

Direct and Indirect Assessments

- Data-collection methods for assessment purposes typically fall into two categories: direct and indirect.
- Direct evidence of student learning comes in the form of a student product or performance that can be evaluated.
- Indirect evidence is the perception, opinion, or attitude of students (or others).
- Both are important, but indirect evidence by itself is insufficient. Direct evidence is required.
- Ideally, a program collects both types.
- Direct evidence, by itself, can reveal what students have learned and to what degree, but it does not provide information as to *why* the student learned or did not learn.
- The *why* is valuable because it can guide faculty members in how to interpret results and make improvements. Indirect evidence can be used to answer *why* questions.

Types of Direct Data-collection Methods

DIRECT METHODS	Examples
Licensure or certification	AIC Level 1 Certification Exam
Embedded testing or quizzes	Students' pass rates on the estimating comprehensive final exam.
Embedded assignments	<p>"Signature assignments" that can provide information on a student learning outcome. Students complete these assignments as a regular part of the course and instructors grade the assignments for the course grade. In addition, the assignments are scored using criteria or a scoring rubric and these scores are used for program-level assessment.</p> <p>Example: Assignment 7 of the Capstone Project course that deal with estimating cost of the project.</p>
Pre- post-tests	When used for program assessment, students take the pre-test as part of a required, introductory course. They take the post-test during their senior year, often in a required course or capstone course.
Employer's or internship supervisor's direct evaluations of students' performances	Evaluation or rating of student performance in a work, internship, or service-learning experience by a qualified professional.
Observation of student performing a task	Professor or an external observer rates each students' classroom presentation using an observation checklist.
Capstone projects	Students produce a final project that demonstrates their cumulative experiences in the program. The project is evaluated by a team comprised of faculty and construction industry representatives.

Types of Direct Data-collection Methods

DIRECT METHODS	ADVANTAGES	DISADVANTAGES
Licensure or certification	<p>National comparisons can be made.</p> <p>Reliability and validity are monitored by the test developers.</p> <p>An external organization handles test administration and evaluation.</p>	<p>Faculty may be unwilling to make changes to their curriculum if students score low (reluctant to "teach to the test").</p> <p>Students may not be motivated to prepare and perform well in the test.</p> <p>The test fee.</p> <p>Information from test results is too broad to be used for decision making.</p>
Embedded testing or quizzes	<p>Students motivated to do well because test/quiz is part of their course grade.</p> <p>Evidence of learning is generated as part of normal workload.</p>	<p>Faculty members may feel that they are being overseen by others, even if they are not.</p>
Embedded assignments	<p>Students motivated to do well because assignment is part of their course grade.</p> <p>Faculty members more likely to use results because they are active participants in the assessment process.</p> <p>Online submission and review of materials possible.</p> <p>Data collection is unobtrusive to students.</p>	<p>Faculty time required to develop and coordinate, to create a rubric to evaluate the assignment, and to actually score the assignment.</p>
Pre- post-tests	<p>Provides "value-added" or growth information.</p>	<p>Increased workload to evaluate students more than once.</p> <p>Designing pre- post-tests that are truly comparable at different times is difficult.</p>

		Statistician may be needed to properly analyze results.
Employer's or internship supervisor's direct evaluations of students' performances	Evaluation by a career professional is often highly valued by students. Faculty members learn what is expected by industry members.	Lack of standardization across evaluations may make summarization of the results difficult.
Observation of student performing a task	Captures data that is difficult to obtain through written texts or other methods.	Some may believe observation is subjective and therefore the conclusions are only suggestive.
Capstone projects	Provides a sophisticated, multi-level view of student achievement. Students have the opportunity to integrate their learning.	Creating an effective, comprehensive culminating experience can be challenging. Faculty time required to develop evaluation methods (multiple rubrics may be needed).

