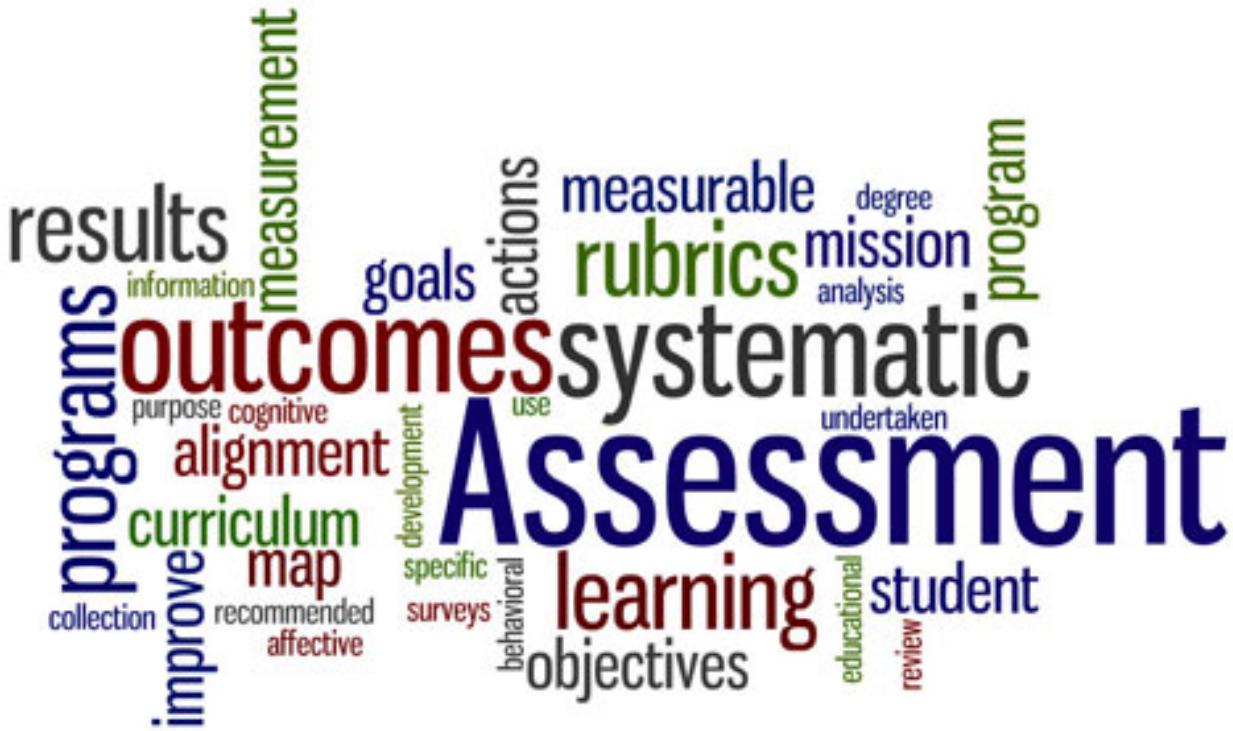
University of California Riverside
Office of Evaluation and Assessment



Annual Program-Level Assessment Handbook

Table of Contents

Assessment Defined

The definition of “Assessment” has evolved and changed over the years:

1991 - *Assessment is the systematic basis for making inferences about the learning and development of students. It is the process of defining, selecting, designing, collecting, analyzing, interpreting, and using information to increase students’ learning and development (Erwin).*

1999 - *Assessment is the systematic collection, review, and use of information about educational programs undertaken for the purpose of improving student learning and development (Palomba & Banta).*

2000 - *Assessment is the process of gathering and discussing information from multiple and diverse sources in order to develop a deep understanding of what students know, understand, and can do with their knowledge as a result of their educational experiences; the process culminates when assessment results are used to improve subsequent learning (Huba & Freed).*

2004 - *Assessment involves the use of empirical data on student learning to refine programs and improve student learning (Allen).*

In other words, assessment is the systematic collection and interpretation of evidence of student achievement of expectations with the aim of program improvement and student success. At the undergraduate level, this may be focused more on the learning and experiences students obtain while in the classroom. At the graduate level, this may have a more balanced approach, where part of the focus is on the learning that occurs in the classroom and the rest comes from experiences in the field (e.g. research, internships, fieldwork) and academic endeavors (e.g. professional conference participation, publications, gallery presentations).

It is important to note that the experiences are where student learning occurs and assessment aims to evaluate the degree to which those experiences help students meet program-level expectations developed by faculty within the program. Assessment provides the scaffolding to systematically do this evaluation.

Purpose of Assessment

Programs engaging with the assessment process may benefit in multiple ways. However, these benefits are dependent on the level at which the assessment occurs and who is engaged in the process.

Teaching and Learning Insights at the Course-Level:

From one perspective, assessment is focused on what students gain from their learning experiences and how faculty are able to guide that learning. When an effective assessment is utilized to determine the effectiveness of curricular implementation in helping students achieve outcomes, faculty are able to answer:

- Did students gain the knowledge and skills that were expected within the course or student experience?
    - Where did students do well?
    - Where did they struggle?
- Did the assessment (exam, paper, presentation, lab, research, etc.) effectively document the outcome being assessed?
- Where should I focus any revisions to my course to address where students struggled?

In essence, by taking the time to be reflective of assessment findings, faculty can gain considerable information that can be used to improve Teaching and Learning throughout the multitude of student experiences.

Program Level Insights:

In addition to course-level insights that focus on teaching and learning, assessment can also guide program-level decision-making. In order to gauge program-level student outcome achievement, assessments from the course-level need to be aggregated to reflect how students are doing in meeting program-level outcomes. This aggregation can help answer the following at the program-level:

- Where should the program emphasize changes to address student struggles?
    - Should these changes be curricular, resource allocation oriented, and/or student experience oriented?
- What do the struggles of students tell us about what is needed?
    - Do we need resources/tools that we currently do not have?
    - Do we need faculty expertise that currently does not exist in the program?
- Are we preparing students for work in the field?
- What assessment findings can we use for marketing purposes?
    - Student experiences and success in the program.
    - Post-graduation student success.

Altogether, when assessment is done in a way that informs programs on where strengths and struggles are, the information can be very useful for long-term planning and decision-making.

