

Guide to Outcomes Assessment of Student Learning¹

San Jose State University

Why Outcomes Assessment?

The most important reason for assessment is to improve student learning.

Assessment is essentially composed of a few very simple pieces:

- 1) What do we want our students to learn?
- 2) Are students learning what we want them to learn? and
- 3) How can we modify our program (or class) so that as many students as possible are successful?

As faculty we do this all of the time, but often we do it in an informal way. We rely on anecdotal evidence, don't have a good feedback mechanism for sharing our findings, or can't really directly link curricular changes with improved student learning. Development of an assessment plan helps to make this process more systematic by documenting data that are collected, evaluations that are made and the resulting modifications. The best assessment plans make extensive use of readily available information that is already being collected.

Several forces are driving us toward assessing student learning outcomes. State legislatures nationwide are expecting greater accountability from academic institutions. The CSU system has committed itself to outcomes assessment, starting with the "Cornerstones" project in 1998 and continuing with the "Access to Excellence" strategic plan in 2006². Accrediting agencies, including the Western Association of Schools and Colleges (WASC), are requiring outcomes assessment as a part of the accrediting process. The assessment movement has gone beyond a fad that will eventually disappear³.

Taking the view that if we demonstrate commitment to assessment we will be allowed to develop and maintain programs which best reflect our values and discipline uniqueness, we take as our guiding objective the improvement of student learning through the enhancement of curricula and instruction. For this reason, assessment of student learning outcomes will take place primarily at the program level, where the information gathered can be used to improve curricula. Assessment has become an integral part of the General Education program and the Program Planning process. All Program Planning Self Studies at SJSU are required to include results of assessment.

Programs that are scheduled for Program Planning are eligible to apply for one semester of assigned time for assessment activities. The assessment activities can include the development of the program mission, goals, student learning outcomes, an assessment plan, collection and evaluation of data, and program

¹ This document is adapted from California State University, Fresno's Guide to Outcomes Assessment of Student Learning (2000) and California State University, San Bernadino's Guide to Assessment of Student Learning Outcomes and Status Report on Assessment Efforts (1996). Members of the Outcomes Assessment Committee were: Claire Purvis, Robert Wilson, Robert London, Kathy Reilly, Elinore Partridge, Sandra Kamusikiri, Terry Hallett, Robert Ricco, Charles Martin, Richard Schwabe, and Jerrold Pritchard. California State University, Fresno contributing authors were Ethelynda Harding, Dianne Dickerson, Brandt Kehoe, and Jeri Echeverria. (Revised, 9/01, 10/07)

² http://www.calstate.edu/acadaff/system_strategic_planning/

³ http://www.calstate.edu/PCA/docs/NASULGC_AASCU_VSA-acc.pdf

development based on assessment data.⁴ The Office of Undergraduate Studies and the Director of Assessment are available to provide guidance as needed.

Mission Statement, Goals and Outcomes

The University and each college have a mission statement, which can be viewed at: <http://www.sjsu.edu/ugs/assessment/programs/missions/>. All programs should support the University and College mission and curricular priorities (<http://www.sjsu.edu/senate/s93-14.htm>).

Developing a department or program mission statement and goals, with student learning outcomes as the most specific and testable level is advised.

1. Mission.

The Mission Statement should state the values and philosophy of the department. It should establish the broad directions and aspirations of the department and its programs. There may be language that further defines the mission of each major concentration or degree level offered and reflects the actual educational and career paths of the program's graduates. The Mission Statement should be understandable to new students and persons outside the field. The catalogue description of your department may be a good source for a first draft of the mission statement. Do your best to finish the mission statement quickly. If you cannot reach consensus, you should consider putting the mission statement aside temporarily, as the department's (or program's) goals and outcomes may help clarify its mission.

2. Goals and Outcomes.

The Goals should focus on the general aims or purposes of the program and curriculum. The goals should state the broad, long-range, intended outcomes of the major/concentration, including content knowledge areas, attributes, skills and perspectives expected of program graduates.

A division of goals into three domains is a good starting point for example:

- Cognitive: What does the student know?
- Performance/Skill: What can the student do?
- Affective: What does the student care about?

