



Assessment of Student Learning at IUPUI

2013-14 Annual Report

Contents

Overview	2
Comprehensive Evaluation at IUPUI	3
Accreditation	3
Accreditation Example: School of Engineering and Technology	4
Program Review	6
Program Review Example: Department of English	7
Assessing Learning Outcomes	9
Principles of Undergraduate Learning	9
Principles of Graduate and Professional Learning	10
PGPL Assessment Example: School of Dentistry	10
Research to Improve Student Success	12
Research Example #1: School of Science	12
Research Example #2: University College	13
Collaborative Support for Assessment	14
Refocusing around a New Strategic Plan	16
New goals, new performance indicators	16
New institutional research structures	16
Educational Unit Annual Reports for 2013-14	17
Appendix A. Assessment Types and Structures at IUPUI	19
Matter for assessment	19
Structures supporting assessment	21
Common methods of assessment	21
Appendix B. Direct and Indirect Measures of Student Learning	23

Assessment of Student Learning at IUPUI

2013-14 Annual Report

Overview

Like other higher education institutions, IUPUI assesses student learning for two main purposes: (1) to assure ourselves and our students that their learning experience at IUPUI meets or exceeds appropriate standards; and (2) to inform and guide improvements to our pedagogy, our programs, and our services. In addition, we regularly report to stakeholders through the annual IUPUI *Performance Report* and, since 2003, through this report and its predecessor, which was developed for the Indiana Commission for Higher Education. These reports are publicly available on the IUPUI web site at <http://strategicplan.iupui.edu/Performance-Report/Archive> for the *Performance Report* and at <http://www.planning.iupui.edu/accr/campus-assessment-page.php> for this assessment report.

At an institution with some 30,000 students in 17 schools and two colleges, assessment is multi-faceted and complex. This report highlights the many approaches to assessment at IUPUI at campus and unit levels, from articulating learning outcomes through strengthening curricula and teaching and learning practices based on assessment findings.

The words *assessment*, *evaluation*, and *measurement* are often used as synonyms, but advanced practitioners make distinctions among them. In higher education, it is more common to use the term “assessment” in relationship to learning, while “evaluation” frequently applies to projects or administrative procedures, and “measurement” connotes for many people a quantitative dimension. This report takes its definition of “assessment” from a glossary compiled by the Advanced Practices Subcommittee of the IUPUI Program Review and Assessment Committee (PRAC):

Assessment: is the systematic collection, review, and use of information about educational programs undertaken for the purposes of improving student learning and development (Palomba & Banta, 1999). The purpose of assessment is to provide information about the student learning and development that occurs as a result of a program. A “program” may be any activity, project, function, or policy that has an identifiable purpose or set of objectives.

(<http://planning.iupui.edu/evalassess/DRAFTGlossaryofAssessmentTerms.pdf>)

Assessment, then, ascertains whether, what, how, and how well students learn. It addresses factors known to affect or correlate with students’ academic success. It is linked with, but not the same as, measures related to students’ completion success (e.g., retention and graduation rates). Its overarching purposes at the unit and campus levels are to improve student learning and program effectiveness in supporting that learning.

Within degree programs, responsibility for assessment of student learning rests with the faculty, whether assigning course grades, determining satisfactory accomplishment of the Principles of Undergraduate Learning (PULs) and of Graduate and Professional Learning (PGPLs), or confirming that students have achieved a program’s expected learning outcomes and are ready to

graduate. Faculty determine program curricula and are thus in the best position to identify opportunities for improvement and to implement improvements. Within academic support and co-curricular units that work with students, assessment is often carried out by professional staff members with assessment expertise and/or in collaboration with faculty members who work with those units. Numerous internal and external structures support this aspect of faculty and staff work and ensure leadership and planning for assessment across the campus.

For information about administrative structures supporting assessment at IUPUI, and for examples of types of assessment commonly used, see the appendices to this report.

Comprehensive Evaluation at IUPUI

Accreditation

Accreditation is one important external driver of assessment. IUPUI is evaluated every ten years for reaffirmation of accreditation by a regional body, the Higher Learning Commission (HLC) of the North Central Association of Colleges and Schools. In Fall 2012, a number of faculty and staff committees, along with members of the Division of Planning and Institutional Improvement and the Office of Academic Affairs, completed several years of intensive preparation for institutional reaffirmation of accreditation, including a campus-level self-study. These efforts culminated with the HLC accrediting team visit in November. The self-study report and the subsequent report of the visiting team continue to be publicly available at <http://www.iupui.edu/2012/>. In April 2013, the HLC approved the visiting team's recommendation for reaffirmation, and IUPUI moved into a new accreditation cycle with mid-point review expected in Summer 2017.

Regional accreditation focuses on entire institutions. Over fifty programs at IUPUI also hold “specialized accreditation”—validation by a professional community of peers that a program meets quality standards in a discipline or field of practice. Some departments and programs must be certified by multiple bodies, and at varying intervals, so the effort involved in specialized accreditation is extensive. For example, the School of Nursing is reaccredited by the National League for Nursing Accrediting Commission for the BSN and MSN programs every eight years, the Commission on Collegiate Nursing Education for the BSN and MSN every ten years, the Indiana State Board of Nursing for the BSN every year, and the American Nurses Credentialing Center for its continuing nursing education programs every five years. The complete list of IUPUI's accredited programs and their current status is available at <http://www.planning.iupui.edu/accountability/>.

In 2013-14, the following programs or departments hosted specialized accreditation visits, each requiring a year or more of extensive self-evaluation in preparation:

- School of Dentistry, Commission on Dental Accreditation of the American Dental Association
- Biomedical Engineering Technology, B.S. initial accreditation, Engineering Technology Accreditation Commission of ABET

- Computer Engineering Technology, B.S., Engineering Technology Accreditation Commission of ABET
- Construction Engineering Management Technology, B.S., Engineering Technology Accreditation Commission of ABET
- Electrical Engineering Technology, B.S., Engineering Technology Accreditation Commission of ABET
- Interior Design Technology, B.S., Council for Interior Design Accreditation (CIDA)
- Mechanical Engineering Technology, B.S., Engineering Technology Accreditation Commission of ABET
- Herron School of Art and Design, National Association of Schools of Art and Design (NASAD)
- Health Administration Information, B.S., Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM)
- Histotechnology, A.S., National Accrediting Agency for Clinical Laboratory Science
- Nursing, B.S.N., Indiana State Board of Nursing
- Public Health (Environmental Health), B.S., National Environmental Science and Protection Accreditation Council (EHAC)
- School of Optometry, American Optometric Association, Council on Optometric Education
- School of Public and Environmental Affairs, National Association of Schools of Public Affairs and Administration
- Social Work (BSW and MSW), Council on Social Work Education

In addition, the following programs were preparing for visits in 2014-15: Clinical Laboratory Science and Cytotechnology (both in the School of Medicine), Continuing Nursing Education (School of Nursing), and Forensic and Investigative Science (School of Science).

