Learning Assessment at IUPUI
2009-10 Annual Report

Overview

IUPUI reached a major milestone in 2009-10 with the launch of a synchronized approach to campus-wide assessment of the Principles of Undergraduate Learning (PULs). This approach represents one outcome of steadily increasing attention to assessment of student learning since the 1980s. These extensive efforts have helped us to understand, not only what students are learning, but what instructional methods and interventions support student success. When we identify an opportunity for improvement, we make adjustments, such as revising the curriculum and restructuring courses. Some assessment findings have led to new or expanded student services, resulting in improved effectiveness in the ways services are provided. Promising work begun in 2009-10 will help us document student learning from co-curricular experiences as well.

As is the case at other institutions, the first purpose of assessment at IUPUI is to assure ourselves and our students that their learning experience at IUPUI meets or exceeds appropriate standards. In addition, we regularly report to the Board of Trustees and other constituents 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://iport.iupui.edu for the Performance Report and at http://www.planning.iupui.edu/accountability for this assessment report.

At an institution with over 30,000 students pursuing more than 250 degree and certificate programs offered by 21 schools, assessment is multi-faceted and complex. While summary risks over-simplification, this report highlights the nature and range of assessment work at IUPUI, from articulating learning outcomes through strengthening practice based on findings. This year's report provides evidence that such work "closes the loop," as faculty engage in periodic review and revision of learning outcomes to keep the learning and assessment cycle moving forward.

Structure and Practice of Assessment at IUPUI

The words *assessment*, *evaluation*, and *measurement* are often used as synonyms in general conversation, though advanced practitioners make distinctions among them. In higher education, it is perhaps 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 will generally use the definition of "assessment" adopted by the IUPUI Program Review and Assessment Committee: "Assessment is a process of describing and documenting progress toward identified educational goals or outcomes for the purposes of improving student learning experiences and academic performance and determining program effectiveness" (http://www.planning.iupui.edu/45.html, retrieved December 10, 2010).

Assessment, then, determines whether, what, how well, and how students learn. It addresses factors known to affect or correlate with students' academic success. It is closely linked with evaluation of operating efficiencies and effectiveness that affect the learning environment. Assessment of student learning rests with the faculty of the schools, whether assigning course grades or determining satisfactory accomplishment of the Principles of Undergraduate Learning (and now, of Graduate and Professional Learning as well). Numerous internal and external structures support this aspect of faculty work and ensure leadership and planning for assessment across the campus.

Accreditation represents the primary external driver of assessment, though there are some external elements associated with program-based assessment. IUPUI is accredited every ten years by a regional body, the Higher Learning Commission (HLC) of the North Central Association. In 2009-10, the campus community began active preparation for the next HLC review in 2012.

Forty programs, departments, or schools at IUPUI hold what is commonly referred to as "specialized accreditation"—validation by a professional community of peers that a program meets quality standards in a discipline. Some departments and programs must be certified by multiple bodies, and at varying intervals, so the level of 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 accredited programs is available at http://www.planning.iupui.edu/accountability/.

In 2009-10, the following programs or departments received specialized accreditation visits (for which most had spent the previous year preparing a self-study):

- School of Education, National Council for Accreditation of Teacher Education
- Computer Engineering BS, Engineering Accreditation Commission of ABET (formerly Accreditation Board for Engineering and Technology)
- Computer Graphics Technology BS, Computing Accreditation Commission of ABET
- Computer and Information Technology BS, Computing Accreditation Commission of ABET
- Electrical Engineering BS, Engineering Accreditation Commission of ABET
- Mechanical Engineering BS, Engineering Accreditation Commission of ABET
- Music Technology BS and MS, Music Therapy MS, National Association of Schools of Music
- Health Information Administration BS, Commission on Accreditation for Health Informatics and Information Management Education
- School of Law, American Bar Association and Association of American Law Schools
- Nuclear Medicine Technology, Joint Review Committee on Educational Programs in Nuclear Medicine
- School of Nursing BSN and MSN, Commission on Collegiate Nursing Education of the American Association of Colleges of Nursing

- Chemistry BS, American Chemical Society on Professional Training
- Forensic and Investigative Science BS, The Forensic Science Education Program Accreditation Commission
- Psychology (for Clinical Psychology BS, MS, PhD), American Psychological Association

Program Review. Although similar to specialized accreditation in requiring self-study and peer review, IUPUI's internal process of program review is integrated with the campus mission and includes all programs, regardless of the existence of an external authority. The IUPUI process emphasizes engaging 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 process is overseen by the Program Review and Assessment Committee (PRAC), with administrative support from the Office of Planning and Institutional Improvement. The dean of each school is responsible for leading the reviews in that school.