Student Learning Outcomes (SLOs) are brief, clear statements of the results of instruction and should flow directly from the goals. As an example:

- Goal 1. To educate students in the basic methods and philosophy used to conduct scientific research, particularly in the Earth Sciences. Graduates from this degree program should be able to
 - SLO 1.1. Use the scientific method to organize and conduct research.
 - SLO 1.2. Demonstrate knowledge of the information resources available in the Earth Sciences such as scientific journals, geologic databases, and internet resources.
 - SLO 1.3. Be able to collect original data using field techniques and archival material.
 - SLO 1.4. Apply quantitative methods to solve problems, analyze data and formulate models.
 - SLO 1.5. Develop the ability to work independently and collaboratively in teams to solve open-ended questions.
- Goal 2. To help students develop effective oral and written communication skills. Graduates from this degree program should be able to
 - SLO 2.1 Effectively disseminate technical findings and conclusions by means of written reports in the format used in professional/technical writing.
 - SLO 2.2 Organize and give professional oral presentations.

⁴ If the program has established a complete and sustainable assessment process, the assessment coordinator's duties can include the writing of the Program Plan.

- SLO 2.3 Use maps, three-dimensional diagrams and other earth imagery to summarize findings and display them to a range of different audiences.

While goals express intended results in broad, global language, SLOs use more precise terms. The Outcomes should focus on the students, rather than the curriculum. Thus, SLOs such as “completing a course” or “writing a thesis” are unacceptable. SLO’s should be written using action verbs and statements, such as identify, explain, translate, construct, solve, illustrate, analyze, compose, compile, design, etc. rather than vague terms such as know and understand.

Accrediting agencies, professional organizations, or disciplinary groups may already have drafted learning outcomes in your discipline that can be adapted to reflect your own departmental emphases. Some departments find it useful to use a “collective resume” as a tool for developing goals and outcomes statements. A collective resume, written as if to potential employers, describes the abilities of a typical graduate from the program. Another approach is to hold a brainstorming session in which each faculty member writes learning outcomes, one per page, on Post-it notes. SLOs are then organized into groups from which learning goals are formulated.

3. Course by Outcomes Matrix

Determine where in your curriculum each outcome is met, and to what extent. In the example below, “I” means “Introduce”; “R”, “reinforce”; and “M”, Master. Some departments have proposed curriculum changes based on this analysis, after finding that outcomes that were important to them were not adequately addressed by the curriculum.

	Outcome 1	Outcome 2	Outcome 3
Course 1	I		
Course 2	I	R	
Course 3		R	
Course 4	A	I	I
Sr. Project			A

Assessment Activity Planning

1. Establishing Priorities.

Since the purpose of outcomes assessment at San Jose State University is to improve student learning, the first step in developing an assessment plan is to decide upon the questions to which answers are most needed. It may not be possible to determine the extent to which students achieve all of the learning outcomes the program has identified, so you will need to establish priorities.

2. Selecting Assessment Activities

The next step is to select the assessment techniques or measures that will give you the information you seek about your students' learning. You should develop a schedule and repeat cycle for performing your assessment activities. Plan one to three assessment activities per year, and use several methods of measuring performance.

To obtain a direct measure of student learning, systematically gather data across students using scores on standardized or locally prepared exams or scoring rubrics for performances, projects, theses, etc. Grade distributions alone are not evidence of student learning, but can be valuable when it is clear just what students must do to earn a particular grade (e.g., by examining graded examples of student work at different performance levels). If you choose to base your assessment in part on culminating experiences or portfolios, be explicit in explaining how the products of these activities will be analyzed. No technique is perfect, and good assessment requires the use of multiple, complementary measures. Criteria for choosing a particular assessment technique include how well it measures the particular outcome under study, and how much effort it entails for the result that will be obtained. Wherever possible, departments should make use of data that they are already generating and use assessment measures that contribute to student learning. Some assessment techniques are summarized in Table 1.