Accreditation Example: School of Engineering and Technology

Critics of non-governmental accreditation often appear not to realize the extent to which faculty prepare seriously and respond purposefully to evaluation by their peers. Specialized accreditation in particular confers meaningful status important to attracting talented students and faculty. The 2013-14 assessment report from the School of Engineering and Technology demonstrates the thoughtfulness and attention to detail with which faculty and staff prepare for an accreditation visit, respond seriously to the review team's observations, and work to ensure that the next group of programs prepares suitably for approaching accreditation renewals. The extensive excerpt below comes from the full school report posted online at <http://www.planning.iupui.edu/evalassess/engtech1314.pdf>.

The five IUPUI technology programs currently accredited under the Engineering Technology Accreditation Commission (ETAC) of ABET, Inc. – Biomedical Engineering Technology (BMET), Construction Engineering Management Technology (CEMT), Mechanical Engineering Technology (MET), Electrical Engineering Technology (EET) and Computer Engineering Technology (CpET) – underwent an accreditation visit in October 2013. This was an initial – and very successful – accreditation visit for the Biomedical Engineering Technology (BMET program): no

shortcomings were noted, meaning that the Commission is satisfied that the program meets all the criteria for accreditation, including demonstrating that students completing the program meet the ABET learning outcomes (a-k) for technology. The final report from the program evaluator particularly praised the well-equipped on-campus laboratories that give students the opportunity for hands-on work with the very tools they would use in the field; as well as the excellent working relationship between the BMET program and local hospitals and medical equipment managers, providing opportunities for all students in the program to complete an internship experience. The commission voted to accredit the BMET program until the next general review, the 6-year maximum allowed by the ABET accreditation process.

The visiting Program Evaluators raised several concerns about the other programs that needed to be addressed after the visit. The most critical of these concerns were:

- In both EET and CpET, there was a slight mismatch in wording between ABET outcomes *c* and *k* and the CpET student outcomes; in particular, the CpET outcomes omitted the ability to “apply experimental results to improve processes” and the commitment to “continuous improvement”. A concern was raised that these crucial elements of the ABET outcomes were therefore not being effectively assessed or considered as part of the continuous program improvement process. In response, CpET updated the wording of their own outcomes, collected data on the new outcomes during the fall 2013 semester, and incorporated those findings into their continuous improvement process.
- In CEMT, a serious concern was raised that although the program had a well-defined process to collect course-level outcomes (primarily via the campus PUL assessment process), there was no systematic process to consider overall student outcomes at the program level. Furthermore, to the extent that program improvements were reported, they were dictated by sources and policy decisions external to CEMT rather than by consideration of student outcomes and how to improve them. In response, CEMT has significantly revamped their program-level outcomes assessment and improvement process using a template that is being adopted school-wide for tracking student outcomes for ABET-accredited programs. This new process is described in detail in the Engineering and Computing section below.

In addition, although it did not rise to the level of a concern that required immediate action, the program evaluator for Mechanical Engineering Technology observed that students in the program had mentioned that it was common knowledge that students having trouble in mathematics could find an easier path to completing the mathematics requirements by taking those courses at the local community college (Ivy Tech). The evaluator recommended that IUPUI work closely with its feeder colleges to ensure that similar levels of quality are achieved across institutions for courses that are deemed to be equivalent. Through joint representation on the School of Engineering and Technology’s Assessment Committee we already maintain a close relationship with the pre-engineering faculty at Ivy Tech (some of whom also support or have supported the Ivy Tech technology programs), and already have plans for assessment activities this fall that will help ensure that students taking foundational courses at Ivy Tech are sufficiently well-prepared for success in IUPUI engineering and technology programs.

The Interior Design Technology program (IDT) also underwent a re-accreditation visit in fall 2014. In their final report, the Council for Interior Design Accreditation (CIDA) highlighted the following strengths of the program:

- Community engagement
- Annual student design show event held on campus
- Study abroad opportunities
- Dedicated Career Services office for job placement
- Global view of Design
- Multidisciplinary collaboration
- Strong assessment methods and data

The main concern raised by this visit was that some instructional facilities and work spaces were not adequate to the needs of the program or sufficiently available to students – a problem that may be addressed with more dedicated spaces or more hours of availability for existing facilities. In light of the overall strength of the evidence that this program is educating students who are well-prepared for the Interior Design industry, the Interior Design Technology program received the full six year re-accreditation.

Program Review

Although similar to specialized accreditation in requiring self-study and peer review, IUPUI's internal process of program review is more explicitly aligned with the campus mission and includes all programs, regardless of the existence of an external accrediting body. IUPUI program review engages community members, students, and school and campus administrators as well as faculty from other IUPUI units and disciplinary specialists from peer institutions. The process is integrated with campus planning, decision-making, and resource allocation so that any recommendations for improvement can be carried out as part of coordinated planning for the future. The Program Review and Assessment Committee (PRAC) provides oversight of the process, with administrative support from the Division of Planning and Institutional Improvement. The dean of each school is responsible for leading the reviews in that school.

Reviews occur on approximately an eight-year cycle, coordinating with any relevant external reviews to minimize duplication of faculty time and effort. Faculty develop a comprehensive self-study during the year prior to review. A team of internal and external representatives conducts the on-site review (including interviews with various constituent groups) and presents a written report with recommendations. During the following year, program faculty prepare a written response that identifies actions to be taken to address each recommendation, and the dean convenes a follow-up meeting to discuss next steps. PRAC subsequently meets with the department chair to discuss long-term outcomes.

During 2013-14:

- The Departments of Africana Studies and Communication Studies in the School of Liberal Arts, the Departments of Mathematical Sciences and Psychology in the School of Science, the Foundation Studies program in Herron School of Art and Design, the Ph.D. and M.S.D. programs in the School of Dentistry, the School of Journalism at IUPUI, and

the Divisions of Human Resources, Student Health and CAPS in Student Affairs, Diversity, Equity and Inclusion, and Information Management and Institutional Research were completing immediate follow-up activities from their reviews in 2012-13.

- The Departments of English and History in Liberal Arts, the Departments of Biology, Chemistry and Chemical Biology, and Physics in the School of Science, the Division of Student Affairs, the Graduate Office, and the First-Year Experience program in University College were reviewed.
- The Advising Program in Technology and M.S. in Technology Program in the School of Engineering and Technology, the Departments of Anthropology and of World Languages and Cultures in the School of Liberal Arts, the Department of Computer and Information Science in the School of Science, the Department of Tourism, Conventions, and Event Management in the School of Physical Education and Tourism Management, the Campus Center in the Division of Student Affairs, and the School of Nursing were preparing for review in 2014-15.

