

## Bloom's Taxonomy

Knowledge	Comprehension	Application	Analysis	Synthesis	Evaluation
Arrange	Cite examples of	Add	Analyze	Arrange	Appraise
Choose	Comment	Adopt	Appraise	Assemble	Assess
Count	Compute	Apply	Audit	Blend	Award
Define	Convert	Calculate	Calculate	Build	Censure
Describe	Defend	Capitalize	Categorize	Categorize	Compare
Duplicate	Define	Change	Check	Collect	Conclude
Find	Demonstrate	Classify	Compare	Combine	Contrast
Group	Describe	Complete	Contrast	Compile	Criticize
Identify	Differentiate	Compute	Criticize	Compose	Critique
Label	Discriminate	Construct	Debate	Conceive	Decide
List	Discuss	Demonstrate	Deduce	Construct	Defend
Locate	Distinguish	Develop	Design	Create	Determine
Match	Estimate	Discover	Detect	Design	Estimate
Memorize	Expand	Divide	Develop	Develop	Evaluate
Name	Explain	Dramatize	Diagram	Devise	Grade
Outline	Expound	Draw	Differentiate	Explain	Interpret
Pick	Express	Employ	Discriminate	Form	Judge
Point to	Extend	Examine	Dissect	Formulate	Justify
Quote	Extrapolate	Exercise	Distinguish	Generate	Measure
Recall	Generalize	Graph	Examine	Group	Prioritize
Recite	Give examples	Illustrate	Experiment	Hypothesize	Rank
Record	Illustrate	Interview	Infer	Integrate	Rate
Relate	Indicate	Make use of	Inspect	Make	Recommend
Repeat	Infer	Manipulate	Inventory	Manage	Reject
Reproduce	Interpret	Modify	Question	Modify	Score
Say	Paraphrase	Operate	Reason	Order	Settle
Select	Predict	Organize	Screen	Organize	Support
Show	Project	Perform	Sift	Originate	Test
Sort	Propose	Practice	Simplify	Plan	Validate

Spell State Summarize Tally Tell Underline	Qualify Rearrange Restate Review Rewrite	Produce Schedule Shop Show Sketch Solve Subtract Translate Use	Solve Summarize Survey Test Utilize	Predict Prepare Prescribe Produce Propose Rearrange Reconstruct Restructure Revise Rewrite Synthesize Write	Value Weigh
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## Types of Student Artifacts

Student learning outcome assessment measures the final outcome of a student's learning, rather than the formative learning process. This is best accomplished in a final project, a term paper, a final exam, or some other capstone assignment for the semester. However, if a summative assessment of a particular skill occurs earlier in the semester, then other assignments or measurable activities can be assessed.

The following are types of student work that can be used for assessment:

- Exams/quizzes
- Term papers
- Essays
- Lab reports
- Presentations
- Speeches
- Debates
- Athletic performances
- Demonstration of a procedure
- Musical performances
- Creative works
- Technical Drawings
- Models
- Prototypes
- Plans
- Discussions
- Journals
- Research projects
- Proposals

This is not an exhaustive list, but keep the following criteria in mind:

- The artifact must be observable and measurable.
- It must represent the final outcome of a student's learning for the specific student learning outcome.
- You cannot simply use the grade for the assignment for your assessment data because assignments include other criteria that are distinct from the specific outcome you are assessing (like other learning outcomes or class discussion).
- If assessing the student artifact/deliverable is an assessment of quality, rather than objective correctness or incorrectness, a rubric needs to be developed to score the assessment.

## Sampling for the Assessment of Student Learning Outcomes

### Rationale: Why sample?

For Student Learning Outcomes (SLO's), we must assess artifacts that reflect the course's desired outcomes. Sampling facilitates the assessment process when it is not feasible to assess all students—for example when programs/courses have large numbers of students or when artifacts take a long time to review. The portion evaluated is the *sample* of the entire population.



*Best practice.* A subjective artifact using a rubric (e.g. a research project in a capstone course or a paper) may be used only if it is scored by an evaluation group, not the individual instructor.