Best practices include the following:

- use data that may already be available to the program, e.g. retention rates, job placement, senior projects or other culminating experiences, etc.,
- use a variety of assessment measures, and
- imbed assessment into instruction to improve student learning and save labor.

It is recommended that an early survey ask alumni to assess the value of the program's goals and outcomes. A survey of employers and/or potential employers of your graduates should be considered if appropriate to your discipline. If you have a program advisory board, the input of its members could be very useful in program assessment.

For each assessment activity, indicate who will carry out the activity and who will collect and analyze data.

Table 1: Some Assessment Techniques

Examinations: Measure Content knowledge, some skills

	Advantages	Disadvantages
Commercial standardized exams	Low time investment National norms	Expense May not match specific program goals
Locally developed exams	Matches local goals Development and grading processes are informative	Difficult to develop valid instruments Time-consuming
Oral examinations	As for locally developed exams, but allows in-depth probing	Too time-consuming for use except for high priority outcomes and small programs

“Real-world” approaches: Measure: Skills, application and generalization of learning

	Advantages	Disadvantages
Performance appraisals	Better than paper and pencil in measuring skill acquisition	Time-consuming, may be subjective, observation may affect results
Simulations	May be a more practical way of measuring skills than performance appraisal	More expensive than traditional testing

Experiential and capstone or keystone courses and projects: Measure Knowledge, skills, application and generalization of learning

	Advantages	Disadvantages
	Synergism between learning and assessment Excellent tool for assessing more complex learning outcomes	Curricular logistics

Student portfolios: Measure Student growth over time

	Advantages	Disadvantages
	Power Inclusion of students in assessment process	Time and logistics

Self-report: Measures Perceptions and attitudes

	Advantages	Disadvantages
Surveys	Inexpensive Acknowledges importance of student (or alumni) opinions	Not a direct measure of learning Difficult to develop valid instruments
Interviews	Allows individualization and follow-up probes May develop positive interactions with students	May be intimidating, biasing results Time-consuming
Small group interviews	As for interviews, but allows more students to be "interviewed" in less time	A few students can skew the results if not carefully performed

Third-party reports: Measures Employer or parent satisfaction

	Advantages	Disadvantages
	Provides an external measure May be easily incorporated into internship or service learning courses	May be difficult to obtain useful data

Archival records: Measure Biographical, academic and other data

	Advantages	Disadvantages
	Readily available Useful for interpreting other data	Not a direct measure of learning Privacy considerations

3. Assessment Activity by Outcomes Matrix

Produce a table indicating which outcomes each assessment activity will measure. You do not need to assess all of your program's outcomes at once, but should focus initially on those of most importance or interest — the outcomes for which data will be most useful to the program. Of course, one assessment activity may measure multiple outcomes.

	Outcome 1	Outcome 2	Outcome 3
GRE Field Exam		X	X
Sr. Project		X	X
Sr. Survey	X		
Alumni Survey	X		

4. Assessment Schedule

Develop a schedule so that each SLO completes the entire assessment cycle at least once in each program planning cycle. This will be posted on the Undergraduate Studies Website.

Sample schedule:

Table 2: Schedule of Planned Assessment Activities

	C = Collect data		D = Discuss results				I = Implement changes (if any)			
Semester	fall	spr	fall	spr	fall	spr	fall	spr	fall	spr
→	2005	2006	2006	2007	2007	2008	2008	2009	2009	2010
SLO↓										
#1	C	D	I					C	D	I
#2						C	D			
#3 100w		C	D	I				C	D	I
#3 cpstn	C	C	D	I				C	C	D
#4			C	C	D	I		C	C	D
#5					C	C	D	I		
#6			C	C	D	I			C	C
#7					C	C	D	I		

5. Implementation Plan

Describe the process in place to ensure that assessment data will be used for program improvement. For example, the curriculum committee may meet annually and recommend program changes based on assessment outcomes. Task forces may be established to complete particular assessment-related activities. The department may hold an annual retreat to consider assessment results and program planning.