Program Review Example: Department of English

The reports that units prepare for the program review visiting team are typically based on detailed self-evaluation across a range of issues and accomplishments linked to departmental efficiency and effectiveness. The excerpt below from the Department of English self-study completed in 2013-14 (pp. 65 and 93-94) exemplifies faculty candor and attention to detail in explaining a challenge, presenting evidence, identifying possible solutions, and soliciting the review team's advice for improvement. The discussion of advising identifies an area that is increasingly a concern for students, faculty, and staff alike because of its importance in assuring student academic success and timely degree progress.

SECTION IV: Assessment of Student Satisfaction and Learning Outcomes

Recent efforts at assessment in the English Department have been focused by the Student Learning Outcomes statements, written in 2010. Coupled with a new, Spring 2013, survey of students in Capstone Experiences, new pictures of student satisfaction and Learning Outcomes are just beginning to emerge. Even though we value the snapshot that numerical data supply, our approach is to couple that with the students' own representations of achievement and with direct evidence in the work they produce. Students, by and large, express high levels of satisfaction with the opportunities and challenges that the faculty and courses offer. These assessments help us to recognize that advising is the category we need to give the most attention, and that even in areas where they acknowledge success, the outliers offer legitimate concerns.

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4. Focus on Advising

The department's advising process seeks to connect students to advisors who know best the requirements of the concentration the students are pursuing. The Program Directors and the Lead Advisor can provide students with dependable advising and serve as a resource to department faculty who have questions about advising. Our *Undergraduate Advising Guide for English Majors* is quite useful and readily available; we update it as needed. Our

relatively new annual Advising Fair provides an additional opportunity for students, especially those who are unaware of their permanent advisor, to receive advising. The recently completed coding of our “new” 2010 requirements in the SIS system promises to clarify the efforts of our students and faculty with advising.

We do less well in reaching students who fail to declare concentrations (though they may think they have one), who have academic difficulties of which we’re unaware, or who are not knowledgeable about career avenues for those who achieve a degree in English. Our process for connecting a student with their permanent advisor can prove cumbersome if the student does not follow instructions for declaring their concentration. Administrative difficulties remain which stem mainly from the variant, unwieldy processes of the School of Liberal Arts infrastructure through which students enter the English major.

Of additional concern is the quality of advising that some students get from faculty in the department. While many faculty see advising students as a priority and take the time and effort to learn graduation requirements and advising systems, some faculty do not see student advising as a priority, do not make a strong effort to stay current on advising requirements, and do not spend time learning the (admittedly complex and confusing) advising tools. These mixed priorities can be seen in the “Capstone” student survey that we administered to senior English majors in the department during spring 2013 as reflected in Tables 26 and 27 below, which are slightly contradictory. While Table 26 shows 73 percent of the junior and senior English majors surveyed (19/26) were less than satisfied with, or undecided about, the advising they received from the department, Table 27 indicates that 65% (17/26) felt advisors were knowledgeable and accessible. (As noted above, 65% in the Graduating Senior Survey rated their advisor’s ability to provide them with accurate and helpful information about their major as Excellent.) . . . [Detailed tables presented.]

When the next cohort of students answered these survey questions in Fall 2013, the raw numbers show improvement. (See charts above.) Nonetheless, the student comments still express the need for continued effort to advise the students early and often and accurately as a part of the experience of completing our degrees, rather than as a burden merely added on to other duties.

Our strengths and weakness in advising offer opportunities for improvement. We continue to build on our relationship with the Student Affairs Office in the School of Liberal Arts; this essential relationship can be improved further to smooth the entry of our majors into departmental advisement. We can use the annual spring Advising Fair and revised correspondence with our majors to increase their cooperation with our advising process. We can further reach out to those majors without declared concentrations and better encourage regular advisement. We can work more closely with the retooled School of Liberal Arts Career Center to improve our communication with majors about their futures.

As reflected in Tables 26 and 27 above and the student comments from the Fall 2013 survey results, we need to work as a department on providing better advising for our majors in our one-on-one appointments. It is clear that some of our majors are not finding faculty who are

willing to meet with them, or are finding that faculty are not well prepared to provide accurate academic advising.

We welcome feedback from the review team on ways to more effectively and efficiently advise our majors.

Assessing Learning Outcomes

Principles of Undergraduate Learning

The campus-wide undertaking to assure that our undergraduates are mastering the IUPUI Principles of Undergraduate Learning (PULs) continued through 2013-14. In Spring 2010, IUPUI adopted a systematic institution-wide approach to PUL assessment to assure regular attention to all PULs across all undergraduate programs and to enable reporting at the campus and school levels. Most undergraduate programs established a five-year cycle for assessing student learning of PULs identified as major and moderate emphases in each course; a few used a three-year period. The faculty member teaching a given course chooses an assignment or group of assignments the successful completion of which can demonstrate accomplishment of the PUL(s) designated for that course. Course instructors use their accustomed tools and a common rating scale to report the PUL results at the same time that they submit course grades for each student.

By the close of academic year 2013-14, the accumulation of nine semesters' data began to provide meaningful information about undergraduate student learning of the PULs. The table below, prepared by Information Management and Institutional Research (IMIR), represents an encouraging look at the campus level, with mean results from the 400-level courses ranging from a low of 3.04 to a high of 3.44 on a 4-point scale (where 1 = Not at All Effective and 4 = Very Effective). Several IUPUI schools have also requested reports sorted by department to permit closer examination of opportunities for program-level improvement.

IUPUI Faculty Ratings of Student Performance on PULs with Major Emphasis (400-Level Courses)¹

PUL – Major Emphasis	Mean ³	Not Effective	Somewhat Effective	Effective	Very Effective	Total
1A. Written Oral & Visual Communication Skills	2,836 3.28	124 4.4	286 10.1	1,095 38.6	1,331 46.9	2,836 100.0
1B. Quantitative Skills	1,935 3.04	135 7.0	333 17.2	779 40.3	688 35.6	1,935 100.0
1C. Information Resource Skills	346 3.12	42 12.1	42 12.1	96 27.8	166 48.0	346 100.0
2. Critical Thinking	3,001 3.24	113 3.8	347 11.6	1,254 41.8	1,287 42.9	3,001 100.0
3. Integration and Application of Knowledge	7,459 3.43	186 2.5	470 6.3	2,738 36.7	4,065 54.5	7,459 100.0
4. Intellectual Depth, Breadth, and Adaptiveness	3,771 3.39	103 2.7	310 8.2	1,373 36.4	1,985 52.6	3,771 100.0
5. Understanding Society and Culture	2,089 3.29	120 5.7	236 11.3	641 30.7	1,092 52.3	2,089 100.0
6. Values and Ethics	1,408 3.44	48 3.4	72 5.1	497 35.3	791 56.2	1,408 100.0
Total ²	22,845 3.33	871 3.8	2,096 9.2	8,473 37.1	11,405 49.9	22,845 100.0

1 Includes Columbus

2 Combined number of student ratings in all 400-level courses sampled in Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, and Spring 2014. A student may be evaluated more than once if he or she is taking more than one 400-level course.