*Best practice.* When scoring subjective artifacts with a rubric, the evaluation group must norm before scoring. This is especially important for rubrics assessing complicated critical-thinking outcomes. In addition, it is a best practice that each artifact be scored independently by two different evaluators—that is, scored twice by two scorers who don't know that the other gave it.

### Census vs. Sampling

For programs that are small, assessing the entire population may yield a more accurate measure of student learning. Assessing the entire population is called a **census** whereas assessing only part of the population is called a **sample**.

#### *Example of Using a Census:*

- An Honors section of Music Appreciation ends the course with four students, each of whom is required to write a 10-15 page paper. All four of the course's outcomes are to be assessed by the paper using a rubric. An evaluation group reads all four student papers.
- The Math Department runs eight sections of Intermediate Algebra involving 163 students. One of the outcomes is to be assessed by three questions on an exam. The exam is given in common to all 163 students on a shared platform like Course Compass which permits instructors to see the aggregate results of individual questions. The aggregate results of all eight sections are gathered, comprising responses from all 163 students.

#### *Example of Using a Sample:*

- The English Department runs five sections of Critical Thinking Through Argument involving 98 students. Two of the course's four outcomes are to be assessed by a 8-10 page paper scored by a rubric. The English department selects 20 papers randomly from the five sections.



## Sampling Procedures

Before evaluating artifacts or data for the SLO, you must:

1. Decide whether you will use a sample or the whole population.
2. Choose an appropriate sample size based on percentage, artifact size and complexity.
3. Choose an appropriate sampling method.

## Determining Sample Size

If you have a large program (over 100 students), you may not have the people and time to evaluate 100 artifacts. Therefore, you would choose a specific percentage of students or artifacts.



*Best practice.* A common standard for sampling is 10% or 10 artifacts, whichever is greater. So for populations less than 100, choose 10; for populations over 100% choose 10%.

Whether or not to sample and the size of the sample depend on three factors, all of which must be kept in mind when making sampling decisions:

1. The length and complexity of the assignments/artifacts.
2. The number of students enrolled in the course or program.
3. The number of faculty members serving as the artifact evaluators.

*Length and complexity of the assignments.* If the assignment or artifact is of a capstone level (e.g. research project), then a smaller percentage of students might be chosen.

*The number of students enrolled in the course or program.* If your course or program has less than 100 students, then you should consider using a larger percentage or the entire population. Remember that the acceptable minimum is 10 students.

*The number of faculty members serving on the faculty committee.* If the program has only three faculty members on the faculty committee, then a smaller sample size would be more appropriate depending on the complexity of the assignment. However, programs with many faculty members and short assignments could have a much larger sample size since there are many more people available to evaluate the artifacts.

### Examples

- The Social Sciences Department runs 12 sections of Introduction to Psychology involving 250 students. Three of the course's four outcomes are assessed by a term-ending 8-10 page research paper scored by a rubric. The department has 5 full-time faculty members on staff and 1 adjunct who is willing to participate. This 6-person evaluation committee agrees to score 10% of papers. The committee selects 25 papers randomly from all 12 sections, meets, norms, reads

two papers apiece for best practice, and aggregates the results. The fourth outcome is assessed by three questions on the final exam. The decision is made that it is feasible to assess all students: percentages are gathered independently by each instructor for each section and sent to the chair for compiling.

- The Humanities Department runs 12 sections of Western Civilization involving 250 students. It also has three of the course's four outcomes assessed by a term-ending paper scored with a rubric. However, only 2 members are on the committee, so they assess only 5% of papers. They select 12 papers randomly, meet, norm, read two papers each for best practice, and aggregate the results. The fourth outcome is assessed by a short-essay answer on the final exam scored by a rubric. The 2 members agree that due to the lesser degree of complexity a 10% sampling size is feasible. They select 25 answers randomly, norm, read two apiece, and aggregate the results.

