Assessment of student learning is the systematic collection and interpretation of evidence of student learning with the aim of improving student learning and increasing student success. This handout suggests some starting points for assessment of student learning, largely at the programmatic level.

Assessment can be organized into six steps. Those with little assessment experience might find it most useful to start at step one and work out an assessment plan by moving sequentially. Those with previous assessment experience might think about which areas could be most profitably improved, find the related step, and take that as their point of engagement.

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|  | **Central Question** |
| **Step 1) Identify outcomes** | Do you have clear outcomes for what students will learn? |
|  **Step 2) Provide learning opportunities** | Have you planned learning opportunities that are aligned with your outcomes? |
|  **Step 3) Gather evidence** | Do you know what kind of evidence of student learning you will gather? |
| **Step 4) Analyze evidence** | Do you how you will analyze the evidence that you will gather? |
| **Step 5) Share results** | Do you know how you are going to document and share what you find? |
| **Step 6) Use what you have learned** | Do know what you could do with what you learn from assessment? |

**Step 1) Identify Outcomes** 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.

Well-crafted outcomes generally have an action verb and these kinds of verbs are often organized using Bloom’s Taxonomy (see <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/> for more context).

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| **Bloom’s Categories of Learning, indicating deeper learning moving from left to right** |
| **Knowledge** | **Comprehension** | **Application** | **Analysis** | **Synthesis** | **Evaluation** |
| defineidentifynameselectstaterecall | translatecompletedescribediscusssummarizeillustratelocateexplainorder | applycalculatedemonstrateinterpretoperateperformsolveuse | analyzebreakdowncomparecontrastexamineexplorequestionoutline | combinecomposeconsolidateconstructcreatedesignformulatehypothesizeintegrate | appraiseargueassesscritiquedefendevaluatejudgejustifyrate |

**Step 2) Provide Learning Opportunities** When assessment clearly links to a learning outcome and includes plans to gather relevant evidence we can talk about good alignment between learning opportunities and assessment plans. To the extent one or more of these elements is missing alignment is weaker.

Mapping is one strategy to plan or describe the alignment between outcomes and learning opportunities. Mapping can be a forward-looking planning strategy, or can be a way to describe and document what is already happening. In either event, mapping helps to focus on the link between teaching activities and intended outcomes.

Maps are most often set up as a grid with learning opportunities (courses at the program level; class meetings at the course level) running down the left and the various outcomes listed across the top. If the given learning opportunity aligns with an outcome this is indicated at the intersection of the row and column for that opportunity and outcome. The table below provides an example.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 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 |

You can also think about alignment between your learning outcome and the assignments you give students as well. Well aligned assignments clearly link to particular outcomes, making it easier for students to focus on what they should be learning and allowing instructors to gather evidence with strong links to the outcome you will be assessing.

**Step 3) Gather Evidence** Below is a list of common methods for gathering evidence. The list is not meant to be exhaustive and the advantages and disadvantages are meant to sensitize you to some of the success and problems you may encounter while using a particular method.

Direct evidence is created by students as they demonstrate what they have learned. Indirect evidence is typically created by students telling us what they think they have learned; indirect evidence can also be things like average grades or graduation rates that point to student success but still don’t tell us what, exactly, students learned. 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.

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| Direct Evidence |
|  | Advantages | Disadvantages |
| Embedded Test Questions | • Easy to integrate into classroom routines• Can be easily aligned to outcomes | • Comparability compromised unless questions are identical• Traditional exams may be an inauthentic way to assess learning |
| Portfolios | • Portfolios can bring work from across courses together in one place• There are free tools (like Blackboard and Google) for managing portfolios• Provide a site for student reflection and meta-cognition | • Identifying and implementing a software package that fits your portfolio project can take time• 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• May be particularly well developed or designed  | • May not be well aligned with local outcomes• Generally are not free of cost |
| Indirect Evidence |
| Locally Developed Surveys | • Can be quickly developed• Can be administered at low cost• Can be easily aligned to outcomes | • Creating high quality surveys may require time and training• Low response rates can impact validity of results |
| Externally Developed Surveys | • Have already been developed, typically by individuals with 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 impact validity of results |
| Reflective Essays | • Can gather evidence on things (attitudes, change over time, etc) that would be difficult to assess other ways• 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 overtime• Can be seen as important measures of student success | • Constructing such measures may require training in data management and analysis techniques •These are likely to be, at best, a very rough proxy for any specific learning outcome |

**Step 4) Analyze Evidence** Analyzing evidence of student learning is one of the most important steps, and there are many ways to do this.

If you gathered evidence in way that easily lends itself to quantification (e.g.: how many questions a student got correct) you may want to use mathematical or statistical techniques to summarize your evidence and get an idea of what students are learning.

Rubrics are a common way to analyze assessment data and most often set up as a matrix that specifies various levels of performance across one or more dimensions of student learning. Rubrics are versatile and can be used to assess many kinds of evidence. You can create your own rubric or modify one of the many existing rubrics. For example, see the American Association of Colleges and Universities for rubrics to assess things like critical thinking, written communication, and information literacy, as well as many others, at <https://www.aacu.org/value-rubrics>.

However you analyze evidence visual representation (like charts and graphs) may be useful to the extent that they can summarize data, make it easier to see patterns and accurately represent the data.

**Step 5) Share what you Learned** Documenting and sharing what you learn from assessment is an important step in using assessment as a tool for student success. This is not only a way to share what you have learned, it may provide others with additional insight and information. Also, it can be an important part of making changes in response to what you have learned.

If you are assessing student learning in an undergraduate program for annual reporting purposes see <http://ueeval.ucr.edu/assessment/loa_report.html> for more details.

**Step 6) Use what you 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.

1) 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.

2) Make changes to facilitate learning: If you learn that students are not meeting your expectations, you will probably want to change some aspect of teaching, program organization, or try something new to help students learn.

3) Make changes to your assessment process:The other general outcome of assessment might be changing the way you do assessment.Particularly if it is one of the first few times you do assessment work, it may be the case that your assessment process could be improved.