3 Scale: 1 = "Not Effective" 2 = "Somewhat Effective" 3 = "Effective" 4 = "Very Effective"

The first five-year cycle begun in Spring 2010 will not conclude until Fall 2014, but serious review of accumulating data occurs every year. For example, the School of Public and Environmental Affairs (SPEA) faculty have noted positive student performance in both PUL 2 (Critical Thinking) and PUL 3 (Integration and Application of Knowledge), but weaker performance on PUL 1A (Written and Oral Communication). Since PULs 2 and 3 are assessed in a total of 28 classes but PUL 1A only at the 100 and 200 levels, faculty anticipate adding a course in public affairs writing in addition to requiring additional writing assignments in courses across the curriculum to assure writing improvement over time. Similarly, students appeared not to be doing as well as desired on PUL 1B (Quantitative Skills), so during 2013-14 SPEA took two significant steps to address that challenge. The school hired a full-time coordinator for the undergraduate statistics program required for all majors, and the new instructor is introducing several new strategies to enhance student learning. In addition, SPEA is participating in a new campus tutoring center designed to help students struggling with statistics and statistics-related analysis.

Principles of Graduate and Professional Learning

In 2011 IUPUI's Faculty Council adopted a set of campus-wide Principles of Graduate and Professional Learning (PGPLs) parallel to the PULs in response to a need expressed by a number of IUPUI graduate/professional programs. Neither regional nor specialized accrediting bodies require assessment of graduate/professional-level "general education" outcomes, nor does IUPUI have any campus-wide requirement that schools report on such outcomes. Nonetheless, most IUPUI graduate and professional programs have now aligned their program outcomes with the campus PGPLs and several have begun reporting on PGPL outcomes in their annual Assessment Reports.

PGPL Assessment Example: School of Dentistry

A discussion of the DDS Program in the School of Dentistry's 2013-14 PRAC report illustrates how alignment between the PGPLs and disciplinary outcomes functions together with specialized accreditation and school standards to support assessment of student learning at advanced levels of study.

Dental education in the U.S. is competency-based. The accrediting body of dentistry, the Commission on Dental Accreditation (CODA), permits each dental school to establish the specific learning outcomes and associated measures that, when demonstrated independently by each student, are deemed to be evidence of successful completion of the requirements of the degree. IUSD maintains detailed student-level tracking of all competencies via its outcomes measures documentation. At the program and institutional level there are additional measures used track the progress of the school towards the stated Mission, Goals, and Vision of IUSD. <http://www.iusd.iupui.edu/about-us/mission-and-goals/>).

Dental accreditation standards were extensively revised in 2013, and in September 2013 IUSD became the first dental school in the country to be accredited using the revised standards. The site visit was highly successful; the school was fully accredited, with no reporting requirements in the DDS, DH or Advanced Specialty Programs.

Dental accreditation standards mandate that the school have stated goals in the areas of teaching, research, patient care and service. At IUSD, each of the goals in these areas has multiple associated measures which are evaluated regularly and used for continuous improvement. Student outcomes are used as evidence of student learning and as indicators of the quality of aspects of the program from admissions through graduation. These are examples of the institutional and program level assessment that is used to improve teaching and learning.

IUSD Teaching and Learning Program Goal:

- Enhance student learning and develop graduates who are highly competent practitioners.

Principle of Graduate and Professional Learning (PGPL) most closely associated with this program goal:

- *Demonstrate the knowledge and skills needed to meet disciplinary standards of performance.*

Program-level Objective & Measure (tracked at the individual student level, as part of the IUSD IOA process):

- All students will pass National Dental Board Examination (NBDE) Part I by August prior to the beginning of D4.

Findings:

Board pass rates are tracked for each student and for the class as a whole. The class of 2015 had a number of students (17) who were not successful on their first attempt of Part I of the NBDE (a measure of student mastery of the basic and biomedical sciences taken after the first three semesters of dental school.) Based on interviews with the students who failed, the course directors of the biomedical sciences courses, and evaluation of the admissions files of these students, action plans were developed and implemented across the 13-14 academic year.

Program Changes Implemented:

1. Early identification of students having difficulty in basic sciences (D1) using ExamSoft. Students at risk meet with faculty in OAA to identify strategies for improvement.
 - In the Fall of 2014, IUSD is delivering all written exams in ExamSoft. This allows us to run reports on students across all their courses, as a sort of dashboard for early identification. With early identification, the impact of D1/D4 mentor pairing is likely to be more effective.
2. D4/D1 mentoring partnerships set up for those students as part of early intervention.
 - 2 first year students were paired with fourth year students for tutoring.
 - 1 first year student was paired with a faculty mentor

3. IUSD Faculty Council adopted revised policies on Boards, with required threshold scores on Mock Boards as an additional requirement for student to be approved to schedule the Board exam.
4. A smaller number of faculty were assigned to advise all D1 students to facilitate greater support for students and increased continuity in the advising process.
 - Beginning in fall 2014, faculty advising for DDS students was taken on by three faculty liaisons for each class.
5. The Curriculum and Assessment Committee is evaluating the impact of the standardized grading scale used in the basic sciences courses in D1 and D2 to determine if a higher minimum passing score in these courses should be adopted. The hypothesis is that the current 70 minimum pass score may not be rigorous enough to ensure a level of mastery of the material that will translate into success on Part I of the Board.

Student- related outcomes of program changes:

The Class of 2016, the first class impacted by these program changes, had a NBDE Part I first time pass rate of 97/99. One of the two students who were not successful passed the Board on the second attempt. The other student is still preparing and using the Mock exams to evaluate his progress. He has been mentored by faculty who do Board remediation.

Research to Improve Student Success

Much of the assessment reporting at IUPUI addresses student achievement of learning outcomes. Some campus units also conduct research on student success and on strategies and interventions that support such success, using metrics related to student retention and graduation. The School of Science and University College have been campus and national leaders in this important research.