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

In 2009-10, the Departments of Criminal Justice, Geography, and Religious Studies, as well as University College, were engaged in their program reviews. At the same time, Museum Studies, the Individualized Major Program in Liberal Arts, Earth Sciences, Economics, and Political Science, along with Intramural and Recreational Sports and Dentistry Technology Services, were preparing their self-studies for review in 2010-11. Philosophy, Nursing, Campus and Community Life, Philanthropic Studies, and Physical Education were completing the immediate follow-up activities after reviews during 2008-09.

For information about the organizational structure supporting assessment at IUPUI, and for examples of the kinds of assessment most generally used, please see the Appendix to this report.

Assessment in Practice:
Results and Improvements in 2009-10

This year saw the convergence of several important multi-year projects related to assessment of student learning at IUPUI. Foremost was the culmination of more than seven years' work that began with refining the IUPUI Principles of Undergraduate Learning (PULs) and moved to integrating them with the learning goals of each academic program. These efforts included mapping PUL-related learning outcomes to all courses in each program to assure that curricula

are appropriately layered with multiple opportunities for students to learn and demonstrate achievement of each outcome. Subsequent work developed methods of assessing student learning outcomes in ways systematic enough to assure regular attention to all outcomes across all programs and in ways consistent enough to allow reporting at the campus level and action at the departmental level. A second major activity, linked with the first, was the careful re-examination and restatement of learning outcomes for each degree program. Each academic unit was asked to place a statement of learning outcomes for each of its undergraduate and graduate programs in the IUPUI online *Bulletin*. A third significant initiative reaching fruition was expansion of the PUL work to graduate and professional programs and to co-curricular initiatives.

Assessing the Principles of Undergraduate Learning

As reported for the past several years, following adoption of the revised PULs in 2007 (see http://academicaffairs.iupui.edu/plans/pul/), schools and departments addressed the challenge of integrating the PULs with their respective curricula. Some programs with national specialized accrediting bodies were accustomed to this approach to designing programs and had already formulated learning objectives for their students. In these cases, the challenge was to align the PULs with disciplinary outcomes already established, a process that most programs were able to accomplish within two or three years. A few of those efforts were delayed because of changes in specialized accreditation standards. Other disciplines, largely in the liberal arts and sciences, faced the more complex challenge of translating the commonly understood goals of their disciplines into language more susceptible to evaluation before they could clarify the ways—often taken for granted by faculty, but not always grasped by others—in which the PULs were aligned with these goals.

By 2008-09, many departments had made sufficient progress to respond quickly to the call to identify the PULs emphasized in every course taught by the department; for most courses, three PULs were identified, one each for major, moderate, and minor emphasis. In 2009-10 the departments completed that substantial undertaking. (At IUPUI, approximately 4,000 courses are offered with some regularity!)

The Office of the Registrar worked with the Office of Information Management and Institutional Research (IMIR) to create a database capable of storing this information and generating a display of the results (available at http://www.planning.iupui.edu/pul/matrix). This campus-wide grid serves two important purposes: (1) It facilitates the work of faculty in assuring that all students majoring or minoring in their field have multiple exposures to the PULs, not only in courses offered by the department, but also in required or elective courses offered by other departments. (2) It provides a reference for advisors to use in helping students select courses appropriately to assure mastery of the PULs by the time they graduate.