Assessment Process

For simplicity, we will discuss the assessment from the program-level perspective. However, the assessment process is the same for course-level assessment.

Assessment of student outcomes is the systematic collection and interpretation of evidence (student work) of student learning with the aim of improving student achievement of expected outcomes. Assessment is systematic in the sense that it is a planned and sequential activity. One way to think about structuring assessment is to break it down into a six-step process:

1. **Identify Outcomes**- Identifying clear, specific, and assessable student outcomes that are in line with goals and objectives of the program.
2. **Provide Opportunities** – Providing opportunities for students to learn and support/experience identified student outcomes.
3. **Gather Evidence** – Gather evidence from student experiences that demonstrate the degree to which students have met identified student outcomes.
4. **Analyze Evidenc**e – Analyze evidence to identify where students excel and where they struggle in achievement of identified student outcomes.
5. **Share Results** – Share results with other faculty, staff, and even students where appropriate, to collaboratively identify next steps in addressing findings from the analysis of evidence.
6. **Use What you Learn** – Apply identified next steps and recommendations to positively impact achievement of identified student outcomes.

Whether all of these steps are explicit in your program's assessment work, applying the assessment steps in some form will help to provide the insights identified earlier.

Assessment at UCR:

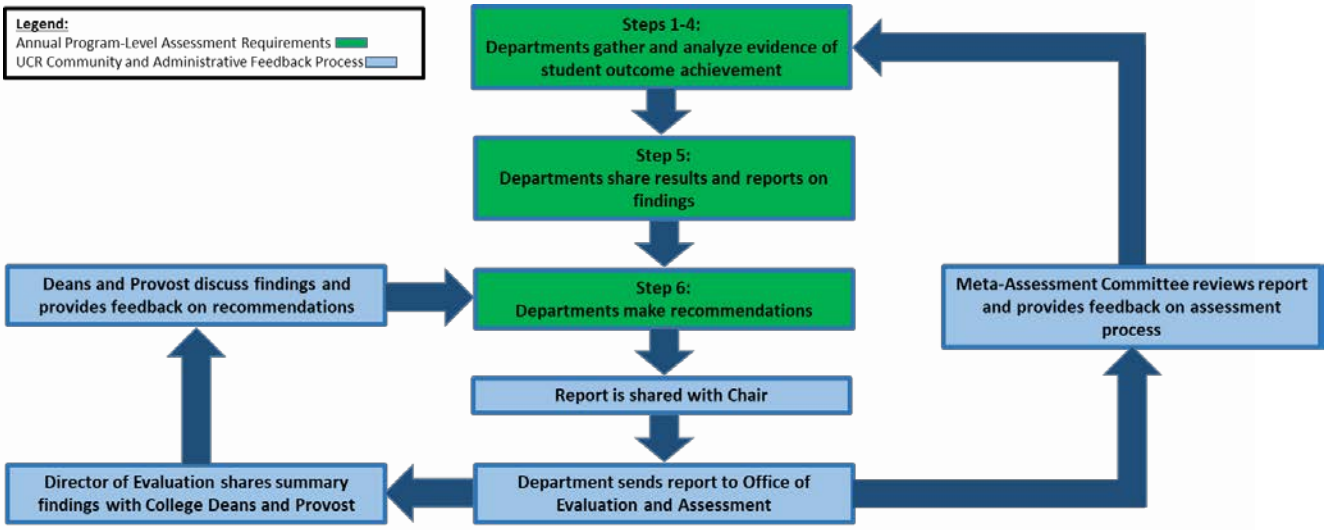
As a best practice in, and professional expectation of institutions of higher education, assessment of student outcomes is becoming more and more important to UCR's decision-making process. **Annually, all academic programs are required to:**

- Evaluate at least one student outcome
- Identify opportunities for improvement based on evaluation findings.
- Submit a report detailing those findings and recommendations.

Programs are strongly encouraged to make this a collaborative effort that brings faculty together to assess, discuss, make recommendations, and reflect on the implications of annual assessment findings. Collaboration through the annual assessment of student outcomes at the program-level aims to accomplish three things:

- Facilitate the annual reflection of programs on achievement of student outcomes for use in the decision-making and planning process.
- Support programs in the incorporation of assessment of student outcomes into future self-studies and program reviews.
- Gauge the institutional capacity of programs to conduct assessment, which will help direct future professional development by the Office of Evaluation and Assessment.

The program-level assessment process at UCR follows the following workflow structure.



Please read on to see details of steps 1 through 6 (program-level annual assessment process requirements.

STEP 1: Identify Outcome(s) to be Assessed

Option 1: Collaboratively at the beginning of the academic year, decide on which program-level student outcome(s) will be assessed. Goal is to get through the assessment of each student outcome in between Program Reviews.

Option 2: Continue to work through the designated student outcome(s) as identified in your program's long-term assessment plan. Goal is to get through the assessment of each student outcome in between Program Reviews.

No matter which option you choose, identifying which student outcome to assess starts with having clear and assessable student outcomes.

Outcomes help instructors know where to focus their time and efforts, facilitate program organization of their curriculum, and assist students in knowing what to expect. For the purpose of assessing student learning, we can think of learning goals as what students should know and be able to do in broad terms. Student learning outcomes are more specific formulations of the knowledge, skills, or attitudes that we will see in students who have had successful learning experiences. Common types of outcomes focus on the following:

- Knowledge Oriented: Emphasis is on knowledge gained.
  - *Students will be able to name the parts of plants and animal cells.*
  - *Students will be able to summarize the major ideas in a political speech.*
- Skills Oriented: Emphasis is on skills gained.
  - *Students will be able to use computers to collect and analyze data from experiments.*
  - *Students will be able to use improvisation to create artistic works.*
- Attitudes Oriented: Emphasis is on perceptions/attitudes achieved.
  - *Students will be able to engage in lifelong learning.*
  - *Students will be able to think critically about contemporary social issues.*

In addition to outcomes that are specific to what students will be able to know and/or be able to do, there are also outcomes that focus on other aspects of a program:

- Process Oriented: Emphasis is on implementation and consistency.
  - *150 students will attend the Resume builder workshops in total over the course of the academic year.*
  - *By the completion of the doctorate, each student will submit 5 times for peer-reviewed publication and include evidence of the use of journal reviewer feedback.*
- Satisfaction Oriented: Emphasis is on satisfaction or enjoyment.
  - *75% of students will be satisfied with the amount of feedback provided by his/her faculty member in a given course.*

Creating Student Outcomes:

If you do not know where to start creating student outcomes, there are a few places you might look to get ideas:

- Disciplinary associations often have mission statements, goals or sometimes even sample or suggested outcomes. You might use these or take them as a starting point to develop your own. In some areas, there are discipline-specific accreditation agencies that have specific goals or outcomes for students.
- You might review syllabi, major assignments, and course texts to gain a sense of what areas are already being emphasized. These may be places to start thinking about what you are already emphasizing.
- Start from the beginning and ask yourself, "What are the Big ideas?" you are trying to get across. Once you have an understanding of the Big Ideas, you can then start to reformulate them into an assessable format.