Research Example #1: School of Science

Over the past several years, the School of Science reports have described Federally funded longitudinal research on interventions to improve student success in science, mathematics, engineering, and technology (STEM) programs. This excerpt summarizes the continuing success of such efforts:

This year's report will next highlight a number of ongoing and new initiatives in the School of Science that assess student learning outcomes and student success. While this is not a comprehensive list, it details many of our major initiatives in the School of Science. Many of the initiatives mentioned in this report are continued efforts of the programs described in detail in our two previous PRAC reports (2011-12 and 2012-2013), many of which are related to our ongoing NSF funded **Central Indiana STEM Talent Expansion (CI-STEP) Program at IUPUI** (Jeff Watt et al.). The focus of CI-STEP is to employ and assess the impact of several intervention strategies on student learning and student success, leading to higher numbers of students graduating with STEM degrees. This program takes a coordinated and systemic approach to increasing

undergraduate success in STEM at all levels, from pre-college to the important first year experience, to the sophomore year and on to graduation, through leadership and career development. To meet these goals, the School of Science has spent the last 4 years initiating a series of new programs and funded a series of STEP mini-grants to expand, extend, or develop new programs at IUPUI based on successful existing high-impact practices. In addition, several other externally funded student success initiatives allow us to continue to make progress in assessing student learning and success, including the NSF funded **Cyber PLTL (cPLTL): Development, Implementation, and Evaluation** (Pratibha Varma-Nelson et al.), and the NSF funded **Advancing Undergraduate Chemical Education Through Contextualized Organic Laboratories** (Martin O'Donnell et al.).

As a result, *we have met or exceeded our target goals for each year of the funding, including a:*

- 10% increase in the number of new and transfer students admitted to STEM majors,
- 10% increase in the number of minority students admitted to STEM majors
- 10% decrease in the DFW rates for MATH, CS, PHYS, TECH and other courses
- 15 additional students participating in internship and research experiences
- 50 graduating seniors participating in honors seminars

Research Example #2: University College

Since its inception in 1997, University College (UCOL) has developed a series of initiatives to support IUPUI undergraduate student persistence and success. Its faculty and staff have employed rigorous research to understand our students and to evaluate UCOL's various programs and projects. This summary of results for one such program demonstrates the school's careful attention to effectiveness and includes the kinds of data that have made "a culture of evidence" more than a trendy slogan at IUPUI.

Summer Bridge Program

The IUPUI Summer Bridge Program is a two-week program for incoming freshmen held in August before fall classes begin. Students are introduced to collegiate-level expectations for writing, mathematics, and critical thinking; given opportunities to establish connections with faculty and other students; allowed to become more acquainted with the campus; and learn effective study strategies. Each Summer Bridge section (limited to 25 students) is taught by an instructional team, which includes a faculty member, an academic advisor, a librarian, and a student mentor. Many students also continue to meet periodically in a first-year seminar-type class throughout the fall semester.

- The Summer Bridge Program has experienced steady growth over the past decade (2003–2013). A . . . total of 539 first-time, full-time IUPUI students participated in Summer Bridge in 2012 compared to 455 in 2011. This marks a one-year increase in participation of 19%.

- Students from the 2012 Summer Bridge Program earned higher one-year retention rates (79% compared to 71% for nonparticipants) and had higher levels of academic performance (fall GPA 2.95) compared to nonparticipants (fall GPA 2.81). Students participating in Summer Bridge also had lower DFW rates (15%) compared to nonparticipants (18%).
- African American students who participated in the most recent Summer Bridge Program (2012) were less likely to earn fall GPAs below 2.0 and had higher fall-to-spring retention rates (92%) compared to nonparticipants (85%).
- Fall-to-spring retention among Hispanic/Latino students participating in Summer Bridge (92%) was notably higher than for Hispanic/Latino students not participating in Summer Bridge (81%). Hispanic/Latino Summer Bridge students also had notably higher levels of academic success (14% of participants earned fall GPAs below 2.0 compared to 23% for nonparticipants).
- Summer Bridge participants have higher one-year retention rates compared to nonparticipants. . . .
- 2012 African American students who participated in SB had higher Fall-to-Fall retention rates (72%) compared to nonparticipants (65%). African-American students who participated in the Summer Bridge program (2012) also were less likely to earn fall GPAs below 2.0. Results suggest that the Summer Bridge program has a differential positive impact on African American, Latino, and students testing into remedial math.
- Students are highly satisfied with their Summer Bridge experiences. Students reported that they were satisfied that the program provided them with the resources and information to help them succeed in college. In addition, the vast majority of students (99%) indicated that they would recommend Summer Bridge to other first-year students.

Collaborative Support for Assessment

Faculty ownership of and collaboration on assessment are important to the success of any assessment program, and especially so at IUPUI, given our size, scale, and structure of schools and centers for experiential and co-curricular education. The main campus-level mechanism supporting faculty-driven, collaborative assessment approaches is the Program Review and Assessment Committee (PRAC), composed of representatives from a broad range of academic and support units and led by faculty. PRAC activities are supported by staff of the Division of Planning and Institutional Improvement (PAII).

As a collaborative, PRAC provides a forum for exchange of program review and assessment information and strategies among undergraduate, graduate, and co-curricular units across the campus. In addition, the committee offers guidance for student learning outcomes assessment throughout IUPUI and funds small grants that promise innovative approaches or improved practice in assessment. PRAC members compile and submit the annual school or unit assessment report, and a PRAC subcommittee peer reviews these reports and provides collegial feedback and suggestions for improvement. PRAC members also serve as liaisons to their units and provide guidance and expertise on assessment issues within the school or center.

At monthly meetings, PRAC members learn about special initiatives, discuss current issues related to assessment and program review, approve new assessment grants and hear reports from previous grantees, and engage in professional development.

- In 2013-14, the committee approved new assessment grants for projects in the Department of Physical Therapy, Center for Service and Learning, School of Social Work, and the Mental Health Counseling Program at IUPUC. Faculty from the School of Dentistry, the Department of Communications Studies, the School of Social Work, and the Department of English presented results from recently completed assessment grants.
- In September 2013, PRAC members from the School of Engineering and Technology, the Kelley School of Business, and the Division of Student Affairs described their varying approaches to assessment of PUL 2: Critical Thinking. The October meeting included perspectives on assessment planning and reporting offered by representatives from University College, the Department of Physical Therapy, and the Office of Institutional Effectiveness. The November meeting continued the focus on assessment planning and sustainability, including an overview presentation from the Center for Teaching and Learning on developing student learning outcomes, illustrative reports from the Schools of Science, Nursing, and Education on processes of curriculum improvement, and a report on assessment planning in the education program at IUPU Columbus.
- With respect to new initiatives, members were kept in touch with:
 - plans to implement and assess the new general education core curriculum;
 - a project in the IUPUI Graduate Office funded by the Council of Graduate Schools to prepare graduate students for future responsibility for assessment of student learning as an integral part of their teaching;
 - a multi-state project sponsored by the Indiana Commission for Higher Education and AAC&U's Quality Collaboratives to pilot a model of assessing student learning outcomes across multiple institutions;
 - the Degree Qualifications Profile (DQP) and work on the DQP conducted by the National Institute for Learning Outcomes Assessment (NILOA); and
 - a new initiative from the Council on Adult and Experiential Learning (CAEL) to build understanding of competency-based education.
- Representatives of Information Management and Institutional Research and University College offered a brief tutorial on using social media to stay in touch with alumni to support assessment and program review. At the December 2013 meeting, Trudy Banta led an exploration of the usefulness of Appreciative Inquiry in assessment practice. In February, IMIR staff presented a report on selected results of the 2013 IUPUI Staff Survey. And in May, the Faculty Liaison from University Information Technology Services (UITS) provided an overview of assessment capabilities in Canvas, IU's new learning management system.
- At several meetings, PRAC members discussed potential improvements to the campus-wide approach to assessing student achievement of the PULs. Representatives from the School of Engineering and Technology, the Herron School of Art and Design, and University College summarized their schools' differing approaches to PUL assessment.