### Common Types of Sampling

There are a variety of sampling methods. Simple random, stratified, systemic, and cluster sampling are examples of four common and appropriate sampling methods for institutional assessment activities.

*Simple Random Sampling:* You randomly select a certain number of students or artifacts. Random sampling can be done easily enough by compiling a list of all students completing the artifact and then using a random number generator, referring to a random number table, or picking out of a hat.

**Example:** The Business Department runs 3 sections of Introduction to Business involving 112 students. All four outcomes are to be assessed by the final exam, and the department has decided on a 20% sample size. The faculty chair gathers the final exams from the instructors, creates a computerized list in Excel of students who completed the exam, and uses the program's random number generator to identify 22 students for each outcome (different 22 students for each outcome). The results are aggregated.

*Stratified Sampling.* Students are sorted into homogenous groups and then a random sample is selected from each group. This is useful when there are groups that may be underrepresented.

**Example:** Child Development 101 has traditionally had few male students. In compiling the data for outcome assessment with a sample size of 20%, the faculty chair makes sure to get 20% of male students by breaking students into gender first before randomly selecting 20% from each group.

*Systematic Sampling.* You select the  $n$ th (e.g. 7th, 9th, 20th) student or artifact from a list.

**Example:** An Introduction to Art course has been delivered in three sections with a total of 83 students finishing the course. One of the outcomes involves scoring a student art



project with a rubric. The faculty chair has sampled 10% of the student population in the past, but this semester because a section got cancelled, 10% of completing students (8) falls below the minimum threshold of 10. So the faculty chair generates an alphabetical listing of all 83 students who completed the assessment artifact and then selects every 8<sup>th</sup> student for a minimum of 10.

*Cluster Sampling.* You randomly select clusters or groups (e.g. classes or sections), and you evaluate the assignments of all the students in those randomly selected clusters or groups.

**Example:** The English Department offers Freshman Composition in eight sections across four sites including two sections online, involving a total of 143 students. There is a single assessment instrument: a final paper scored by a rubric that contains all SLO's. Two of these sections are randomly chosen and all papers from those two sections assessed.

A Note about Stratified Sampling:

For the purposes of Cerro Coso, this method should be preferred when courses are offered in some combination online and onsite sections, or when offered at multiple sites.

A Note about Cluster Sampling:

Given the amount of variation that can happen between different instructors in different locations in different delivery modes, reservations have been raised about the viability of this choice for giving the department and the college a clear picture of any particular course assessed by it.

Nevertheless, the consensus has been to move ahead with this option for this year until it can be assessed in turn as serving our needs or not. However, clear ground rules need to be established in order to avoid the perception of bias that could result from such a selection. In particular, it must be understood that the selection of the section(s) be *random*.

To that end, the following process will be observed: sections to be identified for cluster sampling will be chosen randomly according to the best practices in this document by the Institutional Effectiveness Committee (faculty chairs are welcome to be present at the time of selection) and will be chosen after the mid-point of the semester in which the course is to be assessed. This assures that 1) no perception of bias is present, and 2) that all sections are deploying the assessment instruments as intended.

## Course Assessment Worksheet

Course Number and Course Name: [Click here to enter text.](#)

Instructor: [Click here to enter text.](#)

Student Learning Outcome	Assessment Tool	Detailed Description of Assessment Plan	Results
A. Upon successful completion of the course, students will be able to	This will be assessed with (Click to choose assessment)		
B. Upon successful completion of the course, students will be able to	This will be assessed with (Click to choose assessment)		
C. Upon successful completion of the course, students will be able to	This will be assessed with (Click to choose assessment)		