Types of Indirect Data-collection Methods

INDIRECT METHODS	Example
Student surveys	Students self-report via a questionnaire (online, telephone, or paper) about their ability, attitudes, and/or satisfaction.
End-of-course evaluations	Students report their perceptions about the quality of a course, its instructor, and the classroom environment.
Alumni surveys	Alumni report their perceptions via a questionnaire (online, telephone, or paper).
Employer surveys	Employers complete a survey in which they evaluate the skills, knowledge, and values of new employees who graduated from the program.
Interviews	Face-to-face, one-to-one discussions or question/answer session. E.g., The program administrator or a trained peer interviews seniors to find out what courses and assignments they valued the most (and why).
Focus group interviews	Face-to-face, one-to-many discussions or question/answer session. E.g., The program administrator or a graduate student leads a focus group of students who are enrolled in scheduling course. The students are asked to discuss their experiences in the course, including difficulties and successes.
Job placement data	The percent of students who found employment in a field related to construction within one year.
Enrollment in higher degree programs	The number or percent of students who pursued a higher degree in the field.
Institutional/Program Research data	<ul style="list-style-type: none"> • Class size data • Graduation rates • Retention rates • Grade point averages

Types of Indirect Data-collection Methods

INDIRECT METHODS	ADVANTAGES	DISADVANTAGES
Student surveys	<p>Can administer to large groups for a relatively low cost.</p> <p>Analysis of responses typically quick and straightforward.</p> <p>Reliable commercial surveys are available.</p>	<p>Low response rates are typical.</p> <p>With self-efficacy reports, students' perception may be different from their actual abilities.</p> <p>Designing reliable, valid questions can be difficult.</p> <p>Caution is needed when trying to link survey results and achievement of learning outcomes.</p>
End-of-course evaluations	<p>Analysis of responses typically quick and straightforward.</p>	<p>Difficult to summarize the results across courses.</p> <p>Property of individual faculty members.</p>
Alumni surveys	<p>Can administer to large groups for a relatively low cost.</p> <p>Analysis of responses typically quick and straightforward.</p>	<p>Low response rates are typical.</p> <p>If no up-to-date mailing list, alumni can be difficult to locate.</p> <p>Designing reliable, valid questions can be difficult.</p>
Employer surveys	<p>Can administer to large groups for a relatively low cost.</p> <p>Analysis of responses typically quick and straightforward.</p> <p>Provides a real-world perspective.</p>	<p>Low response rates are typical.</p>
Interviews	<p>Provides rich, in-depth information and allows for tailored follow-up questions.</p> <p>"Stories" and voices can be powerful evidence for some groups of intended users.</p>	<p>Trained interviewers needed.</p> <p>Transcribing, analyzing, and reporting are time consuming.</p>

Focus group interviews	<p>Provides rich, in-depth information and allows for tailored follow-up questions.</p> <p>The group dynamic may spark more information--groups can become more than the sum of their parts.</p> <p>"Stories" and voices can be powerful evidence for some groups of intended users.</p>	<p>Trained facilitators needed.</p> <p>Transcribing, analyzing, and reporting are time consuming.</p>
Job placement data	Satisfies some accreditation agencies' reporting requirements.	Tracking alumni may be difficult.
Enrollment in higher degree programs	Satisfies some accreditation agencies' reporting requirements	Tracking alumni may be difficult.
Institutional/Program Research data	Can be effective when linked to other performance measures and the results of the assessment of student learning (using a direct method).	

Evaluate Your Choice of Data-collection Method

A well-chosen method:

1. provides specific answers to the assessment question being investigated.
2. is feasible to carry out given program resources and amount of time faculty members are willing to invest in assessment activities.
3. has a maximum of positive effects and minimum of negative ones. The method should give faculty members, intended users, and students the right messages about what is important to learn and teach.
4. provides useful, meaningful information that can be used as a basis for decision-making.
5. provides results that faculty members and intended users will believe are credible.
6. provides results that are actionable. Faculty members will be willing to discuss and make changes to the program (as needed) based on the results.
7. takes advantage of existing products (e.g., exams or surveys the faculty/program already use) whenever possible.