Additional Information

Policy on Assessment Plans

Mission, goals, outcome statements and assessment plans are to be considered living documents, to be revised in response to assessment results and changing circumstances. Program Planning Self Studies are expected to include reports of assessment efforts undertaken and of changes (if any) made in the program as a result of those efforts. Future self studies should include a discussion of all assessment efforts since the prior program review, resulting program changes, and revisions in the assessment plan itself.

Resources for Assessment

The Office of Undergraduate Studies web site has established some links to other universities' web sites that have information on assessment. There are some examples of assessment plans in the next section of this document. However, keep in mind there is no ONE way of doing this. You will discover that the assessment models are as diverse and unique as the programs; this is why there is no recommended "ideal" model for you to follow. It is important that the faculty decide what questions are most important to them, and what is the best way to assess their academic programs.

Guidelines for Development of Student Learning Outcomes

The document is clearly written in terms that can be understood by students, faculty outside the discipline, and the public.

The outcomes are concrete and specific enough to be measured and evaluated.

There are enough outcomes, at an appropriate level of detail, to evaluate the entire degree program.

Separate outcomes have been developed for options and emphases.

The outcomes reflect the strengths and unique characteristics of the program.

Guidelines for Development of Program Assessment Plans

The outcomes selected for assessment are appropriately significant.

Assessment methods are adequate to measure student achievement. Multiple measures are used. The plan does not rely overly on a single type of measure.

The time frame described is appropriate and workable. The plan takes advantage of current data sources and activities that are already in place.

It is clear who will do the assessments, collect and analyze data. There is appropriate faculty involvement and sharing of tasks.

There is a formal mechanism for reporting results of assessment and for summarizing results and to ensure that assessment provide information to be used in program improvement.

The plan is feasible, workable and affordable, given available resources.

Examples and Analysis of Selected Assessment Plan Models

From <http://academic-affairs.csusb.edu/examples.htm>

These samples mostly were selected from School of Humanities (at CSUSB) as their programs were submitted earliest, have had time for multiple revisions, and have the most discussion with the University committee. Note again, that all of these are working documents that likely will be revised after the experience of the first implementation of the assessment procedures.

Not all of the plans illustrated below are "perfect" nor should they be seen as the "best" or only way to address the issues and formats presented by the University Assessment Committee (at CSUSB). They were chosen primarily to show the campus community the range of assessment techniques and strategies developed to meet the individual needs of each program.

I. COURSE-BASED ASSESSMENT USING SENIOR CAPSTONE

This sample plan includes essays and portfolio preparation followed analysis by selected department faculty

BA in English

1. Goal:

Students are expected to be familiar with major writers, periods and genres of English and American Literature and to be able to place important work and genres in their historical context.

2. Outcomes:

Discuss a major work or author in English and/or American Literature, or compare two or more works and authors, for example, analyze the character of Satan in Milton's Paradise Lost.

Analyze a novel, short story, poem, play or a significant piece of prose showing familiarity with the techniques and literary contexts of the particular genre being examined.

Show a knowledge of the historical context or literary period of the work or author being examined, for example, a discussion of Cranes Maggie as an example of American Naturalism.

Comment: Clearly stated. Good use of concrete examples. Tells the reader what is expected of student.

3. Outcomes Criteria.

Completion of Senior Project (See description attached) consisting of a portfolio of four papers and a reflective essay demonstrating that the student has met a substantial number of the outcomes of the English major.

Comment: Good use of summative assessment and sampling techniques. Assessment built into common core course. Level of achievement and criteria for judging whether the student has reached the desired proficiency and knowledge still is not specified.

4. Assessment methods.

Portfolios reviewed and evaluated by departmental committee.

Comment. Excellent use of special group of faculty to review student products. What the committee will look for, how they will reduce data to useful form, or what scale will be used to judge success is not stated yet. Will students be provided feedback and guidance on the results of faculty analysis?

5. Time Frame.

Students will take the course proposed and will prepare the portfolios before the end of the senior year. Evaluation of the portfolios will be scheduled for each quarter.

6. Who will do the Assessment.

Department Chair and appointed Committee

7. Type of Feedback.

At end of each evaluation, the committee will write a report describing the strengths and weaknesses which the portfolios demonstrate.