## Course Assessment Worksheet (Sample)

Course Number and Course Name: DMA C113 Accessibility and Usability

Instructor: Suzie Ama

Student Learning Outcome	Assessment Tool	Detailed Description of Assessment Plan	Results
<p>A. Upon successful completion of the course, students will be able to evaluate the usability of web content and apply usability principles, taking into account such issues as user technology, visual hierarchy, legibility and readability, writing style, site structure, navigation, search engine optimization, Intranets, eCommerce, and internationalization.</p>	<p>This will be assessed with a project, scored by a rubric.</p>	<p>Students were given the option to produce a web site or write a term paper. The scoring rubric evaluated usability concepts of visual hierarchy, technology, legibility and usability, content, site structure, navigation, and search engine optimization. Analysis was done for each student's overall mastery of the group, and there was analysis for each usability concept, as well. All students were assessed.</p>	<p>Students exhibited 81% overall mastery of the outcome.</p> <p>Analysis of the individual usability concepts revealed weakness in visual hierarchy (56%) and navigation design (67%). All of the other areas were 80% or above.</p>
<p>B. Upon successful completion of the course, students will be able to identify disabilities that impede access to web content and categorize appropriate accommodations for each.</p>	<p>This will be assessed with an exam</p>	<p>Students were given a matching question in an exam, in which they were asked to match the specific disability with the appropriate accommodation. There were 5 disabilities and 5 accommodations to match. All students were assessed.</p>	<p>Students averaged 76% correctness across all 5 pairs, falling below the 80% target.</p> <p>Macular degeneration (69%), multiple sclerosis (72%), and blindness (63%) and their corresponding</p>

C.	<p>Upon successful completion of the course, students will be able to defend the position that sites should be accessible from a legal and ethical perspective.</p>	<p>This will be assessed with an exam, scored by a rubric.</p>	<p>Students were given an essay question in an exam with the following scenario: "Ms. Smith has started a new dog grooming business and launched a web site to promote her services. Should she make her web site accessibility compliant? If so, why?" All students were assessed.</p>	<p>accommodations were problematic concepts for students. 87% of students provided a correct answer, reflecting knowledge of accessibility law and sensitivity toward ethical reasons for making a site accessible.</p>
D.	<p>Upon successful completion of the course, students will be able to apply XHTML coding techniques to make a site compliant with the strictest accommodation standard.</p>	<p>This will be assessed with a project, scored by a rubric.</p>	<p>Students were given the option to produce a web site or write a term paper. However, this outcome cannot be assessed with a paper. This outcome should be revised to evaluate a students ability to use accessibility testing software. All students were assessed.</p>	<p>67% of students mastered this outcome</p>
E.	<p>Upon successful completion of the course, students will be able to develop a usability and accessibility testing plan.</p>	<p>This will be assessed with a paper, scored with a rubric.</p>	<p>Students were given the option to produce a web site or write a term paper. A rubric was developed for each to score students' work.</p>	<p>92% of students mastered this outcome.</p>

## Rubric Worksheet

Course Number and Course Name: [Click here to enter text.](#)

Instructor: [Click here to enter text.](#)

Student Learning Outcome: [Click here to enter text.](#)

Primary Trait	Met Outcome	Did Not Meet Outcome

Aggregate: [Click here to enter text.](#)



## Rubric Worksheet (Sample)

Course Number and Course Name: DMA C107 Computer Illustration

Instructor: Suzie Ama

Student Learning Outcome: Create aesthetic illustrations and designs that employ a grid system, gestalt principles, typographic principles, color theory, and/or usability.

Primary Trait	Met Outcome	Did Not Meet Outcome
Application of Grid	Design is clearly organized around a grid of margins and columns.	It is not clear that a grid has been used to organize content.
Principle of Typography	Principles of typography are used successfully to create style and promote legibility and readability.	Principles of typography have not been successfully implemented to promote legibility and readability, and/or typeface selections or combinations don't work well for the design.
Color Theory	Color scheme is harmonious and creates mood that is consistent with the audience and intended purpose of the piece.	Color scheme is not harmonious and/or establishes a mood that is in conflict with the audience and intended purpose of the piece.
Gestalt Principles	Gestalt principles are effectively used to create contrast that makes visually scanning the design easy, while establishing overall unity in the design.	Gestalt principles are not used effectively. There is too much contrast in some areas and too much uniformity in other areas.