Outcomes are easier to assess if they have an action verb pointing to something that students will be able to do or produce. Outcomes such as "Students will know . . ." do not give much guidance as to how students might demonstrate what they know. If, for example, we want students to know two or three theories well enough to understand their relative strengths and weaknesses, we might select a verb such as "compare." The outcome "Students will be able to compare theories of . . ." suggests what students who really understand those theories will be able to do.

Well-crafted outcomes focusing on knowledge and skills often have an action verb, and these kinds of verbs are often organized using Bloom's Taxonomy, which highlights the cognitive complexity of a given task. The following list defines each level of Bloom's Taxonomy from shallower to deeper levels of learning:

- **Knowledge**: the ability to remember or recall facts, terms, or concepts that have been previously learned
    - Students will be able to identify important authors and works from nineteenth-century American literature.
    - Students will be able to name the parts of plant and animal cells.
- **Comprehension**: the ability to understand, interpret, and explain material that has not previously been seen (but may be similar to material that has been seen)
    - Students will be able to draw a diagram illustrating the major parts of a volcano.
    - Students will be able to summarize the major ideas in a political speech.
- **Application**: the ability to recognize when knowledge is relevant to a new situation and be able to solve new problems
    - Students will be able to factor a polynomial expression.
    - Students will be able to determine the (likely) age of a child based on a description of his or her behavior utilizing Piaget's theory of development.
- **Analysis**: the ability to identify the organizational structure of knowledge, including identifying parts and the relationships between the parts
    - Students will be able to apply economic theories to current events in another country to identify probable causes and likely outcomes.

    - Students will be able to describe a chemical reaction knowing only the starting and ending products.
- **Synthesis**: the ability to create a new product, such as a paper, speech, or creative work, with a variety of elements (some of which may be encountered for the first time during the synthesis)
    - Students will be able to hypothesize the origins of an observed genetic mutation.
    - Students will be able write a play (or screenplay).
- **Evaluation**: the ability to judge the quality or adequacy of something based on criteria
    - Students will be able to judge which among several alternative proposals is likely to expand access to medical care most widely.
    - Students will evaluate the soundness of another's conclusions given the particular set of observations at hand.

Here are some additional tips to help in creating effective and assessable student outcomes at any level:

- Good outcomes specify the level, criterion, and/or standard for the knowledge, skill, ability, disposition, or experience that the student must demonstrate.
- Good outcomes should be attainable by students with a reasonable amount of effort: Do not set the bar too high or too low.
- Good outcomes are observable and measurable.
- Good outcomes tend to focus on one observable item (single barreled vs. double-barreled).
    - Single-barreled: Customers will be highly satisfied.
    - Double-barreled: Customers will be highly satisfied with the service they receive and requests for service will increase.
- Try not to indicate a specific avenue for demonstration of the outcome (this is important because the door will be left open for individual faculty to decide on the teaching and assessment methods).
- Group outcomes in broad categories, where appropriate, based on similarities.
    - For example, the following three:
        - Students will be able to design and conduct experiments to address questions germane to the discipline.
        - Students will be able to design and administer surveys that address questions appropriate to the discipline.
        - Students will be able to conduct interviews and focus groups that address questions relevant to the discipline.
    - Can be merged into just one student outcome:
        - Students will be able to design and execute research plans using the major methodologies of the discipline (experiments, surveys, qualitative techniques) to answer disciplinary specific research questions.
- Collaborate and share with others to make sure that the outcomes are understandable and reflect what is most significant within your program and field.

- Make sure that the focus is on creating a manageable number of significant outcomes. It is better to have five or six really targeted outcomes than ten or twelve that are scattered, general, or difficult to manage periodic assessment of.
- Try to keep outcomes student-centered. As a start, begin each statement with "Students will be able to…" and use action verbs to clearly articulate what should be observed and measured.

Clear outcomes can help you know where to look and what kind of evidence to look for in understanding how well your students are meeting your expectations at any level. But keep in mind that creating outcomes is a process. The really good ones are created over time and revisited at the time of assessment.

STEP 2: Providing Aligned Student Experiences to Outcomes

In the context of assessment, alignment refers to the clear and direct relationship among student outcomes, learning opportunities and student experiences, and the evidence used for assessment. We can think about alignment at the level of the observable actions within a program, such as the curriculum students go through or the experiences they gain. Alignment is strong between outcomes and assessment when students have the opportunity to gain the relevant knowledge, skills, and/or experiences prior to being assessed.

Mapping is a strategy to plan or describe the alignment between outcomes and student experiences or learning opportunities. Mapping can be a forward-looking planning strategy, or it can be a way to describe and document what is already happening. In either event, mapping helps programs focus on ensuring program activities align with goals and intended outcomes.

Maps are most often set up as a grid, with student experiences running down the left and the various outcomes listed across the top. If the given learning opportunity or student experience aligns with an outcome, this is indicated at the intersection of the row and column for that student experience and outcome. We can use these techniques to develop a curriculum map for the various courses in a program of study and program-level outcomes. In the map below, Outcome 1 is covered in Course 001, Course 100, and Course 150, and Outcome 2 is covered by Course 005, Course 010, Course 020, and Course 160.

	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
Course 001	X				
Course 005		X		X	
Course 010		X			
Course 020		X			
Course 100	X		X	X	
Course 110			X		
Course 130			X		
Course 150	X			X	X
Course 160		X		X	X
Course 190					X

An alternative to the simple “X” way of noting alignment above is to use a scheme to show the depth or quality of coverage. For example you could use the following notation system:

- Introduced (I): This learning opportunity introduces students to the outcome at a basic level.
- Practiced (P): This learning opportunity gives students the opportunity to practice using something they already know, but with increasing sophistication.
- Demonstrated (D): This learning opportunity will give students a chance to demonstrate knowledge or skills at the level expected of degree holders.

