literacy**

Students will demonstrate information competence and the ability to use computers and other technology for many purposes.

Goal 7. Communication Skills

Students will be able to communicate effectively in a variety of formats.

Goal 8. Sociocultural and International Awareness

Students will recognize, understand, and respect the complexity of sociocultural and international diversity.

Goal 9. Personal Development

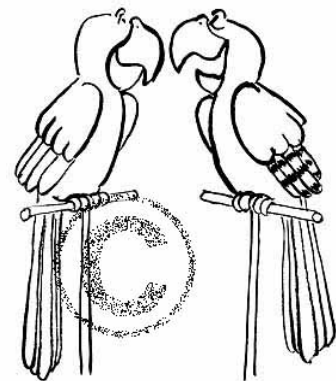
Students will develop insight into their own and others' behavior and mental processes and apply effective strategies for self-management and self-improvement.

Goal 10. Career Planning and Development

Students will emerge from the major with realistic ideas about how to implement their psychological knowledge, skills, and values in occupational pursuits in a variety of settings.⁷

Program Assessment Plans

To measure student learning for a comprehensive program, departments can identify a set of expected outcomes which, taken as a whole, reflect what core concepts, abilities, and values students should have upon completion of the program. Each of these outcomes should have associated measurable criteria and one or more assessment tools to gather the data. The results of these assessments should be collected and analyzed regularly. This information should be used to continuously improve student learning. An example of such a Program Assessment Plan is included on the next page.



"He spent all morning trying to teach me my own name."

⁷ "Undergraduate Psychology Major Learning Goals And Outcomes: A Report" American Psychological Association. <http://www.apa.org/ed/guidehomepage.html>

Parkland College Academic Program Assessment

October 31, 2002 (Excerpts)

Department: Computer Science and Information Technology
 Program: Computer Information Systems: Microcomputer Support Specialist/ Programming Specialization
 Assessment Methods: Direct Assessment Measures

<input type="checkbox"/> Pre/Post Tests	<input type="checkbox"/> Capstone exam/project	<input type="checkbox"/> Primary Trait Analysis
<input checked="" type="checkbox"/> Course Embedded Test	<input type="checkbox"/> Standardized Exams	<input type="checkbox"/> Professional Certification
<input type="checkbox"/> Portfolios	<input type="checkbox"/> Performance Assessment	<input type="checkbox"/> Other