Refocusing around a New Strategic Plan

New goals, new performance indicators

February 2014 saw public release of *Our Commitment to Indiana and Beyond: IUPUI Strategic Plan*, which represents the efforts of several hundred IUPUI faculty, staff, and community members and reflects the values, culture, and aspirations of the IUPUI community. IUPUI's annual *Performance Report* for 2013-14 describes the plan's three focal emphases and ten strategic goals, and subsequent *Performance Reports* will report progress toward achieving these goals:

The success of our students

- Goal 1: Promote Undergraduate Student Learning and Success
- Goal 2: Increase Capacity for Graduate Education
- Goal 3: Transform Online Education
- Goal 4: Optimize our Enrollment

Advances in health and life sciences

- Goal 5: Leverage our Strengths in Health and Life Sciences

Contributions to the well-being of the citizens of Indianapolis, the state of Indiana, and beyond

- Goal 6: Accelerate Innovation and Discovery through Research and Creative Activity
- Goal 7: Deepen our Commitment to Community Engagement
- Goal 8: Strengthen Internationalization Efforts
- Goal 9: Promote an Inclusive Campus Climate
- Goal 10: Develop Faculty and Staff

Measuring and reporting progress on these goals as well as the goals for the Indiana University Bicentennial Strategic Plan will involve development and refinement of key performance indicators. The most up-to-date list of indicators is available on the Strategic Plan web site at <http://strategicplan.iupui.edu/MeasuringSuccess/Emerging-and-Representative-Performance-Indicators>. Several of the proposed indicators relate directly to student learning and its assessment.

Under Goal 1: Promote Undergraduate Student Learning and Success

- Evidence of student learning outcome attainment through assessment at course, program, and co-curricular levels
- Evidence of learning of and growth in skills and abilities associated with the Principles of Co-Curricular Learning

Under Goal 5: Leverage our Strengths in Health and Life Sciences

- Evidence of student learning outcome attainment

Under Goal 8:

- Evidence of student attainment of global learning outcomes

More indicators related to learning and assessment may emerge with further progress.

New institutional research structures

One result of the Strategic Plan was creation of a new Office of Student Data, Analysis, and Evaluation (OSDAE) in the Division of Undergraduate Education to focus on supporting

decisions about student success initiatives and enrollment management. In addition, this office will oversee the student data business intelligence infrastructure, administer and report results for student surveys, report on assessment of general education outcomes, and continue to report on effectiveness of first-year programs and services.

The new Institutional Research Office (IRO) in the Division of Planning and Institutional Improvement (PAII) prepares recurring reports for internal IUPUI use in such areas as business decision-making, planning and evaluation, and grant proposal submission; provides reports for external organizations, including accrediting and governmental agencies; and consults with departments on how to fulfill their information needs most effectively. The new Survey Research Office (SRO), formerly a unit in the School of Liberal Arts and now part of PAII, assumes campus responsibility to help units use valid and reliable survey data for institutional improvement. Specific responsibilities will include data support for administrator reviews, surveys of faculty and staff, surveys of graduate students and graduate alumni, and assessment related to cultural climate and diversity.

Educational Unit Annual Reports for 2013-14

Each year, academic and co-curricular units prepare summary reports of their assessment activities for the Program Review and Assessment Committee. Reports submitted for 2013-14 are posted on the PRAC web site at <http://www.planning.iupui.edu/evalassess/schoolaccessreport-page.php>.

Each unit's approach to reporting is adapted to meet its particular number, range, and types of programs. Most units identify student learning outcomes for their programs and describe approaches to helping students achieve the outcomes, methods of assessing this achievement, assessment findings, and improvements they have made or plan to make based on these assessment findings. Some large schools report on half or a third of their programs in alternating years; others provide comprehensive summaries every year, but only periodically detail such items as learning outcomes or assessment procedures that may change very little from one year to the next.

Reports from the following schools and educational units are available for 2013-14.

- Center for Service and Learning
- Indiana University-Purdue University Columbus
 - English
 - General Studies
 - Mental Health Counseling Program
 - Psychology
- School of Dentistry
 - Dental Hygiene
- School of Education
- School of Engineering and Technology
- School of Health and Rehabilitation Sciences
- Herron School of Art and Design

- Honors College
- School of Informatics and Computing
- Kelley School of Business Indianapolis
- Robert H. McKinney School of Law
- School of Liberal Arts
- School of Medicine
 - Health Professions Programs
- School of Nursing
- School of Physical Education and Tourism Management
- School of Public and Environmental Affairs
- School of Science
- School of Social Work
- University College

Appendix A

Assessment Types and Structures at IUPUI

Matter for assessment

Learning outcomes for all IUPUI undergraduates. The Principles of Undergraduate Learning, adopted by the IUPUI Faculty Council in 1998 and revised in 2007, describe the expectations for what IUPUI undergraduates will know and be able to do upon completing their degrees, regardless of major. As a result of the faculty's efforts to link these general principles with the disciplinary learning outcomes of individual majors, students are provided multiple opportunities to gain increasing mastery of the PULs across their entire undergraduate experience, including general education courses and those in their major fields of study. In addition, the Division of Student Affairs has adopted the PULs and added two principles of its own—Intra- and Inter-personal development—to form the Principles of Co-Curricular Learning (see <http://studentaffairs.iupui.edu/about/assessment/learning-outcomes.shtml>). These new Principles furnish the framework for co-curricular programs, including leadership development, residence life, campus recreation, and student involvement.