When you include student experiences and where in a specific student experience the outcome can be observed, you start to create an alignment that links outcomes to assessments through the experiences. As mentioned before, these experiences can cover more than just what happens in courses. At the undergraduate level, student experiences and outcomes in academic programs will more than likely focus exclusively on the curriculum, while at the graduate level, experiences may cover fieldwork and academic expectations for students. The example on the following page is a more in-depth map that one might see in a graduate program, but can easily be used in an undergraduate program as well.

	Student Experience	SO1: Candidates will be able to create a differentiated lesson plan that will address a core objective.	SO2: Candidates will be able to utilize technology to facilitate the implementation of a lesson plan.	SO3: Candidates will be able to deepen student understanding by utilizing effective engagement strategies.	SO4: Candidates will be able to identify effective student engagement practices that utilize restorative justice practices.	SO5: Candidates will be able to develop their own area of research for peer-reviewed journal publication.
Curriculum	EDUC 500	Introduced (lesson plan)				
	EDUC 543	Practiced (lesson plan)	Introduced (lesson plan)			
	EDUC 556		Practiced (lesson plan)	Introduced (engagement presentation)		
	EDUC 612			Practiced (engagement presentation)	Introduced (engagement presentation)	
	EDUC 624					Introduced (capstone paper)
Fieldwork	40 Hours Classroom Observation/Teaching in Gate/Advanced Classroom	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom observations of mentors)	
	40 Hours Classroom Observation/Teaching in Regular Classroom	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom observations of mentors)	
	40 Hours Classroom Observation/Teaching in Special Needs Classroom	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom teaching event)	Practiced/Demonstrated (classroom observations of mentors)	
Professional/Academic	Attendance at Education Conference relevant to field of interest					Practiced (AERA Attendance)
	Article Submission for Publication					Demonstrated (capstone article submission proof)

For more information, please go to the following links to learn more about mapping:

- Student Experience Map (also known as a Curriculum Map) Template
- Student Experience Map Instructions
- Student Experience Map Example

STEP 3: Gathering Evidence of Student Achievement of Outcomes:

There are many common methods for gathering evidence of student learning and outcome achievement. It is hard to say that any one method is right or wrong, but some will align better with your outcomes than others. Also, some may work better in your class, discipline, or program than others.

Selecting a Method:

There are a few things to think about when deciding what kind of method(s) to select:

- Think about how reliable or consistent the measurement is likely to be. A measure with low reliability would give different results each time it was used. For a concrete example, using just one multiple choice item to assess a learning outcome is not likely to be reliable. A student might misread the item, understand the larger concept but miss the finer details in the individual question, circle "B" instead of "C," and so on. On the other hand, combining the total number of correct answers from a group of ten items is likely to be a more reliable measure of student learning.
- Think about how valid a measurement is likely to be. Measures with high validity have good alignment with the outcome they claim to be measuring. For example, using an essay to assess students' writing skills is probably more valid than using a multiple choice exam about the rules of grammar.

You may already have experience with some methods from prior experience teaching or assessing your students. If these methods have reasonable validity and/or reliability, there is nothing wrong with selecting a method to which you are already comfortable. In fact, it might make the assessment process more relevant if you use an assessment that you are already using, and it may increase efficiency and reduce workload.

Common Methods:

The following is a list of common methods of gathering evidence and they are separated into two distinct categories. First, Direct Evidence is created by students as they demonstrate what they have gained as a result of the student experience. Second, Indirect Evidence is typically created by students telling us what they think they have learned; indirect evidence can also be items such as average grades or graduation rates that point to student success without telling us what exactly students learned (or did not learn). Direct evidence is generally more convincing and should be used where possible. Indirect evidence can sometimes offer unique insights and may also be used to supplement direct evidence.

Using more than one line of evidence, or triangulating, generally offers more robust evidence of student success than using just one method. You can also select methods that complement one another's strengths and weaknesses. In the tables below, you will see the advantages and disadvantages of utilizing either direct or indirect evidence.

Direct Evidence

	Advantages	Disadvantages
Term Papers, Essays and other Written Work	• Easy to integrate into classroom routines • Can be used to assess a variety of kinds of outcomes	• Requires time to develop high quality assignments
Embedded Test Questions	• Easy to integrate into classroom routines • Can be closely linked to outcomes	• Comparability over time compromised unless questions are identical • Traditional exams may be an inauthentic way to assess learning
Portfolios	• Portfolios can bring work from across courses/time together in one place • There are free tools (e.g., Blackboard and Google) for managing portfolios • They provide a site of student reflection and metacognition	• Identifying and implementing a software package that fits your portfolio project can take time, and not all portfolio systems are free
Capstone or Signature Assignments	• Can be an effective place to assess more than one outcome • May be a good site to assess what has been learned over a student's career	• Guiding students through capstone assignments and assessing them may be particularly time intensive
External Tests	• Make it possible to compare across institutions (and across time) • Tests may be particularly well developed or designed	• May not be well aligned with local outcomes • Generally are not free of cost

- Term papers, Essays and other Written Work
  Student writing can be a good way to assess a variety of outcomes, from knowledge and basic mastery of content to skills like analysis, critical thinking and (obviously) writing. One advantage of using written work is that it is easy to integrate into classroom or course routines, including fieldwork and research. Another advantage is that with the use of a rubric, much of the time spent scoring and providing feedback to students can overlap with grading. Some advantages of using written work is that it is easy to integrate into classroom or course routines and, if you use a rubric, much of the time spent grading and providing feedback to students can overlap with grading. The main disadvantage is that without some kind of standard set of criteria (e.g. rubric), different people are likely to assess the same student evidence (i.e.: paper) in different ways.

- Embedded Test Questions
  Questions that align well with outcomes can be embedded in midterm, final, or other kinds of student examinations. These test questions can be multiple choice, fill in the blank, short answer, or essay. You can use existing test questions, although you might want to think about creating new ones (or making adjustments) to ensure good alignment with the outcome being assessed. Some advantages of embedded test questions are that they are easy to integrate into usual classroom procedures and can be crafted to closely align with your programs outcomes. One disadvantage of embedded test questions is that comparability between courses or over time can be limited unless identical questions are used. Another disadvantage is that traditional tests may not be an authentic form of assessment; a student may be able to select the correct answer on a multiple choice exam but fail to apply the underlying knowledge to a problem in the real world.