Comment. Very useful approach. .

8. How data will be used to improve program or revise curricula?

The department will meet as a whole to discuss findings and will recommend to the chair and curriculum committee methods of improving department procedures and curricula.

Comment: Shares findings with whole department. Provides context for revision of courses and teaching strategies

II. COURSE-BASED "PROFICIENCY EXAMS"

Proficiency exams are usually used at end of lower division and/or the end of upper-division work.

Example BA in Spanish and French

1. Goal.

Students are expected to have achieved at least an Advanced Level in speaking, listening, reading, writing and cultural knowledge. "Advanced" is the equivalent to level 3 on the scale developed by the American Council on the Teaching of Foreign Languages. The Scale consists of five levels: Novice, Intermediate, Advanced, Superior and Native.

In oral proficiency, for example, "Advanced" means that the student is able to speak the language with sufficient structural accuracy and vocabulary to participate effectively in most formal and informal conversations on practical, social and professional topics. They must be able to discuss their particular interests in special fields of competence with reasonable ease. Their comprehension is expected to be quite complete for a normal rate of speech. Their vocabulary demonstrates sufficient breadth that they rarely have to grope for a word; their accent may be

obviously foreign, although they have good control of grammar, and their error virtually never interfere with understanding and rarely disturb the native speakers.

Comment: Very specific and focused, based on nationally agreed upon standards.

2. Outcomes: Speaking

ACTFL Advanced level speaking is characterized by the ability to:

- converse in a clearly participatory fashion;
- initiate, sustain, and bring to closure a wide variety of communicative tasks, including those that require an increased ability to convey meaning with diverse language strategies due to a complication or an unforeseen turn of events;
- satisfy the requirements of school and work situations;
- narrate and describe with paragraph length connected discourse
- Students demonstrate use of conversational skills by:
 - Interacting with a fluent speaker on everyday topics
 - Exchanging factual information
 - Providing information on an event
- Students describe and provide information using a variety of discourse strategies
- Students narrate an event that has already taken place

Comment: The outcomes use strong action verbs to operationalize the goals in tangible and observable outcomes that can be evaluated and measured. The criteria for judging whether a student met the outcome are concrete and are embedded in the outcomes.

3. Outcomes Criteria (How will students demonstrate or complete the outcomes?)

Students will demonstrate their listening and speaking abilities by

- satisfactory completion of those courses dedicated specifically to developing listening and speaking skills;
- successful completion of all major courses;
- successful completion of the speaking/listening comprehensive portion of the junior and senior assessment examinations.

4. Assessment Methods and Measures to be Used.

Since the acquisition of listening and speaking skills is integral to any foreign language major's outcomes, this skill is assessed at every stage of the educational process. At the beginning levels, students are continually assessed during class time, within each test and at the end of each course. As soon as feasible, students are required to conduct interviews of native speakers or to mimic real life situations. In the remaining intermediate and advanced courses, all lectures and activities conducted in the target language must be understood by the students in order for them to successfully complete the requirements. In general, then, assessment used will include:

Examination(s) for each course;

- junior assessment examination using the Video Oral Proficiency Instrument [VOPI], a profession-wide, nationally normed comprehension exercise;
- advanced VOPI speaking and listening test.

5. Time Frame (When will the Assessment be done?)

Each quarter, including final examination at the end of the course

Sophomore/Junior year: French 295/Spanish 395 in connection with the respective advanced composition courses (French 310, Spanish 302)

(c) Senior year: French 395 and Spanish 496 are the senior assessment courses which students must take prior to completing the last twelve units before graduation.

Comment: Makes excellent use of "formative" assessment in each core course, where each course have agreed upon content and standards. Builds assessment and diagnosis in to mid-point of major and requires final ("summative") assessment (and remediation where necessary) prior to final term of study.

6. Who will do the assessment, collect and analyze the data?

Individual instructors routinely assess students on a quarterly basis. The instructors of French 310 and Spanish 302 are responsible for administering the speaking/listening section of the junior assessment. The French and Spanish area coordinators administer the speaking/listening section of the senior assessment. The coordinators are in charge of collecting and analyzing the data, while the department chair informs students of both their junior and senior assessment results.