Indirect Assessment Measures

<input type="checkbox"/> Focus Groups	<input checked="" type="checkbox"/> Grad Surveys/Interviews	<input checked="" type="checkbox"/> Employer/Faculty Surveys
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<p>Intended Outcome(s): 1. Graduates from this program will have acquired knowledge and skills needed for entry-level positions in a variety of computer-related fields.</p>	<p>Assessment Criteria: 1.a. When surveyed, employers of our interns will rate 80% of the students with an average of 4.5 on a scale of 1-5. The rating will be composed of 14 skill areas each rated on a scale of 1-5.</p>
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<p>Results: 1.a.1. Fall 2000: Two students fell under the 4.5 rating. 80% of the interns received an average score of 4.5 or higher. The weakest area was identified as "Ability to Plan," which received an average score of 4.29.</p> <p>1.a.2. Spring 2002 Five students took CIS 298: CIS Work Experiences in Spring 2002. Employers for all 5 returned surveys.</p>	<p>Analysis and Action: 1.a.1. Fall 2000 data analyzed in Spring 2001: This indirect measure is not providing the results anticipated. The committee proposes making changes to the survey to make it a more valuable assessment tool. In addition, information will be given to the instructors in CIS 297-CIS seminar and CIS 231- Systems Analysis, Design and Administration to enhance course content to encourage students to strengthen their "ability to plan." A direct measure to show "ability to plan" will be included in the capstone tests given near the completion of the program. (See 1.c.)</p> <p>1.a.2. Spring 2002 Students did well overall in every area. The lowest marks came in the "ability to plan" area with 1- Excellent, 4- Good ratings. Suggestions have been made for providing additional information in CIS 297: Seminar and CIS 231:Systems Analysis, Design and Administration.</p>
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<p>Intended Outcome(s): 1. (continued)</p>	<p>Assessment Criteria: 1.d. 90% of students will score 80% or higher on a standard, capstone test to be administered near to their completion of program.</p>
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<p>Results: 1.d.1. Fall 1999: The percentage of those students giving the right answers ranged from 13% on the question that the fewest answered correctly to 87% on the question answered correctly by the most students.</p>	<p>Analysis and Action: 1.d.1. Fall 1999 data analyzed in Spring 2000: Faculty met and determined that the pilot instrument needed to be changed to gather more accurate results. Students seemed confused by the questionnaire and we felt the results were not valid enough.</p>
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<p>Intended Outcome(s): 1. (continued)</p>	<p>Assessment Criteria: 1.e. All students in the introductory level required courses for all CIS programs (101 and 117) will be given a set of five questions to be graded with the final exam. Students completing their final courses in CIS will be given 10 questions.</p>
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<p>Results: 1.e.1. Fall 2000: Data was collected and reviewed for CIS 101 and CIS 117. 143 students answered questionnaires in 101 with an average score of 84%. 39 students answered questionnaires in 117 with an average score of 90%.</p> <p>1.e.2. Spring 2001: Data was collected at the end of the semester for CIS 101 and CIS 117. 105 students for CIS 101 had an average score of 86%. 41 students for CIS 117 had an average score of 96%.</p> <p>1.e.3. Fall 2001: Data was collected from CIS 101 and CIS 117. 118 students for CIS 101 had an average score of 86%. 38 students for CIS 117 had an average score of 98%.</p>	<p>Analysis and Action: 1.e.2. Spring 2001: Overall scores for CIS 101 improved by 2%. The weakest question in CIS 101 was identified. 25% of students missed the question about how to save files using Save vs. Save As. Instructors were encouraged to spend more time on this topic and the question was reworded to be easier to read for the next semester's assessment test. Overall scores for CIS 117 improved by 3%.</p> <p>1.e.3. Fall 2001: Overall scores for CIS 101 stayed the same as the previous semester. The rewording of the question about saving indicated that fewer instructors were thoroughly teaching the concept of saving vs. the save as command. 29% of the students answered the question about saving incorrectly. A memo was sent out to all instructors outlining what students need to learn in CIS 101 pertaining to the save and save as command. Scores for CIS 117 improved by 2%.</p>
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Program Audits

With a set of program SLOs in hand, it is useful to analyze which courses in the department include that material. Such “program audits” are usefully displayed in tabular form as shown below.⁸

Table 1: Curriculum Audit Grid*

Outcomes	Course										
	201	202	205	207	251	260	313	314	320	...	425
1 Recognize and articulate approaches to psychology.	I							E			R
2 Independently design valid exper/corr. Research			I	E					R		
3 Articulate a philosophy of psych/Christian integration	I	I		R	R	R	R	R	R	R	E
4 etc.											

*Modeled after Hatfield (1999) I = Introduced E = Emphasized R = Reinforced

Note that this example includes the ratings “Introduced,” “Emphasized,” and “Reinforced” showing that expectations for student mastery of a particular learning outcome may evolve over the course of a program. It may be that the same assessment tool is used in each of these courses to measure student progress on that learning outcome but perhaps with different performance expectations.

Assessment of General Education

General education is a central part of the associate degree. Requirements are organized by topic areas based primarily on two systems: the CSU General Education-Breadth categories⁹ and the areas specified in Title 5 of the California Code of Regulations.¹⁰

CSU General Education-Breadth Areas	Title 5 Associate Degree GE Areas
Area A: Communication in the English Language & Critical Thinking A1. Oral Communication A2. Written Communication A3. Critical Thinking Area B: Physical Universe and Its Life Forms B1. Physical Science B2. Life Science B3. Laboratory Activity B4. Mathematics/Quantitative Reasoning Area C: Arts, Literature, Philosophy and Foreign Languages C1. Arts (Art, Dance, Music, Theater) C2. Humanities (Literature, Philosophy, Foreign Languages) Area D: Social, Political, and Economic Institutions and Behavior; Area E: Lifelong Understanding and Self-Development	A. Natural Sciences B. Social and Behavioral Sciences C. Humanities D. Language and Rationality D1. English Composition D2. Communication and Analytical Thinking

Several community colleges have identified student learning outcomes for general education topics. Examples from Palomar¹¹ and Isothermal¹² Colleges are cited on the next page.