- Portfolios
  Portfolios are a collection of artifacts that students have produced - such as texts, images, creative products, or webpages. These collections are likely to be housed in an online repository. Students may simply collect things there, use the collection to highlight their own learning, or use the portfolio as a place to showcase their work to others. There are many options for online portfolio creation and curation. Note, that UCR's iLearn can be used to create portfolios, and there are other free options/alternatives such as Google Drive. One advantage of portfolios is that the collection of evidence is streamlined, and portfolios can be used to assess student growth over time as students will collect and add evidence of their learning to the portfolio over time. Another advantage is that portfolios are a natural place for students to reflect on their own learning; students can also often take portfolios with them, using them in graduate school or employment applications. One potential disadvantage of portfolios is that it can take time to identify and implement an electronic portfolio management system with features that work for your purposes.

- Capstone or Signature Assignments
  A capstone/signature assignment is one that asks students to create a significant original piece of work, integrating what they have learned over several courses or even years of study. The assignment might be a thesis, an original research project, or creative work. Some advantages of capstone assignments include the potential of assessing more than one outcome with the same piece of student work: A good capstone project should show that a student has met most of the program's expectations. Capstone assignments may also be a good place to assess student learning in interdisciplinary programs where much coursework may occur outside the department or program. Some disadvantages of capstone assignments are that they may be time intensive for instructors because they may have to guide students through the process (for example reviewing drafts), and then the projects themselves may be lengthy and complex.

- External Tests
  External tests are ones developed by a third party - such as a testing service or disciplinary association - that measure what students know in a particular field. One example is the Diagnostic of Undergraduate Chemistry Knowledge (DUCK), which asks students about general principles of chemistry and contains groups of items that ask about important subfields. The test has been taken at universities across the country, and the American Chemical Society reports national averages and percentile rankings. The advantage of external tests is that they make it possible to compare students' learning across or between institutions; it is also often possible to make comparisons over time. Many of these national tests have been developed by professionals with a background in psychometrics, meaning they may be particularly high-quality exams. The disadvantage of external tests is that they do not exist, and may not be appropriate, for all disciplines, may not be well aligned with your own program outcomes, and are usually not free of cost.

Indirect Evidence

	Advantages	Disadvantages
Locally Developed Surveys	• Can be quickly developed • Can be administered at low cost • Can be closely linked to outcomes	• Creating high-quality surveys may require time and training • Low response rates can affect the validity of results
Externally Developed Surveys	• Surveys have already been developed, typically by individuals with a background in survey methods • Make it possible to compare across institutions (and across time)	• May not be well aligned with locally developed outcomes • Generally are not free • Low response rates can affect the validity of results
Reflective Essays	• Can gather evidence that would be difficult to assess in other ways, for example about attitudes or change over time • Can be used as a pedagogical tool to encourage reflection	• Students may be tempted to write what they think instructors want to hear and not what they actually think
Focus Groups	• An authentic way to learn about attitudes and perceptions • Able to gather insights that instructors did not anticipate	• Keeping a focus group on topic can require some skill or training on the part of the facilitator • Evidence from focus groups is often unstructured, requiring skills in qualitative analysis
Graduation Rates	• Facilitate comparison between groups and over time • Can be seen as important measures of student success	• Constructing such measures may take knowledge of data management and data analysis techniques • These are likely to be, at best, a very rough proxy for any specific learning outcome

- Locally Developed Surveys
  One of the most common ways to gather indirect evidence of student learning is to ask students to self-report what they have learned. These surveys could be a half sheet of paper asking students about what they learned in the previous hour or an online survey with dozens of questions asking students about what they have learned in their degree programs. Surveys can include close-ended items (e.g., “strongly agree, agree, neutral . . .”) or open-ended items (e.g., “How do you think your writing has improved?”). The advantage of local surveys is that they can be quickly created and are generally easy to administer, and locally developed surveys can be easily tailored to your outcomes. One disadvantage of locally developed surveys is that creating high-quality surveys can be difficult without at least some experience in survey design. Another potential disadvantage is low response rates: If a relatively low percentage of respondents answer a survey, there is a chance that there could be significant differences between those who respond and those who do not.

- Externally Developed Surveys
  Others have also developed surveys that ask about student learning in general ways. One example is the University of California Undergraduate Experience Survey. This survey asks students to self-report on their level of reading, writing, math, and other skills when they started at this campus and where they are now. The change in self-assigned scores could be seen as indirect evidence of learning. The advantage of external surveys is that they have already been developed. Moreover, such surveys may have already been administered,

making it possible to look at change over time; it may also be possible to compare students on one campus to students on other campuses. The disadvantage of externally developed surveys is that they may not align particularly well with a given set of local outcomes, some of these surveys are proprietary and not free of cost, and external surveys may also suffer from the problem of low response rates.

- Reflective Essays
  Reflective essays ask students to reflect on what they have learned, often near the end of a course or just before earning a degree. Reflective essays can also be integrated with larger assignments, such as portfolios or group presentations, giving instructors additional insights into what students have learned. These kinds of essays ask students to make additional connections with course material or engage in metacognition, and are often assessed with a rubric. The advantage of reflective essays is that they can give instructors insights that might otherwise be difficult to make. Reflective essays can also be a unique pedagogical tool, encouraging students to link ideas and engage with the material in a more thoughtful and personally relevant manner. One disadvantage of reflective essays is that there may be a tendency for students to say what they think instructors are interested in hearing and not what they actually think.

- Focus Groups
  Focus groups involve students having a focused discussion on particular topics, such as what they have gained in a particular course, program, or professional experience. Focus groups typically involve a facilitator asking a small number of open-ended questions and then listening to answers as well as encouraging discussion among participants. The choice of the facilitator is important: If it is the instructor of a course students are currently enrolled in, students may not feel comfortable sharing (Another faculty or staff member from the same program may be a better choice). The conversation is typically documented by notes, a transcription, or a recording. This then becomes the evidence and is analyzed for common themes or patterns. The advantage of focus groups is they have a stronger ability to gauge the strength of respondents' feelings. Focus groups are also much better able to glean insights from responses or feelings that were not anticipated when compared to surveys, with predefined sets of answer choices. A disadvantage of focus groups is that if a facilitator is not careful, the group can easily stray off topic. It can also be time consuming to analyze unstructured data.