In Fall 2009, each department established a five-year cycle for assessing student learning of PULs identified as having major and moderate emphasis in each course. The faculty member teaching a given course chooses an assignment or group of assignments whose successful completion can illustrate accomplishment of the particular PULs designated for that course. Also during Fall 2009, University Information Technology Services (UITS) worked with the Registrar

and IMIR to adapt the course management system and grade reporting system so that faculty can use familiar tools and a common rating scale to report the results of the PUL assessments. During 2009-10, the IUPUI Center for Teaching and Learning collaborated with the ePortfolio Initiative and other educational units to offer an array of faculty workshops on effective ways to assess each PUL, along with other workshops on curriculum mapping, designing and using rubrics, and related assessment topics.

The first campus-wide PUL assessment launched in Spring 2010. IMIR staff assembled the ratings of student learning submitted by faculty in all courses scheduled for PUL assessment that semester and provided aggregate reports to each school. The reports of outcomes in 400-level courses will be used to assess student mastery at or near graduation. Reports from 100-, 200-, and 300-level courses are intended to help faculty refine and strengthen student achievement of PULs as may be needed. It should be noted that these reports are not associated with particular students, but rather with the level of collective student accomplishment of knowledge and attributes identified by the faculty as core results of an undergraduate education. Nor are the reports associated with the specific courses involved, since a student's level of mastery of, for example, Values and Ethics, does not result solely from any single course.

Finally, results of these assessments will become most valuable as more are collected, since the report from any single semester or academic year will represent only a fraction of courses offered and may be somewhat unevenly distributed across departments. Nor are the results from a single semester likely to be statistically meaningful, since no representative sampling is involved. That said, the initial semester's assessment results represent an encouraging first look, with mean results from the 400-level courses ranging from a low of 3.17 to a high of 3.84 on a 4-point scale (where 1 = Not at All Effective and 4 = Very Effective). IUPUI schools received their reports by early fall of 2010, and the larger schools have requested future reports sorted by department to permit closer examination. The five-year cycle begun in Spring 2010 will not complete its first iteration until Fall 2014, but serious review of accumulating data is already beginning as this report is being prepared.

Articulating Program-Level Learning Outcomes

As noted above, academic units have worked over the past several years to articulate, in the form of outcomes, their expectations for what students will learn in their majors. While degree programs have always been based on certain goals commonly understood by faculty in the particular field, goal statements do not readily lend themselves to assessment. Moreover, students have too often understood neither what they are expected to learn from majoring in a field nor how their courses fit together in logical and related sequences. Framing program goals more explicitly as expectations of the knowledge and skills that students should be able to demonstrate on completion of a program of study—as learning outcomes, in other words—helps to resolve both challenges.

The expression of programmatic objectives and learning outcomes by a specialized accreditor provides a solid framework for many disciplines to adapt in defining the distinctive program of a particular institution. Disciplines evolve, however, and periodically revise their expectations, causing ripple revisions to campus statements. In 2009, for example, the School of Social Work

began an extended process of restructuring its programs to align with the new competence-based approach of the Council of Social Work Education (CSWE) in preparation for reaccreditation of its bachelor's and master's degree programs in social work in 2012. The CSWE now defines 10 core competences and 41 foundational practice behaviors that students in accredited BSW programs must be able to demonstrate satisfactorily. The School of Social Work has included these components along with the IUPUI PULs in extensive curriculum mapping.

Most fields in the School of Science, on the other hand, do not have such external drivers, although most of the science disciplines do have common standards established through disciplinary associations. In 2004-05, the school adopted a six-stage assessment strategy, which entailed articulating common Science Learning Outcomes (SLOs), then adapting those to particular disciplines (e.g., Psychology SLOs, Biology SLOs), and finally aligning them with the IUPUI PULs. A table clarifying alignment of the Psychology SLOs, for example, with the PULs helped faculty identify appropriate course assignments to use for the campus-wide PUL assessment process. Most science departments completed working through the outcomes-development process in 2009-10. The School of Liberal Arts encompasses more fields of study and has therefore had an even more substantial challenge, but more departments are reporting progress, and all participated in the PUL assessment initiative described above.