Aggregate: 3/4

# Submitting Assessment Plans

To complete this stipend agreement, you need to complete the **Course Assessment Worksheet** for each class you are teaching.

## Moodle Login

The **Course Assessment Worksheet** is available in electronic format on the **Student Learning Outcome Assessment Moodle**: <http://moodle.cerrocoso.edu/course/view.php?id=637>. The enrollment key is: **assess**

This is on the old Moodle server. If you are new to the college and/or have only worked with Moodle classrooms that are accessible through the InsideCC portal, you'll need to create a Moodle account for this site.

1. Go to <https://moodle.cerrocoso.edu/login/signup.php>
2. Complete the form, noting the username and password that you choose. Use a valid email address.
3. After you submit the form, you should receive an email that requests that you confirm the creation of the account. Click the hyperlink in the email to confirm.
4. Then, go to <http://moodle.cerrocoso.edu/course/view.php?id=637>.
5. Log in when prompted.
6. Then, enter the enrollment key, **assess**, when prompted. You will only be prompted for the enrollment key the first time you enter the site.

The screenshot shows the Moodle interface for the 'Student Learning Outcome Assessment' course. At the top, the Cerro Coso Community College logo is visible on the left, and the user 'Suzie Ama' is logged in on the right. The course title 'Student Learning Outcome Assessment' is prominently displayed in the center, with a sub-section for 'SLO Coordinator Announcements'. Below this, a topic outline shows '1 Course Assessment - Fall 2011'. Under this topic, there are sections for 'Assessment Process', 'Plan Assessment', and 'Document Results'. The 'Plan Assessment' section contains links for 'Course Assessment Worksheet', 'Course Assessment Worksheet - Sample', 'Rubric Worksheet', 'Rubric Worksheet - Sample', and 'Upload Plans'. The 'Document Results' section has a link for 'Upload Results'. On the left sidebar, there is an 'Administration' menu with options like 'Turn editing on', 'Settings', 'Assign roles', 'Grades', 'Outcomes', 'Groups', 'Backup', 'Restore', 'Import', 'Reset', 'Reports', 'Questions', 'Files', 'Unenroll me from SLO Assessment', and 'Profile'. Below that is a 'Cerro Coso Links' section with links to 'Bookstore', 'Counseling', 'Financial Aid', and 'Learning Resource Center'. On the right sidebar, there are sections for 'Messages' (No messages waiting), 'People' (Participants), 'Latest news' (Add a new topic... No news has been posted yet), and 'Online Users' (last 5 minutes) showing 'Suzie Ama'.

## Site Resources and Activities

Shown below is the home page for the site. The main block is organized into sections to help you complete the **Course Assessment Worksheet** in 2 phases. You'll plan your assessment first, including identifying the artifact that will be used to assess the outcome and writing the details of the assessment plan. There are resources linked to help inform this process, and there is a **"Upload Plans"** assignment activity to which you'll upload your plan and other relevant resources, like your rubric(s) or exam questions you have generated to measure specific outcomes (group the questions together with the outcome in your presentation). Upload your plan as soon as it is finished.

After you collect the data and add it to the **Course Assessment Worksheet**, upload it to the **"Upload Results"** activity. Doing so completes your stipend agreement. If you are teaching this semester, please submit this by the end of finals week this Fall. If you aren't teaching until next semester, then finals week of Spring 2012 is when you'll submit your results.