- Metrics Such as Passing, Retention, and Graduation Rates
  Metrics such as graduation rates or, in the context of particular programs, how long it took to pass a particular sequence of courses (e.g., BIOL 005A, 005B, and 005C) can give some insight into student learning. The advantages of these kinds of metrics is that they can often be compared across groups of students as well as disaggregated for subgroups (e.g., men or women) and tracked over time. The disadvantage is that constructing these kinds of metrics generally requires direct access to student data and at least some background in data

management and analysis techniques. These are also somewhat imprecise metrics in that it is not possible to know what, exactly, a student learned (or did not learn).

Additional notes on selecting evidence:

- Not all evidence needs to come from common forms of assessment as described above, which is especially true for assessment of outcomes that are more based on fieldwork and/or performance oriented. Some examples unique evidence are:
    - Art displays
    - Musical performances
    - Observations of field based research methodologies
    - Public presentations in the community
    - A software program
    - An engineered product
    - A lesson taught in a classroom
- Assessment evidence is most relevant and efficient if it comes from what already exists. There is nothing wrong with using work that students produce in existing courses, labs, fieldwork and research, or any other student experience.

Selecting a Sample:

One important aspect of gathering evidence for assessment is to counteract the most common myth that you need to look at every piece of student work when conducting assessment. It is not necessary to look at every single example of student evidence to conduct assessment. Instead, it is possible to draw a sample that is representative of the larger group of students. If done carefully, the time you spend examining this sample of student evidence can tell you something about learning among the larger group of students.

The key to sampling is selecting a group that is representative of the larger group. One option is to gather the kind of random sample statisticians talk about. To do this, you would gather all the evidence (e.g. all the term papers) and then use some random selection procedure (maybe those papers written by students with a student identification number ending in a six). You are typically much safer in making generalizations from those kinds of randomly selected samples. There is a large body of work on random sampling that can offer more precise guidance on considerations such as generalization and sample size.

If it is not feasible to assess all the pieces of evidence, and if you are not willing or able to assemble a random sample, the alternative is to try to be purposeful and collect a sample that attempts to approximate the larger group of students. This would likely mean including students from different classes and stages in the program; you will also want to include students whose work will show a variety of levels of mastery. It is important to be aware of limitations such purposeful sampling may introduce: If some groups of students are not included or are underrepresented, you limit your ability to say anything about learning among those groups.

If you are sampling because you simply do not have time to assess every student and are wondering how much evidence your sample should include, here is one approach to try. Start with about thirty examples. Conduct your assessment and then draw some tentative conclusions. Then assess ten more examples. Does any of this new evidence change your conclusions? If not, then your sample is probably big enough. If the additional evidence changed your conclusion, you should repeat the process until adding more evidence does not change your conclusions.

Remember, though, you do not have to collect a sample. If you are assessing student learning in a small class or program, you should probably include all students. Similarly, if you are using embedded test questions, it might be easier to look at the results for all the students at the end of the grading process.

STEP 4: Analyzing Evidence

Analyzing evidence of student achievement of expected outcomes is one of the most important steps in the assessment process because it is where strengths and gaps begin to emerge. While there are many ways to analyze evidence, we will focus largely on rubrics - a versatile tool that can be adapted to analyze many kinds of evidence - and then make some suggestions about analysis in general.

Rubrics:

Rubrics are versatile and can be used to assess many kinds of evidence, such as writing, presentations, research, and fieldwork. Rubrics can also provide relatively detailed feedback to students without requiring the grader to write many comments, and if you share a rubric with students before assignments or experiences are due, they can help students better understand what to spend time on when they work on assignments. In essence, such a rubric takes the ambiguity out of scoring student work and helps to put the student and the faculty member on the same page in terms of expectations.

In addition, rubrics can help standardize the assessment of student work across a number of individuals; for example, you might split up term papers among two colleagues and yourself and assess them with a common rubric. This can reduce the amount of time needed to conduct assessments or allow you to look at a larger sample in the same amount of time. If you use multiple people to assess student work – and you should – it is important to think about the level of agreement between the raters. A more technical term for this agreement is interrater reliability. We say interrater reliability is higher where raters give more similar scores and lower where their scores are more different. To increase interrater reliability, it is usually a good idea to have all raters look at a few of the same examples of student work, assess them, and then discuss why they gave the scores they did. This exercise, called “norming,” helps individuals calibrate their expectations or, alternatively, may reveal ambiguity in the rubric you are using. You will probably want to norm on five or so examples before splitting up the work among multiple raters.

Rubrics are most often set up as a matrix that specifies various levels of performance across one or more dimensions of student learning/expectations. The following is an example of a rubric created by UCR’s Department of Theatre, Film, and Digital Production that could be used to assess oral presentations by students:

Criteria	Emerging	Developed	Highly Developed
Content of Presentation	Presenter shows limited command of subject matter; insufficient coverage of context or background; inadequate use of details.	Presenter shows command of subject matter; sufficient coverage of context or background but does not generate additional interest in subject matter; adequate coverage of detail and main points.	Student shows excellent command of subject matter; provides context and background in a way that generates interest from those without specific prior knowledge; provides appropriate amount of detail for audience in time allotted.
Structure/Organization of Presentation	Presentation starts or stops abruptly; connection between some elements of the presentation may not be clear at all; movement from topic to topic is abrupt or unpredictable.	Presentation is clear overall; the logical relation between some elements may not be immediately clear; some transitions may create momentary confusion among the audience.	Presentation is compelling with a clear beginning, middle and end; presentation is a cohesive whole; movement from topic to topic is marked by logical transitions.
Nonverbal Delivery	Presenter makes limited eye contact; use of notes or prompts is a distraction; presenter's use of physical space distracts audience; use of gesture (or lack thereof) distracts from presentation.	Presenter makes eye contact as appropriate; use of notes or prompts may briefly distract; limited use of physical space and/or expressive gestures.	Presenter use of eye contact generates and holds attention; use of notes or prompts is subtle; presenter uses the space available in a way that focuses attention or interest; expressive gestures add clarity or interest to presentation.
Verbal Delivery of Presentation	Presenter's voice consistently indicates nervousness; pacing is uneven throughout; volume creates difficulties understanding content; wording choices obscure meaning or create confusion.	Presenter's voice is calm and tempo is generally appropriate throughout; volume is appropriate throughout; wording choices are clear and consistent with general usage.	Presenter modulates tempo and timbre to create interest; excellent pacing; volume is clear and modulated to add interest; wording choices are imaginative and memorable.
Time Frame	Presentation poorly fits time allotted, e.g., leaving either significant time at the end, running over time, or not covering all content before time expired.	Presentation nearly completed in time allotted. e.g., left a small of time or had to rush near the end.	Length of presentation almost perfectly matched to time allotted.