Equally noteworthy is the changing use of these program outcomes not only for assessment but for enhanced guidance of students. In addition to their inclusion in the IUPUI online *Bulletin* (http://www.iupui.edu/~bulletin/iupui/2010-2012/schools), program learning outcomes are increasingly available on school and/or departmental web sites for easier access by students and others. Further, many programs include these outcomes, along with information about the PULs, in individual course syllabi so that students can more readily perceive the connection between the courses they take and larger program and campus expectations.

As a foundational practice consistent with IUPUI's mission emphasis on best practices, University College now has students in all First Year Seminars and Themed Learning Communities prepare a Personal Development Plan (PDP). Emphasized in that preparation is an introduction to the PULs as expressions of what it means to be an educated person. In developing their PDPs, students are also asked to pay attention to the learning expectations of the majors they have chosen or are considering. In 2009-10, University College prepared for a pilot project in Fall 2010 in which students were to assemble their PDPs in electronic portfolios so that they (and their advisors and others) could see even more clearly the connections between their career goals, educational plans, experiences, and the courses they planned to take.

Moving Beyond Undergraduate Programs

The past year also saw completion of a multi-year project to articulate a set of expectations for graduate and professional programs similar to the PULs but taking into account the advanced nature of graduate preparation. As faculty worked to identify linkages between the Principles of Undergraduate Learning and their undergraduate program objectives, they also recognized that the key intellectual abilities and skills articulated in the PULs are relevant to graduate and professional programs as well. For instance, graduate/professional students are expected to demonstrate evidence of solid communications skills, albeit at a higher level than for

undergraduates, and most graduate/professional programs today expect students to develop advanced appreciation for diversity and/or global relationships.

Consequently, faculty in several departments began to align the PULs with their graduate programs and called for consideration of similar principles geared toward graduate and professional study. The Graduate Affairs Committee of the IUPUI Graduate Office worked to develop an appropriate framework and completed its approval of new Principles of Graduate and Professional Learning in Spring 2010. The full statement provides examples to illustrate the ways in which graduate and professional principles are distinguished from those for undergraduate study, including differences in assessment based on practices of comprehensive examinations and scholarly research typical in advanced study. (See the complete statement and examples at http://academicaffairs.iupui.edu/plans/graduatePrinciples.cfm.)

Branching out in a different direction, in 2009-10 the IUPUI Division of Student Life developed its first division-wide plan for assessment of student learning. Despite the recognition that much of what students learn in college occurs outside the classroom, many people forget that those responsible for extra-curricular—or more properly, co-curricular—activities are also educators. The staff of Student Life began with adoption of a set of learning outcomes for all the students they serve, both undergraduate and graduate. They then mapped all of their programs and services to those outcomes, moving next to develop a set of assessment tools and to plan communication of these "Student Life Learning Outcomes" to students. The new outcomes are grounded in the IUPUI PULs and express the conviction that the division provides significant educational value to the student experience. Linkage of the SLLOs to the PULs is intended to help students more readily make connections between their classroom and co-curricular involvement in learning.

Just as academic programs identified key PULs for their courses, the Division's units identified the two most relevant PULs for each of the 86 Student Life programs, services, and activities. Staff collaborated to develop a common question bank on which they can draw to measure student learning across all of the SLLOs. To avoid confusion, Division units will use a unified plan and common language to communicate about the SLLOs. Implementation of the communications plan and the new assessment strategy was set to begin in 2010-11.

Educational Unit Report Summaries, 2009-10

Each year, educational units are asked to prepare summary reports of their assessment activities for the Program Review and Assessment Committee. Those submitted for 2009-10 are posted on the PRAC web site at http://www.planning.iupui.edu/64.html#9. They are summarized below to provide glimpses of key themes and accomplishments, with full details available online.

Center for Service and Learning
The Center for Service and Learning (CSL) has a set of clearly defined outcome areas to guide student learning through course-based service experiences, along with a set of formal mechanisms to measure such learning. Currently these methods rely heavily on indirect methods, such as surveys of students' perceptions of their learning and of partner organizations'

perceptions about the students they have hosted. Results are regularly used to improve CSL programs. For example, the coordinator for the America Reads/America Counts program used survey results to inform student orientation and monthly training sessions.