1. **Core Communication and Quantitative Skills**—the ability of students to express and interpret information, perform quantitative analysis, and use information resources and technology—the foundation skills necessary for all IUPUI students to succeed
2. **Critical Thinking**—the ability of students to engage in a process of disciplined thinking that informs beliefs and actions, remaining open-minded, reconsidering previous beliefs and actions, and adjusting their thinking, beliefs, and actions based on new information
3. **Integration and Application of Knowledge**—the ability of students to use information and concepts from studies in multiple disciplines in their intellectual, professional, and community lives
4. **Intellectual Depth, Breadth, and Adaptiveness**—the ability of students to examine and organize discipline-specific ways of knowing and apply them to specific issues and problems
5. **Understanding Society and Culture**—the ability of students to recognize their own cultural traditions and to understand and appreciate the diversity of the human experience
6. **Values and Ethics**—the ability of students to make sound decisions with respect to individual conduct, citizenship, and aesthetics

In the complete description of the PULs (<http://due.iupui.edu/Undergraduate-Curricula/General-Education/Principles-of-Undergraduate-Learning#16225100-pul-1-core-communication-and-quantitative-skills>), the definition of each principle further articulates specific outcomes or objectives that help, not only to explain the principle's importance, but also to assure commonality in measurement across the campus, even though each school or department assesses the PULs through the lens of its own disciplinary standards.

Learning outcomes for all IUPUI graduate students. The Principles of Graduate and Professional Learning (<http://graduate.iupui.edu/faculty-staff/policies.shtml>) were adopted by the Graduate Affairs Committee in 2010 and similarly represent common expectations for all students who earn graduate and professional degrees from IUPUI, regardless of the field of advanced study.

1. Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field
2. Thinking critically, applying good judgment in professional and personal situations
3. Communicating effectively to others in the field and to the general public
4. Behaving in an ethical way both professionally and personally

RISE to the IUPUI Challenge. IUPUI’s academic plan calls for all IUPUI undergraduates to participate during their college careers in two experiences captured in the acronym RISE—Undergraduate **R**esearch, **I**nternational Learning, **S**ervice Learning, or other **E**xperiential Learning (such as internships, practica, and clinical or field experiences). These experiences occur within courses, and are identified accordingly on students’ transcripts. RISE experiences incorporate the PULs and often contain a reflective component that is incorporated, along with other relevant materials, into students’ ePortfolios or other records to support assessment of PUL learning outcomes across the campus.

Best Practices and the First-Year Experience. One of IUPUI’s mission commitments is that each of its core activities—teaching and learning; research, scholarship, and creative activity; and civic engagement—will be characterized by the pursuit of best practices. Many of these “best practices” support students’ success in achieving their educational goals, particularly by enhancing academic engagement and improving retention and graduation rates. The RISE learning experiences are themselves forms of engaged learning closely correlated with improved learning outcomes. IUPUI has also invested substantial resources in its First-Year Experience programs to assure that students are well supported as they make the transition to college. Students are introduced to the PULs in their First-Year Seminars and Themed Learning Community courses; they also develop their PUL-related knowledge and skills in Gateway courses (courses that enroll the highest numbers of entering undergraduates and account for over 30 percent of all undergraduate credit hours). Instructors and advisors work with new freshmen in First-Year Seminars to create a Personal Development Plan that includes academic and career goals integrated with the PULs. Assessment of these practices typically focuses on engagement levels, student perceptions, and percentages of students retained into their second semester and second year.

Program and project evaluation. Some assessment approaches resemble the kinds of customer satisfaction surveys or program evaluations common in the for-profit and non-profit sectors. Programs, as well as the institution as a whole, have good reasons to measure student and alumni satisfaction. They want to understand student perceptions of roadblocks to completing their education, to check for disparities between what students think they are learning and what faculty believe students are learning, and to understand why students encounter difficulties with particular courses or concepts. Similarly, after attempting to improve some aspect of student academic support, a program evaluation approach is often the best means to follow up to assure the desired improvement. Forms of assessment that go beyond ascertaining academic achievement are thus necessary and useful in helping academic programs serve students well.

Structures supporting assessment

Primary responsibility for assessment of learning at IUPUI is properly decentralized to the faculty. Coordination is achieved through the work of three standing institutional groups: the Council on Retention and Graduation, the Program Review and Assessment Committee (PRAC), and the Undergraduate Curriculum Advisory Committee. Administrative support and leadership for assessment are provided through the Division of Planning and Institutional Improvement, including its offices of Program Review, Institutional Research, Survey Research, Institutional Effectiveness, and Testing Center, working in collaboration with the Division of Undergraduate Education and its Office of Student Data, Analysis, and Evaluation. The Office of the Executive Vice Chancellor for Academic Affairs contributes academic oversight and also assures that the Centers for Teaching and Learning, Service and Learning, and Research and Learning are engaged and ready to assist faculty in acting on any identified needs for improvement.

Several practices prompt attention to assessment processes and results. Comprehensive academic program review occurs at IUPUI on an eight-year cycle and helps ensure that general education and discipline-specific instruction and assessment are occurring according to plan. Review teams are asked to comment on the quality of curricula, methods of instruction, and evidence of student learning in general education, as well as in the major field of study. Annually, each educational unit prepares an Assessment Report to PRAC. These “PRAC reports” serve as the main foundation for this report on learning outcomes assessment at IUPUI and are available at <http://www.planning.iupui.edu/evalassess/schoolaccessreport-page.php>.

IUPUI also includes as part of its annual *Performance Report* a variety of performance indicators designed to chart progress on the ten goals set for the campus in IUPUI’s Strategic Plan. The *IUPUI Performance Report* is published early each calendar year in print and online. (See <http://strategicplan.iupui.edu/MeasuringSuccess>.)

Common methods of assessment

Grades. Assignment and course grades are considered to be indirect evidence of learning for purposes of program or institutional assessment, but they do represent essential direct feedback from instructor to learner on individual progress and achievement. Since low grades can cause students to be underprepared for later courses, faculty members pay close attention to unusually high rates of low grades in classes so they can intervene when necessary. Grades in capstone courses and experiences (culminating experiences that offer students opportunities to integrate and apply learning of both content and skills) can often provide direct evidence of cumulative student learning. These courses and experiences typically include research projects, honors theses, creative exhibitions or performances, and/or internships or field experiences. Grades in these courses or experiences may bear directly on program assessment and are now integrated with PUL assessment as well.

Surveys. Indirect evidence of student learning is collected annually through a variety of surveys administered to representative samples of undergraduates. The locally developed IUPUI Continuing Student Satisfaction and Priorities Survey (CSSPS) was administered annually from 1995 until 2001, when it was moved to biennial administration to permit use of the National

Survey of Student Engagement (NSSE) in alternate years. Currently, NSSE is administered every third year, while the CSSPS is administered in other years. Comparison of average responses of lower- and upper-division students offers an indication of how best practices adopted at IUPUI contribute to learning and development. National surveys like the NSSE allow IUPUI to benchmark its performance on learner engagement over time and against a set of peer institutions and other participating institutions. NSSE does not directly measure student learning, but higher education research demonstrates that the engaged practices on which NSSE focuses are closely linked with student learning. Our local surveys are particularly helpful for understanding students' perceptions of the extent to which they are mastering PUL skills and knowledge.