The screenshot shows the Cerro Coso Community College SLO Assessment website. At the top, the logo for Cerro Coso Community College is on the left, and the text "You are logged in as Suzie Ama (Logout)" is on the right. Below the logo, the text "CCO SLO Assessment" is displayed. A navigation bar includes a "Switch role to..." dropdown and a "Turn editing on" button. The main content area is titled "Student Learning Outcome Assessment" and includes "SLO Coordinator Announcements". A "Topic outline" section lists several items: "Course Assessment - Fall 2011" (with a sub-item "Assessment Process"), "Plan Assessment" (with sub-items "Course Assessment Worksheet", "Course Assessment Worksheet - Sample", "Rubric Worksheet", and "Rubric Worksheet - Sample"), and "Document Results" (with a sub-item "Upload Results"). The "Upload Plans" and "Upload Results" items are circled in red. On the left, an "Administration" sidebar lists various site management options like "Turn editing on", "Settings", "Assign roles", "Grades", "Outcomes", "Groups", "Backup", "Restore", "Import", "Reset", "Reports", "Questions", "Files", "Unenroll me from SLO Assessment", and "Profile". Below this is a "Cerro Coso Links" section with links to "Bookstore", "Counseling", "Financial Aid", and "Learning Resource Center". On the right, a "Messages" section shows "No messages waiting". Below that, a "People" section lists "Participants". A "Latest news" section has a link to "Add a new topic..." and a note that "No news has been posted yet!". An "Online Users" section shows "Suzie Ama" as being online "last 5 minutes". At the bottom of the main content area, there is a "Jump to..." search box.



# of Attendees	Adjunct Faculty Names	Full Time Faculty Names	Administrator
1	Anne Winston		
2	Anthony Damiano		
3	Antwan Miller		
4	Benjamin Beshwate		
5	Bobbie Edwards		
6	Charles Humphries		
7	Chris Cooper (ESCC)		
8	Chris Harper		
9	<i>Cynthia Durisco - classified no stipend</i>		
10	Damien Jacotin		
11	Dana Alloway		
12	Daniel Johnson		
13	Debra Lurie		
14	Don Rosenberg		
15	Elaine Rudis-Jackson		
16	Eva Poole-Gilson		
17	Guck Ooi		
18	Heather Freeman		
19	Herman Foster		
20	Janis Fisher		
21	Jeanne Olson		
22	Jeff Swartz		
23	JoAnn LaRue		
24	Jon Bushnell		
25	Julie Gray		
26	Lauren Brown		
27	Letty Sparling		
28	Linda Eberhart		
29	Maher Khankan		
30	Margaret Porter		
31	Maria Frankhauser		
32	Marianne Fountain		

33	Mark Hosman		
34	Matt Greedy		
35	Matt Wanta		
36	Missy Gross		
37	Nancy Willard		
38	Ray Hocker		
39	Rocky Maraccini		
40	Roger Warnock		
41	Sandra Bradley		
42	Steve Gorrone		
43	Steve Irwin		
44	Suzy Ernst		
45	Terri Smith		
46	Theodore Little		
47	Tiesha Klundt		
48	Vickie Taton		
49	Victoria Alwin		
50	Willie Edwards		
51		Adnan Buxuamusa	
5		Cheryl Gates	
53		Cliff Davis	
54		Dennis Jensen	
55		James O'Connor	
56		Jan Moline	
57		Janis Jamison	
58		John Stenger-Smith	
59		Julie Cornett	
60		Karen O'Connor	
61		Lisa Darty	
62		Lisa Fuller ( <i>lunch &amp; afternoon session</i> )	
63		Mary O'Neal ( <i>breakfast &amp; lunch</i> )	
64		Scott Cameron	
65		Shannon Bliss	
66		Suzie Ama	

67		Vivian Baker ( <i>lunch &amp; afternoon session</i> )	
68			Corey Marvin
69			Deanna Campbell (ESCC)
70			Erie Johnson
71			Heather Ostash
72			Jill Board
73			Valerie Karnes
74		Loren Sandvik	
75	Welsey Williams		

Attended - No stiped paperwork

- 1 Richard Schultz
- 2 Helen Wang
- 3 Sharon Britz
- 4 Debra Veit
- 5 James Morford
- 6 Patty Holton
- 7 Maxine Binn

- 59 Adjunct confirmation
- 8 non attendance
- 7 adjuncts not pre-registered
- 58 TOTAL ADJUNCTS IN ATTENDANCE

Bill Locke - No - medical appointment in Santa Barbara  
Dean Bernsten - NO  
Jon Heaton - NO