In addition, the CSL has begun an initiative to use the ePortfolio to assess student learning more directly according to its conceptual framework for the "Civic Minded Graduate." These characteristics track closely with the PUL for Understanding Society and Culture, with notable overlaps in Core Communication Skills and Values and Ethics as well. Shared with faculty across campus through the CSL web site, Oncourse, and a central survey software package, the CMG survey and rubric can be adopted by faculty to measure both civic outcomes and appropriate PULs as needed.

Indiana University-Purdue University Columbus

As the regional campus in Columbus has grown, its divisions have generally pursued specialized accreditation as part of the Indianapolis and/or Bloomington campuses; Columbus faculty are still developing local assessment capacity. In the past year, a new campus assessment committee has been formed and a coordinator designated, with the strong support of the new vice chancellor. These actions are intended to improve the climate for assessment and allow strengths in separate divisions to reinforce one another.

The Business Division is seeking separate accreditation from the Association to Advance Collegiate Schools of Business (AACSB) for its BS in Business program, so the division faculty has made substantial progress in articulating its Assurance of Learning plan, identifying learning outcomes to be measured, and developing guidelines and rubrics for external evaluation of student skills. The Division of Education, on the other hand, has already achieved accreditation by the Association for Childhood Education International and clearly articulated the formative and summative assessment approaches used to document teacher candidate performance according to those standards. Program assessments of content knowledge provide evidence that the large majority of teacher candidates develop an acceptable to exemplary level of knowledge in all content areas through coursework and field experiences. Several improvements were implemented during 2008-09 to improve the comparatively weaker elements, but data are not yet sufficient to determine the long-term success of these improvements.

School of Dentistry

The School of Dentistry articulates general, but very clear, outcomes for graduates of both general dentistry and advanced practice programs. These outcomes are frequently based on external measures such as board exams. Its students achieve 89 percent pass rates on clinical competency exams and mock clinical boards and 90 percent or higher first-time pass rates on all regional board exams. Its advanced graduates perform with 100 percent pass rates on three of the four specializations offered (in the fourth case, a 100 percent pass rate on written and 50 percent pass rate on oral components). In course evaluations, student focus groups, and student exit interviews, students demonstrate 90 percent student satisfaction with their curriculum and learning objectives. In turn, faculty pursue continuous improvement in teaching strategies, techniques, and methods as well as improved testing methods to help students prepare for future challenges. For example, in students' first orientation and in each year of study, faculty focus

students on national board exams, provide online and print resources to help students prepare, and offer mock exams using released board questions each semester.

A particular emphasis is placed on graduates' understanding and practicing ethics and social responsibility. Thus, student involvement in community and professional organizations is tracked, with 426 student members each in the Indiana Dental Association and the American Student Dental Association. High ethical standards are established for students to monitor their own professional behavior. In this case, success is measured by low numbers of cases brought to the Student Professional Conduct Committee; of a total 16 cases heard in 2009-10, eight were judged moderate to severe. The school is currently rewriting the IUSD Code of Ethics for greater clarity.

School of Education: Elementary and Secondary Education

The School of Education reports on two aspects of its programs. For Benchmark I, Block I, the team of instructors who have had the students in Block I classes during the semester meet as a group to evaluate each student in each area. In Fall 2009, 24 percent of students received some negative indicators, the most common of which were "misjudges personal strengths and weaknesses when self-assessing (10 percent)," and "lacks development as a critical thinker (9 percent)." In Spring 2010, 33 percent of students had one or more negative indicators, the most common of which were "being a critical thinker (18 percent)," "careless about assignments and preparation for class (13 percent)," and "gaps in understanding central concepts from the block (11 percent)." Writing skills have also been a continuing weakness for minorities of students (12 to 16 percent), and the education faculty have sought ways to improve these skills prior to students' entering the program. In addition, faculty continue to discuss ways to address the concerns highlighted above, including providing opportunities for students to improve depth of reflection and abilities as critical thinkers.