⁸ From “A Program Guide for Outcomes Assessment” Geneva College (PA)

⁹ CSU Executive Order 595 “General Education-Breadth Requirements”

¹⁰ Title 5, Section 55806 of the California Code of Regulations “Minimum Requirements for the Associate Degree”

¹¹ “Benchmarks for Core Skills” from Palomar College (CA)

¹² “Assessment Plan/Progress Report For Curriculum Outcomes Assessment” Isothermal Community College (NC)

General Education Student Learning Outcomes

Palomar College	Isothermal Community College
<p>A. Communication Students will communicate effectively in many different situations, involving diverse people and viewpoints.</p> <ol style="list-style-type: none"> 1. Listening: Students will listen actively and respectfully to analyze the substance of others' comments. 2. Speaking: Students will speak in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion. 3. Reading: Students will read effectively and analytically and will comprehend at the college level. 4. Writing: Students will write in an understandable and organized fashion to explain their ideas, express their feelings, or support a conclusion. <p>B. Cognition Students will think logically and critically in solving problems; explaining their conclusions; and evaluating, supporting, or critiquing the thinking of others.</p> <ol style="list-style-type: none"> 1. Problem Solving: Students will identify and analyze real or potential problems and develop, evaluate, and test possible solutions, using the scientific method where appropriate. 2. Creative Thinking: Students will formulate ideas and concepts in addition to using those of others. 3. Quantitative Reasoning: Students will use college-level mathematical concepts and methods to understand, analyze, and explain issues in quantitative terms. 4. Transfer of Knowledge and Skills to a New Context: Students will apply their knowledge and skills to new and varied situations. <p>C. Information Competency Students will use printed materials, personal communications, observation, and electronic resources to find and evaluate information.</p> <ol style="list-style-type: none"> 1. Research: Students will do research at a level that is necessary to achieve personal, professional, and educational success. 2. Technological Competency: Students will use technological applications to find, organize, and present information effectively. <p>D. Social Interaction Students will interact with individuals and within groups with integrity and awareness of others' opinions, feelings and values.</p> <ol style="list-style-type: none"> 1. Teamwork: Students will participate effectively in teams, committees, task forces, and in other group efforts to make decisions and seek consensus. <p>E. Aesthetic Responsiveness Students will produce or respond to artistic and creative expression.</p> <p>F. Personal Development and Responsibility Students will develop individual responsibility, personal integrity, and respect for diverse people and cultures.</p> <ol style="list-style-type: none"> 1. Self-management: Students will demonstrate habits of intellectual exploration, personal responsibility, and physical well being. 2. Respect for Diverse People and Cultures: Students will interact respectfully in groups whose membership includes such diverse human traits as language, culture, and physical ability. <p>Note: Outcome statements are further refined into Beginner, Developed, and Accomplished categories.</p>	<p>Writing Competency Criteria</p> <ul style="list-style-type: none"> • Demonstrate the ability to achieve the intended purpose in the writing task. • Demonstrate the ability to organize ideas effectively. • Demonstrate competence in mechanics and style • Demonstrate the ability in the essay and the research paper to fully and specifically develop ideas. • Demonstrate the ability in the research paper to incorporate and document borrowed information correctly. <p>Reading Competency Criteria</p> <ul style="list-style-type: none"> • Demonstrate ability to comprehend text. • Demonstrate critical thinking skills. • Demonstrate ability to evaluate text. <p>Speaking Competency Criteria</p> <ul style="list-style-type: none"> • Demonstrate competence in a variety of academic and/or professional speaking situations. • Demonstrate competence in the use of language. • Demonstrate competence in voice control. • Demonstrate preparation in the nonverbal communication of the message. • Demonstrate competence speaking in small groups. <p>Listening Competency Criteria</p> <ul style="list-style-type: none"> • Demonstrate good general listening skills between individuals and within large and small groups. • Demonstrate satisfactory listening skills in an academic situation. <p>Information Literacy Competency Criteria</p> <ul style="list-style-type: none"> • Determine the nature and extent of the information needed. • Access needed information effectively and efficiently. • Evaluate information and its sources critically and incorporate selected information into own knowledge base and value system. • Individually or as a member of a group, use information effectively to accomplish a specific purpose. • Understand many of the legal and social issues surrounding the use of information; access and use information ethically and legally. <p>Problem Solving Criteria</p> <ul style="list-style-type: none"> • Demonstrate an understanding of problem analysis. • Demonstrate data retrieval. • Use data effectively. • Arrive at logical conclusions. <p>Interpersonal Skills Criteria</p> <ul style="list-style-type: none"> • Keep the group on task. • Support/praise. • Encourage participation. • Check for understanding. <p>Quantitative Skills Criteria</p> <ul style="list-style-type: none"> • Demonstrate the ability to perform basic arithmetic skills. • Demonstrate the capability to use well-defined processes/models to solve quantitative problems. • Demonstrate the use of quantitative language in written communication. • Demonstrate the ability to apply quantitative concepts to personal or professional real-world situations. • Demonstrate the ability to make inferences from experience <p>Computer Skills Criteria</p> <ul style="list-style-type: none"> • Demonstrate a sufficient understanding of computer concepts and terminology (list). • Demonstrate sufficient basic computer operating skills (list). • Perform computer applications (list). • Demonstrate Internet skills (list). <p>Note: Outcome statements are further refined with a list under each bullet. The college has constructed a rubric for each area as well.</p>