Comment: Work is spread between faculty at various stages of the program. Clear responsibility is assigned.

7. Type of Feedback (Data)

The department chair informs students of their assessment result. While students are considered ultimately responsible for their own educational decisions, each one is assigned a faculty advisor who suggests appropriate remediation and guidance based on individual assessment results.

Comment: Provides direct feedback to individual students who must review and master material/skills required. Allows students to repair their weakness in a timely fashion.

8. How will data be used to improve program or revise curriculum?

Results will be used to determine the strengths and weakness in the area of listening/speaking and to identify needs for changes in or improvements in the curriculum.

Comment: Somewhat vague, but, with regular collection and publication of results of assessments each term and with a small faculty that is intimately involved in the progress of their students, should provide clear choices and constant awareness of where courses and teaching methods need change.

III. MULTIPLE MEASURES OF PROFICIENCY USING PERFORMANCE-BASED STANDARD

Example: BA in Music

1. Goal.

The unified major goal for core curriculum each music major is the acquisition of the understanding and development of musicianship.

Comment: Uses one broad overarching Goal for content of Core of major. Additional goals and outcomes are later established for each of the three options (Music Education, Specialized/pre-professional Studies, and General Music Studies). Concept of "musicianship" is well understood by those in the field but may be confusing to others without further definition.

2. Outcomes:

All student in the department of Music are required to demonstrate

- an acceptable level of musical and artistic performance skills in vocal and/or instrumental performance,
- an understanding of the nature and expressiveness of music,
- an understanding of various musical genres in the evolution of historical music eras,
- an ability to accurately analyze music scores from various historical music eras,
- an understanding of various music of other cultures

Comment: Rather vague to non-musicians but further refinement and definition occur under specific outcomes criteria.

3. Outcomes Criteria.

- All students will demonstrate competencies
- in performance of composition through quarterly "jury" exam before the entire music faculty,
- in performance or composition at quarterly public recitals,
- In an understanding of music historical perspectives and performance practices in western music and other cultures through lecture courses with class projects, exams and public performance,
- in music history through a Final Assessment

For musical synthesis through the successful completion of a Final Project (recital, conducting, original composition).

Comment: level of achievement and standard of competency expected are not specific, relies on use of consensus and involvement of faculty as a whole to developed shared standards for expressive and intangible aesthetic components.

4. Assessment Methods and Measures to be Used

for applied studio instruction the designated music instructor will monitor and record student technical progress on a weekly basis and the entire music faculty will provide written critique for each students at a quarterly jury examination,

successful passing of the final written exams in specific courses,

successful passing of the final performance exams in specific courses,

The Final Assessment will be scored objectively by written exam and subjectively before a faculty committee.

5. Time Frame

on a weekly basis in applied individual lesson and at end of each quarter at the jury exam

For traditional lecture courses at the end of each quarter

the Final Assessment will be evaluated by a faculty committee and a percentage rating of scores will be provided.

Comment: Relies heavily on individual instructors, but involves whole faculty for portion of ongoing and summative evaluation. The "Final Assessment" needs to be further described as to content and format.

IV. COURSE-BASED ASSESSMENT BY INDIVIDUAL FACULTY

(Problematic due to consistency of standards from section to section and year to year. More department involvement in assessment and analysis of results needed.)

Example: BA in Art

1. Goal.

Graduating students will possess the ability to "read" the non-verbal language of art and design, and to express their reading in clear written and verb forms.

Comment: Seems to be a good approach for art history and courses in principles/theory of art.

2. Outcome.

Students will be able to demonstrate an understanding of basic design principles, concepts, media, and formats in clear written and verbal form.

Comment: Not stated in measurable, operational terms. Seems to duplicate or expand on the goal but does not clearly state the intended outcomes.

3. Outcomes criteria.

Students will demonstrate their knowledge by

studying objects in a museum collection and writing one or more formal analysis paper of passing grade.

2) by writing critiques and exhibit reviews, as well as essay style examinations relating to design principles, in a variety of studio and foundation courses.