Benchmark II, for Elementary Education majors only, awarded passing scores to 69 percent of students. The 31 percent who received failing scores were required to complete a follow-up during the spring semester. To address the needs of borderline students more effectively, the school continues to work to improve inter-rater reliability on the blindly scored rubrics for Benchmark II. The scoring is Pass/Fail, but students are given feedback specific to their needs. Common strengths are "looking beyond procedural knowledge" and "attending to the responses of children," while common areas for growth are "ability to construct a working definition on which to build an interview," "interpreting responses of children," and "writing skills."

School of Engineering and Technology

The extensive 2009-10 report from the School of Engineering and Technology is replete with outcomes assessment results and actions taken to enhance student learning. Selected examples of "closing the loop" include the following:

- Acting on advice from the October 2009 ABET accrediting team visit, in Spring 2010 Computer Graphics Technology program faculty incorporated two new math courses intended to improve students' preparation to meet the quantitative reasoning competency. The evaluators made a point of affirming the effectiveness of the department's ongoing assessment of program learning outcomes.

- Feedback from ABET evaluators prompted faculty in Computer and Information Technology to redefine performance criteria for one outcome, identify five courses in which to incorporate the criteria, and implement revised syllabi and new assignments, beginning in Spring 2010.
- Ongoing outcomes assessment in Biomedical Engineering demonstrates that students are successfully achieving most of the ABET program outcomes, but reveals two areas needing improvement: (1) Students underperform in applying higher math to solve engineering problems and are not sufficiently retaining math concepts from one semester to the next; recent improvements to the engineering math sequence in the first two years of study should resolve the problem, though any effect will not be evident until students advance further; (2) Students need additional practice with hands-on and design-oriented problems. To address this need, faculty expanded the laboratory portion of a sophomore course to include more inquiry-based learning and added an elective "gateway" course to all concentration areas, each of which will incorporate a design component. Also, in 2009-10, faculty began to see evidence of improved writing skills resulting from a curricular change implemented two years ago in two junior-level BME courses.
- Faculty in Construction Engineering Management Technology have added opportunities for students to practice and achieve several outcomes through group activities embedded in several courses (including one mixing CEMT students with interior design and architectural technology students to simulate real-world workplace use of multidisciplinary teams). Also, a new assessment method was implemented whereby capstone students in CEMT 447 Project Management are now required to present posters of their work to Industrial Advisory Board members; their feedback will help faculty to improve both the capstone course and the program overall.
- Mechanical Engineering student groups present their senior capstone design projects to an IAB jury. Feedback from the Spring 2009 jury resulted in faculty adoption of an industry-standard presentation template, leading to improved outcomes in Spring 2010. As with most engineering fields, alumni survey feedback is important to faculty in assuring that the program prepares its graduates to be successful. In 2010, the department adopted a new online survey tool that permits skipping to the next appropriate question, capability needed for a single survey that encompasses the range of fields in which mechanical engineers work. The changes resulted in a much higher response rate and clearer results.
- Technical Communication faculty have developed thorough assessment practices in which TCM faculty join engineering faculty to evaluate students' oral presentations and randomly selected written reports, using common rubrics. Evaluations of oral reports are consistent and very strong, due in part to past improvements, such as increased course emphasis on graphical representation of information and student involvement in experiential problem-analysis/recommendation assignments. Written communication continues to need improvement in three specific components of the rubric; these results are consistent with data from PUL assessment and will continue to be a focus of faculty efforts to improve curriculum and teaching methods.

School of Health and Rehabilitation Sciences

The 2009-10 report from Health and Rehabilitation Sciences documents ways in which strong IUPUI programs consistently seek to become stronger.

- For Occupational Therapy, the primary external assessment measures are the pass rate on the relevant national certification exam for first-time takers (while the national average is 85 percent, the IUPUI student pass rate is 94 percent) and standardized evaluations of clinical fieldwork (where IUPUI students have a 92 percent first-time pass rate). In response to the most recent alumni survey results, which indicate 84 percent overall satisfaction, the school changed the sequencing of internships and implemented a reflective-topic focus throughout seminar courses.
- Results for Nutrition and Dietetics students are similarly strong: over the past five years, they have exceeded targeted pass rates for the registration exam for dietitians (88 percent). These students have 100 percent program completion rates and 100 percent satisfaction on alumni surveys; 85 percent of graduates who sought employment were employed within three months of graduation.
- First-time pass rates for 2009 graduates in Physical Therapy were 97 percent (compared to 88 percent nationally). Exit interviews and alumni surveys reported that students would have liked to experience greater diversity in clinical exposure, more interaction with Occupational Therapy students, more curricular emphasis on pediatrics, and improved computer access. Subsequent faculty actions addressed all of these needs by the end of 2009-10.