Exercise #9. Program Assessment Plan for Departments

Choose a certificate or degree program in your department and review the catalog description of that program and the courses which are required and recommended for that program. Identify 3 to 5 program level student learning outcomes. For at least one of these, write detailed criteria for assessment and select a method to do that evaluation. Share the results with the larger group, addressing the following issues:

- What are the strengths of the assessment plan both in measuring student learning and providing feedback to the department on ways to improve learning?
- What are the weaknesses of the plan in its ability to measure learning and to provide feedback?
- What new opportunities would the results of this plan offer to the department?
- What are the major threats or barriers to carrying out the plan and obtaining useful and reliable results?

Exercise #10. Program Assessment Plan for General Education

Choose a general education area in which your department has one or more qualified courses. Join with other faculty in departments with courses in this same general education category. Working as a group, write first a global learning objective for that GE area and then produce one or more specific, measurable, student learning outcomes. Select an assessment tool. Share the results with the larger group, addressing the questions posed in Exercise #9.

Assessment of Pedagogy

Classroom Assessment Techniques

We will use portions of the workshop material “Classroom Assessment: A Manual for Faculty Developers” by the National Council for Staff, Program and Organizational Development.

Appendix 1
Activity Schedule for the MJC Student Learning Outcomes Institute

DAY ONE

10:00 am	Departure from the College	Van Drivers
11:30 am	Arrive in Napa – Bridge Building Exercise	Derek, Kathleen
1:00 pm	Lunch – Discussion of Good Practices	Lee, Michelle
3:00 pm	Arrive in Sonoma, settle in	Becki, Sandy
4:00 pm	Overview, Goals of Retreat, Role of Facilitators	Bill
6:00 pm	“Private Universe” film; Discussion of Grading	Jim, Mike S

DAY TWO

Morning	Writing Measurable Student Learning Outcomes Course Embedded Assessment Presentation on Accreditation by Darlene Pacheco	Mike T, Dennis Bill, Jim Darlene
Afternoon	Rubrics Inter-Rater Reliability Unstructured Time	Bill, Michelle Bill, Michelle
Evening	Presentation of Lessons and Rubrics	Selected Participants

DAY THREE

Morning	Program Assessment Plans Assessment of General Education	Dennis, Derek Bill, Kathleen
Afternoon	Assessment of Pedagogy: Classroom Assessment Techniques	Lee, Jim