The rubric above breaks down the more complex skill of oral communication into several more specific dimensions such as content, structure/organization, time use, and verbal and nonverbal delivery. The columns provide detailed descriptions of what each level of performance looks like. You can create your own rubric or modify one of the many existing rubrics. The American Association of Colleges and Universities VALUE rubrics cover more 16 areas and are specifically designed for higher education. You can also access many more rubrics and/or create your own for free on iRubric.

Summarizing Results:

Once you have gathered information from a large number, or sample, of students, you will want to summarize the information in some way. One of the simplest ways to organize evidence is with a table that shows how many students performed at what level along what dimensions. Imagine we analyzed evidence from thirty students using the example rubric discussed earlier and organized it into the following table.

	Emerging	Developed	Highly Developed
Content of Presentation	5	5	20
Structure/Organization	5	5	20
Nonverbal Delivery	10	10	10
Verbal Delivery	15	10	5
Time Frame	15	10	5

Even this relatively simple presentation shows us students are, in general, doing fairly well with the content and structure. However, they appear to be struggling with the elements of delivery and their use of time.

It is important to note that findings do not need to be presented in a table format or even quantitatively. You also have the option of summarizing assessment findings in narrative format. Here are two ways of presenting the findings from the table above in narrative format that may be just as effective:

- After assessing samples of student work from 30 students in their capstone course, we found that that 20 out of the 30 students were scored at the highly developed level on the presentation of their content and structure, while students were evenly scored on their nonverbal delivery. Areas where students struggled were in verbal delivery and time where 15 of the 30 students were scored at emerging.
- After assessing samples of student work from 30 students in their capstone course, we found that the majority of students did well and were scored at highly developed on the presentation of their content and structure. The following comments provided to students as feedback emphasize where students excelled:
    - You did a good job in presenting the material. It was clear that you understood the content, and your presentation of how the movie was personally relevant to the lives of the people in the community emphasized that.
    - The way you organized the presentation made it easy to follow the choices you made from development, to creation, to production.

  However, it is clear after our assessment that students struggled in verbal delivery and time management. In terms of verbal delivery, students struggled to remain calm and maintain a consistent tempo in the delivery of their presentation. And in terms of time, students struggled to not go over the time allotted for them. The feedback below emphasizes these points:
    - While it was clear that you knew your content, the manner in which you communicated verbally was challenging to follow. It is recommended that you practice your presentations in the future in order to calm your nervousness and project your voice to everyone in the room.
    - Your presentation was very interesting to watch, but I was left wanting more because you were not able to finish your presentation in the time allotted. I would encourage you to practice your presentations in the future to make sure that it can be completed in the time frame provided and revise your presentation accordingly.

The benefit of summarizing your results in a table or figure is that it allows you to present all of the information in an easy to digest, space saving format. Tables and charts also allow for patterns in strengths and challenges to readily be observed. However, not all programs will have data, or a large enough sample size, for this to make sense. As such, a more narrative approach will allow for smaller programs and programs that are more qualitatively inclined to present their findings in a manner that makes sense to them. The only drawback to a narrative approach is that more writing may be necessary to fully convey the assessment results.

Ultimately, the decision as to how to summarize and present assessment findings is a purely programmatic or faculty driven decision. Neither way is wrong, and both have their benefits.

Collaborative Analysis and Interpretation of Evidence:
There are a number of reasons why assessment works best when it is a collaborative enterprise. First, and most important, when you are assessing at the programmatic level, you are really assessing the entire program, which is "owned," at least in part through the curriculum, by the collective faculty of a program. Second, assessment at the programmatic level generally works better when you gather evidence of student learning from more than one course or student experience and select more than a few examples of student work. Recruiting multiple faculty, and possibly even staff, to gather and analyze student evidence can be a way to spread out the work. Third, different people will always bring different experiences and perspectives, and involving them in the analysis of student evidence may help you identify and understand patterns and trends you might have missed. Program level committees that are engaged in program implementation, teaching and learning, curriculum, and student experience development are a good place to start in building that collaborative team.

Some Other Tips to Think About when Analyzing Evidence:

- Think about how the information would be most useful to you
    - If you want to know what the average student is capable of doing, consider analyzing your evidence using averages or medians.
    - If you are interested in learning more about how your students varied from student to student on the same measure, variation on subscales or submeasures of larger outcomes, or variation across time or between classes, majors, or other groups of students consider analyzing your evidence by percentages or frequencies by different criteria.

  Which of these is more important - central tendency or variability - will vary in different contexts, but it is always a good idea to look at your results, at least briefly, through both sets of lenses.
- If you are interested in the overall level of student performance towards a specific standard that is set beforehand, consider using benchmarks.
    - You might select your benchmark in a number of ways, for example, by coming to some kind of consensus with your colleagues, looking at previous assessments, or looking to national norms or expectations from employers or graduate school entrance standards.

    - Formalizing your expectations before analyzing the evidence may allow you to make a clearer assessment of the extent to which students are meeting your expectations.
- If you would like a visual representation of the data gathered, consider using charts, graphs, or other visual representations of assessment results.
    - This may only be useful to the extent they summarize data, make it easier to spot trends and patterns, and accurately represent the data. However, if a chart or graph is difficult to read or interpret (or takes much more time to create than a written description of results), it probably does not add value.
    - If you are working with a Microsoft product, here is a step by step guide to creating charts and graphs.
- Make sure to look for patterns in the evidence.
    - Where did students do well? Where did they struggle?
    - Any issues with the assessment itself?
- Not all assessments need to be displayed quantitatively. It is okay to describe results in a narrative form that makes sense to you and conveys what you discovered.