Another example of survey-based indirect evidence is the survey of undergraduate alumni employment and satisfaction conducted since 1996-97. Several subsets of questions probe how well students believe their education at IUPUI prepared them for their careers and/or graduate study. Direct experience in a job or graduate program may offer alumni perspectives on their learning that are more realistic than were their perceptions when they graduated.

School-level results of both locally developed surveys and the NSSE are given to IUPUI schools to enable them to compare themselves to other schools on campus and to results for similar units at other institutions that administer NSSE. In addition, program-level results of the CSSPS are provided to individual programs in years when those programs undergo their IUPUI program reviews.

External sources. External audiences also contribute directly to our understanding of our undergraduates' learning outcomes. For example, many of the schools that prepare students for employment in professional fields (e.g., nursing, business, engineering) periodically survey employers of their graduates to assure that students are acquiring the abilities and knowledge needed to thrive professionally. In other cases, graduates must pass a state- or nationally-normed examination in order to enter a profession (e.g., attorneys, nurses and allied health professionals, some kinds of social workers). Pass rates of IUPUI graduates on these exams furnish important feedback to faculty about areas showing satisfactory learning and opportunities for improvement. Similarly, student scores on various graduate entrance examinations or acceptance rates into graduate school can supply helpful external validation.

Portfolios. Portfolios of student work also offer direct evidence of learning outcomes. Some degree programs continue to rely on traditional methods of assembling and evaluating portfolios. Other programs have been drawn to the opportunities offered by electronic portfolios. IUPUI's system serves both assessment and instructional purposes. Data derived from authentic evidence (that is, evidence created during learning experiences rather than scores on one-time-only examinations) collected, reflected upon, reviewed, and evaluated in IUPUI's ePortfolio system can be aggregated via digital reporting mechanisms to provide information at program and campus levels. As departments incorporate the ePortfolio into their curricula, they often refine courses or even entire programs to address desired learning outcomes more deliberately and effectively.

For further information about advantages and drawbacks of different methods of direct and indirect assessment, see Appendix B.

Appendix B

Direct and Indirect Measures of Student Learning

Direct Measures

Definition: Direct measures require students to demonstrate their knowledge and skills. They provide tangible, visible and self-explanatory evidence of what students have and have not learned as a result of a course, program, or activity (Suskie, 2004, 2009; Palomba and Banta, 1999). Actual student behavior or work is measured or assessed.

Examples: exams/tests, quizzes, papers, oral presentations, group work, assignments, exit exams, standardized tests

Direct Measures		
Types	Advantages	Disadvantages
Authentic Course-Embedded: Exams/Tests, Quizzes, Papers, Oral Presentations, Group Work, Assignments	<ul style="list-style-type: none"> - Require higher-order cognitive skills and problem solving. - Direct measures are most effective if they are also course-embedded which means the work done by the student is actually work that counts towards a grade. -Students tend to take activity more seriously if associated with grade. - Authentic and part of already existing faculty and student work (not add-on assessment). -Facilitates development of a “culture of evidence”. - Increasingly the mandate from accrediting agencies. 	<ul style="list-style-type: none"> - Time-consuming to develop standardized criteria for evaluating (e.g., rubrics). -Can be difficult to collect and aggregate for a large, public institution.
Electronic Portfolios	<ul style="list-style-type: none"> -Effective mechanism for collecting and storing student work (authentic direct measures). - Allows multiple formats (e.g., paper, video, audio). -Allows for students to reflect on learning experiences. 	<ul style="list-style-type: none"> - Time-consuming to develop standardized criteria for evaluating (e.g., rubrics). -Can be difficult to collect and aggregate for a large, public institution. -Technology can be difficult to develop, use, and navigate.
Locally Developed Exit Exams	<ul style="list-style-type: none"> - Match local goals. - Aligned with curriculum. - Faculty-developed. - Development and scoring processes are informative. 	<ul style="list-style-type: none"> - Difficult to develop valid instruments. - Time-consuming to develop.
Commercial Standardized Tests (e.g., Collegiate Learning Assessment)	<ul style="list-style-type: none"> - Low time investment. - National norms. 	<ul style="list-style-type: none"> - Expensive. - May not match specific program goals - Students may not be motivated to perform at best ability and this can negatively affect reliability and validity. - May measure “generalized intelligence” which may not change due to curriculum or classroom experiences.

Indirect Measures

Definition: Assessments that measure opinions or thoughts about students' or alumni's own knowledge, skills, attitudes, learning experiences, perceptions of services received or employers' opinions. While these types of measures are important and necessary they do not measure students' performance directly. They supplement direct measures of learning by providing information about how and why learning is occurring.

Examples: self-assessment, peer-feedback, surveys, end-of-course evaluations, questionnaires, focus groups, or exit interviews, and other activities that gather impressions or opinions about the program and/or its learning goals. Other examples: academic performance levels (e.g., GPAs), graduation rates, retention and transfer studies, graduate follow-up studies, success of students in subsequent institutional settings, and job placement data.

Indirect Measures		
Types	Advantages	Disadvantages
Grades	<ul style="list-style-type: none"> - Inexpensive. - Relatively easy to aggregate and collect. - Available for almost all students. - Good indicator of academic success and progress toward degree. - Can be good proxy for student learning. 	<ul style="list-style-type: none"> - Not standardized. - Not ideal measure for determining students' actual knowledge, skills, and abilities. - Grades alone do not indicate if students are able to write well, think critically, problem solve, and apply values and ethics.
Surveys and/or questionnaires	<ul style="list-style-type: none"> -Inexpensive. -Understand issues that are difficult to observe systematically. - Critical to understand what individuals perceive, know, and think of programs and services. -Acknowledges importance of students' (or alumni), faculty, and staff opinions. - Can help understand students' perceptions of learning experiences -Students can offer suggestions for improvement. -Can provide information about how and why learning is occurring. - Statistical relationships, prediction control, description, hypothesis testing. - Precise, numerical. - Resulting data can be analyzed, reanalyzed to address specific questions. 	<ul style="list-style-type: none"> -Not a direct measure of learning. -Difficult to develop valid instruments. -Low response rates for large sample, web-based surveys. -Do not involve higher order cognitive processes.
Interviews (e.g., senior exit interviews)	<ul style="list-style-type: none"> - Comprehensive, holistic, richly descriptive. - Provides in-depth information about students' learning experiences. - Allows individualization and follow-up probes. - May develop positive interactions with students. 	<ul style="list-style-type: none"> - May be intimidating, biasing results. - Not ideal for embarrassing, personal, or politically charged issues. -Time-consuming to conduct and analyze data. - May not be representative.

Focus group interviews	-Same as interviews. -Allows more students to be "interviewed" in less time.	-Same as interviews. -A few students can skew the results if not carefully facilitated.
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