Herron School of Art and Design

Each program in Herron includes a major assessment by a faculty panel after the sophomore year; students receive specific feedback about improvements needed before they proceed. Art Education students must pass the State Praxis Examination in order to be licensed; last year, 19 students took and passed the exam. In May 2010, 86 Fine Arts sophomores passed their review, with 8 others placed on probation (none failed). In Visual Communication, however, 30 students passed, but 20 were denied. This number is unusually high, so in 2010-11, faculty are undertaking an in-depth evaluation of review standards and preparatory coursework. The required senior capstone studio course in Visual Communication incorporates reflection and synthesis of work in the major and learning of the PULs; the resulting visual record of integrative student understanding has enabled faculty to refine courses at sophomore and junior levels, but further work may be needed at introductory levels.

In May 2010, the Master of Fine Arts program in Visual Art and Public Life graduated its first class. Based on reviews of student work, faculty are considering some minor changes to curriculum, with a final decision to be made after the second group has moved through the program.

School of Informatics

To assist faculty with the campus-wide PUL assessment, the school compiled a large archive of PUL rubrics available for adapting and use by faculty. The school also worked with Information Management and Institutional Research (IMIR) to adopt a new plan for regularly monitoring high-level benchmarks such as retention rates, graduate-school acceptances, and percentages of students employed, for both undergraduate and graduate programs.

The School also began a focused two-year review of all its undergraduate programs, with all faculty serving on one of six committees. Each program identified at least one, typically three, specific assessment projects to undertake, beginning in 2009-10. For example, Health

Information Administration planned three projects: (1) improve graduates' registration examination scores in all five domains; (2) revise the HIA prerequisite course offerings to assure that students are well-prepared on entry for the levels of work expected in the program; and (3) develop a new Professional Practice Experience Model with advanced projects and clinical work to improve students' preparation to function as professionals (including addition of four new courses to provide such hands-on experiences). Media Arts and Science identified two substantial projects: (1) developing a "2010 Curriculum" to correct a program drift away from digital media as communication to an over-emphasis on technology production (consolidating some skills-oriented courses made room for new coursework emphasizing teamwork, creativity, and critical thinking); and (2) requiring a new capstone project where students develop a web-based presentation on their undergraduate learning to replace the prior traditional poster format (resulting in increased student engagement with the project).

Similarly, each graduate program in Informatics identified one to three assessment projects to conduct in 2010-11, with careful groundwork laid in 2009-10 to articulate assessable learning outcomes, opportunities for students to achieve the necessary learning, and solid assessment rubrics.

Kelley School of Business Indianapolis

Last year, Kelley launched an Assessment Analysis of the Undergraduate Program to assure that all program faculty state clearly and quantifiably their expectations for student learning, particularly for key principles taught in a course. If student mean scores fall short of the targets, faculty develop plans to address the learning gaps. For example, in a Finance course, the instructor was dissatisfied with the number of students able to complete designated problems in weighted average cost of capital, so he created a video tutorial demonstrating how to perform such exercises. As a result, the number of students completing the exercises perfectly rose from 43 to 53 percent. Several faculty use pre- and post-test scores to assess student learning in a course. A dramatic example occurred in a Business Law course, where entering students improved from two percent to 83 percent in their knowledge of the components of a legally binding contract. In a Human Resources case, the class average for pre-test knowledge of the legal implications of EEO policies in hiring was 63 percent; the post-test scores averaged 90 percent, and several students commented on the effectiveness of class discussions in the end-of-semester course evaluations.