STEP 5: Documenting and Sharing Results:

Documenting what you learn from assessments is an important step in using assessment as a tool for student success. But in order to share your results, you need to document your assessment work and findings. Here are some suggestions for documenting your assessment work and findings:

- For documenting assessment work and findings in your own course:
  - Write down some notes about what you examined and what you found, but remember to revisit these notes before you teach the class again.
  - Put together a synopsis of your findings comparing different courses over the years.
  - Consider having an informal conversation with a colleague by sending a quick e-mail to others who have recently taught the same course or are colleagues in the department, letting them know what you have found.
- For documenting assessment work and findings at the program level:
  - Use a more formal approach, such as the UCR Annual Assessment Report
  - Consider documenting your work in collaboration with others that address the same outcomes through their own interactions with students.
  - Present your findings in a formal manner in program-level meetings.
  - Consider sharing your strengths/successes with the campus as a whole.

Once you have documented your assessment work, either through the formal assessment process at UCR, or through a personal approach for your own development, sharing your assessment results is an opportunity to:

- Share what you have learned from the assessment findings.
- Provide others with additional insight and information about your program or course and progress towards helping students achieve goals.
- Give you the opportunity to tout your successes and strengths.
- Encourage collaboration.
- Set the stage for any changes in response to what you have learned.

At the individual faculty level, it may not seem that important to share your assessment findings, but it may be beneficial to others who “follow-up” your work by continuing the education when they interact with the same students. Sharing your own individual results may also help those who teach the same courses come to some understanding that can help reduce the “shopping around” by students for courses. In both of these cases, consider sharing your assessment findings with others in your field through a simple email or through a formal faculty or program-level meeting. In either format, be sure to share what you did, your findings, the potential significance, and what you are going to do about the results. You could even ask for feedback/recommendations as to what to do about the assessment findings.

In terms of assessment findings at the program-level, it is very beneficial when the sharing process is formalized. Consider using the UCR Annual Assessment Report to formalize the format in which the assessment report will be shared, but also consider setting aside time at a program-level meeting to share the annual assessment report

(this is already planned into the UCR Annual Assessment Report process). The assessment findings become more relevant if shared after the completion of the assessment, but before the end of the academic year. It is also helpful if you share the assessment report/findings ahead of time, with ample time for others to review before the actual meeting. This allows you to focus the actual meeting time on what next steps/recommendations can be collaboratively created by the program to address assessment findings. Most importantly, try to make the sharing process a collaborative endeavor that allows for honest and meaningful discussion on the assessment findings that are important to your program.

General Advice on Assessment Reporting:

Here are a few general pieces of advice to keep in mind when reporting on assessment:

- Be open, honest, and fair about your assessment results. Although there may be a temptation not to report on discouraging findings, assessment is more about the process than the outcome.
- Encourage discussion and collaboration as part of the reporting and sharing out process (see UCR Annual Assessment Report)
- Second, think about confidentiality issues for your students. You should not identify individual students in assessment reports. Remove names, student identification numbers, and other obviously identifying information from samples of student work that you might include in a report.
- Plan ahead. There is no need to do everything in one year. If you plan your assessment over multiple years, it can become more manageable and less stressful (see Program-Level Assessment Timeline - Overview).
- Be concise. There is no need to share everything, only what is necessary for the who you are sharing the assessment findings with to understand what you did, how you did it, what the results were, and what you plan on doing about the results.
- Be thoughtful as to how it fits into the big picture of your program and its long-term plans. Assessment becomes irrelevant unless you link it to something that is meaningful. The reporting process can be an opportunity to do just that.

STEP 6: Using What You Have Learned

Use What You Have Learned:

The goal of assessment is to discover actionable insights into how you might facilitate student learning and student success. Using assessment results in this way is often referred to as closing the loop, and there are three general ways to use what you have learned from assessment.

Make Changes to Facilitate Learning:

If you learn that students are generally not meeting your expectations, you will probably want to change some aspects of teaching or program organization or try something new to help students learn. Examples of things you might change in response to assessment results that do not meet your expectations might include the following:

- Change the assignment you used for assessment. It may not have given students the best opportunity to show what they have learned. Perhaps the directions were confusing, the assignment was not adequately linked to course material, or students did not have adequate examples to help them understand what good and poor work would look like.
- Change a course to include new content modules, move important content modules earlier, or remove modules that are not critical so that you have more time for what is important.
- Coordinate instruction across courses. For example, if you were not satisfied with students' ability to use proper citation conventions, you might include specific instruction in an introductory course and then ask all instructors to include citations in grading criteria for all written assignments.
- Make a change at the programmatic level - for example, changing the prerequisites for a given course, the number of required courses, or which specific courses can meet particular requirements.

Certainly, there are other solutions you might try in response to evidence of weak student learning, but the most important purpose for engaging in assessment is to improve student learning and success. This means reflecting critically on places where courses, academic programs, or other elements of students' educational journeys could be changed to facilitate student success.

When thinking about what kinds of changes to make, it is important to bear in mind the amount and quality of evidence with which you are working. It would probably not be advisable to completely rework a curriculum if you observe that students are not meeting expectations in one small sample; if you found evidence of weakness in student learning in this small sample, you might think about smaller changes such as fine-tuning the course, assignments, or assessment methods.

Make Changes to your Assessment Process:

Another general result of assessment might be changing the way you conduct assessment. If this is one of the first few times you have done assessment work, you may need to improve your assessment process. Common examples here include revising the rubrics you used, fine-tuning survey questions, or deciding to assess the

same outcome in a different course or student experience next year. You might also realize that your approach to assessment needs a more significant overhaul and that you want to try something different next time. Relatedly, you may want to revise your learning outcomes if you find that an outcome was too vague, too specific, or too similar to another outcome. (However, keep in mind that if you are trying to track student learning over time, changing outcomes means that you may have to "start the clock over" if the old and new outcomes are not similar enough to be comparable.)

Celebrate your Success:
If you learn that students are meeting your expectations, indicating that teaching is generally effective and that learning is proceeding as expected, this is good news. You should share your success and keep doing what helps students learn.

Academic Program Review:
At UCR, undergraduate programs typically undergo an external review every five to seven years. Part of this process involves reporting on results of recent assessment efforts. (See Senate procedures.) If you have been conducting regular assessment activities, gathering this material to support the program review process should be relatively straightforward. Hopefully your program will have assessed all outcomes during the span since the last program review, so the self-study process for program review is also a good time to reflect on assessment results in a more holistic way.