Appendix 2 – MJC Student Learning Outcomes Resource Book – Table of Contents

Good Practices

- “An Assessment Manifesto” by College of DuPage (IL)
- “9 Principles of Good Practice for Assessing Student Learning” by AAHE
- “Palomar College Statement of Principles on Assessment”
- “Closing the Loop—Seven Misperceptions of Student Learning Outcomes” by Tom Angelo
- “Five Myths of ‘Assessment’” by David Clement, faculty at Monterey Peninsula College

Writing Measurable Outcomes

- “Methods of Assessment of Student Learning” by Peggy Maki of AAHE
- “Program Guide” by Geneva College (PA)

Course Embedded Assessments and Rubrics

- “Course Embedded Assessment” by Larry Kelley, University of Louisiana Monroe
- “Grading Standards: Written Work for BIOL 111” from Southern Illinois University
- “Student Participation Assessment and Evaluation” from Southern Illinois University
- “Using Scoring Rubrics” from CSU Fresno
- “Assessing Modeling Projects in Calculus and Precalculus” by C. E. Emenaker, University of Cincinnati

Program Assessment

- “Assessing the Work of E-Teams” by Mary Besterfield-Sacre of the University of Pittsburgh
- “A Program Guide for Outcomes Assessment” from Geneva College (PA)
- “Academic Assessment Program” from Parkland Community College (IL): www.parkland.cc.il.us/aac
Adult Education; Business and Agri-Industries; Computer Sciences; Engineering Science and Technologies;
English & Critical Studies; Fine and Applied Arts; Health Professions; International Programs; Mathematics; Natural
Sciences; Social Sciences and Human Services

General Education Assessment

- “Benchmarks for Core Skills” from Palomar College (CA)
- “Assessment Plan/Progress Report For Curriculum Outcomes Assessment” Isothermal Community College (NC)

Classroom Assessment Techniques

- “Classroom Assessment: A Manual for Faculty Developers” by the National Council for Staff, Program and Organizational Development.

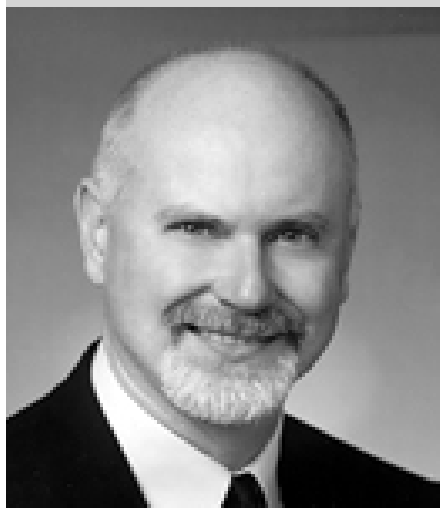
Appendix 3 – Reference Books Distributed to SLO Institute Participants

- Angelo, Thomas and Patricia Cross, *Classroom Assessment Techniques: A Handbook for College Teachers*, 2nd edition. Jossey-Bass. 1993.
- Huba, Mary and Jann Freed, *Learner-Centered Assessment on College Campuses*. Allyn and Bacon. 2000.
- Walvoord, Barbara and Virginia Johnson Anderson, *Effective Grading: A Tool for Learning and Assessment*. Jossey-Bass. 1998.

The MJC Student Learning Outcomes Institute gratefully acknowledges the support of the Modesto Junior College Foundation in providing the books and materials.

About the Author

Are they learning what we're teaching?
What do we think they're learning?



Bill Scroggins has been Vice President for Instruction at Modesto Junior College since January of 2002. Previously, he was Dean of Science & Math at San Bernardino Valley College (2000-02) following a 26-year career as a chemistry professor, serving both El Camino College and then Chabot College. Bill's BS is from UCLA and his PhD is from UC Riverside. He is best known for his work for the state Academic Senate, serving from 1990 to 1999, the last two years as President. Bill has written and spoken widely on a range of topics including curriculum, technology, shared governance, planning, accountability, articulation and transfer, and most recently assessment and student learning outcomes.