3) by clearly verbalizing their understanding of design principles, concepts, media and formats during critiques held in all foundation and studio classes.

Comment: These "criteria" are actually the ways students will reveal their achievement, but the criteria for measuring the expected results are not stated. By "Studying objects", writing papers, and "clearly verbalizing" students will have the chance to demonstrate their competency level, but the level expected is not explicit. When students have done these things, how will the department know or be able to discriminate levels of accomplishment?

4. Assessment Methods and Measures to be used.

For papers in Art 210ABC, students receive a detailed formal-analysis assignment and write their essays as homework. Instructor reads essays, grading and commenting on accuracy of perception, clear articulation, utilization of the vocabulary of formal analysis, grammar, spelling, organization, and essay structure.

Studio and foundation teachers assess written critiques, exhibit reviews, and essay examinations by grading with criteria above.

Studio and foundation faculty evaluates student ability to verbally synthesize material and this ability is reflected in grades for projects and final grades for courses.

Comment: States methods and occasions for evaluation but still sets no real criteria or level of performance expected. How will teachers assess critiques, reviews, and essays?

5. Time frame when assessment will be done.

mid-quarter during 210ABC sequence;

Ongoing during each quarter of enrollment in foundation or studio courses.

Comment: Relies heavily on course grades and role of individual instructor. Calls for no "summative" assessment at end of degree.

6. Who will do the assessment, collect and analyze data?

Comment: Lacks consistency of criteria and standards from section to section and instructor to instructor. Provides no real mechanism for collecting data on student performance level over time.

7. Type of Feedback (Data).

Feedback to the art department includes formal analysis paper grades, together with records of written faculty comments; grades from written critiques, reviews, as well as from oral critiques, together with faculty comments.

Comment: Needs more detail of how data will be collected, summarized, and interpreted. Seems like a massive record-keeping problem.

8. How will data be used to improve program or revise curriculum?

Data fed back to our department will be used to identify need for changes in the curriculum in order to improve students' ability to articulate understanding of design principles in clear written and verbal forms.

Comment: Seems unlikely that data can be reported and used to improve program when no method of collecting it or analyzing results over time is described in the methodology used. Sampling techniques might be developed. Stated criteria or scaling techniques need to be included if this course-based assessment is implemented

V. COURSE-BASED ASSESSMENT USING "EMBEDDED" QUESTIONS.

Example: BA in Mathematics
(part of plan only)

Goal 2.

To teach advanced mathematical concepts and analytical skills, to stimulate curiosity, encourage persistence, and develop mathematical maturity. We will thereby provide mathematics majors with a strong foundation, suitable for further study and for a career in mathematics or related field.

Comment: Focuses primarily on what department and program will provide rather than what they wish students to achieve or know or accomplish.

Outcome 2.

Students can analyze problems using mathematical definitions and criteria.

Outcomes Criteria:

Students must demonstrate knowledge of mathematical definitions associated with such mathematical concepts as groups, rings, homomorphisms, automorphisms, open and closed sets, accumulation points, theories of differentiation, 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.

Comment: A detailed set to topical expectations is provided but level of achievement is left to the assessment procedures below.

Assessment Methods and Measures:

The assessment procedure for undergraduates 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 student's achievements in the appropriate outcomes. In order to ensure consistency of grading, the committee will predetermine a detailed grading scheme for each of the questions in the list. The Scores from this grading will be kept in departmental database.

Comment: Provides consistency in courses without dictating all of the content, procedures or grades for individual instructor.

Time Frame.

Each student will be assessed in the appropriate courses during the quarter of his or her enrollment in that course.

Comment: Excellent formative assessment. Summative assessment procedures not developed. Use of senior honors projects and colloquia presentations suggested elsewhere in document.

Who will do the assessment?

Class instructors, according to departmentally approved grading schemes.

Type of Feedback:

The raw scores and summary statistics such as mean, median and standard deviations will be collected regularly and reviewed periodically.

Comment: With such reliance on individual faculty including key assessment measures in their courses, more detail on how department will collect and analyze finding would be helpful.