Another assessment instrument used systematically by the school is the senior exit survey, which seeks data about the effectiveness of curricula, faculty, and classroom environment. The school has made several significant changes in undergraduate courses and majors, office procedures, and other areas, such as career placement support, as a result of the survey; responses over the past six years attest to students' recognition of the improvements. The survey results are also compared with the periodic NSSE and IUPUI survey results to track consistency or gaps. All relevant findings are presented annually to the Indianapolis full-time faculty, and specific department or program data is segregated and shared with each department for review and decisions. Summary findings are also shared with the Kelley student leadership.

Several Kelley Indianapolis courses have developed externally verifiable methods for charting student learning. Perhaps best known is the Business Simulation capstone required for all senior-

level undergraduate business majors. For this course, faculty have now gathered data on 18 class sections, which included 690 Kelley students running 175 businesses in 30 industries, with five or six teams per industry. Nearly 50 percent of teams have ranked in the top 10 percent of comparable teams competing internationally, and 50 percent of individual students ranked in the top 20 percent for the Balanced Scorecard performance comparison with other individual students. Though these results are much higher than would be predicted, faculty are making additional course and grading changes to encourage students to understand the simulations and participate fully in their projects earlier in the semester.

School of Law

The School of Law does not require learning-outcomes assessment beyond course grades, but it does track carefully the performance of its graduates on the Indiana bar exam and their ability to obtain law-related employment. The 73 percent pass rate for 2009-10 graduates is consistent with the average pass rate among all takers, meeting or exceeding the American Bar Association accreditation standard. Employment statistics for the class of 2009 stood at 93 percent employed or enrolled in a full-time degree program. The School's legal writing program is ranked fifth nationally by *US News and World Report*.

School of Liberal Arts

Several departments in the School of Liberal Arts reported various types of evaluation under way. For example, assessment of learning in the Economics capstone experience determined that students can generally make logical arguments, but have difficulty using economic models to inform their analyses. Instructors of upper-division courses are experimenting with exercises that provide students more opportunity to combine economic modeling and data analysis. Review of the English senior capstone course suggests that a single capstone for all five concentrations may not fully meet student needs or provide appropriate and equivalent culminating experiences. Faculty are moving to develop concentration-specific capstones, as well as an internship capstone option.

As part of a review of the major, History faculty have compared competencies defined by the American Historical Association with the European Bologna Process descriptors (IUPUI provided leadership in the Indiana "Tuning" project), then created student learning outcome rubrics for introductory, upper-division, and capstone courses. In creating a new baccalaureate program, Philanthropic Studies developed program learning outcomes and required their inclusion in syllabi for all undergraduate courses, along with rubrics for assessment of learning in those courses. Religious Studies continued working through its three-year pilot, with a revised senior capstone course focused on Theories of Religion replacing the previous independent study course. To date, student response has been very positive, with many students reporting a desire for greater emphasis on theory throughout the curriculum. The World Languages and Cultures Department completed analysis of results of its IUPUI program review in late spring 2008. Though very complimentary on several points, the reviewers recommended integration and utilization of assessment feedback and discipline norms of language proficiency at all levels, along with use of outcomes of the Spanish capstone as a model to inform other capstone courses. In fact, reviewers singled out the Spanish capstone, which uses IUPUI's ePortfolio, as a model of authentic assessment procedures for other language departments.

School of Library and Information Science
The Master of Library Science program encompasses seven clearly identified learning outcomes, which have been mapped to competencies established by the American Library Association. The School uses several direct and indirect measures to assess student learning of these outcomes. An exit survey of graduating students gathers information about perceived quality of the program, and the school's alumni board is consulted regularly to determine whether teaching is relevant and adequate for current practice. Alumni also provide informal feedback on whether the program adequately prepared them to acquire a professional position and meet its demands. In Indianapolis, the school has customized the IUPUI ePortfolio to assess the program as a whole and to determine areas that may need improvement.

The most frequently expressed student concern is a desire for better advising. All students in the program are assigned a faculty member as their advisor; these faculty have been trained to use a variety of available systems to access information about their advisees. Data from the pilot study of the ePortfolio indicate that the program may be focusing too much attention on one system of organizing information without demonstrating other options and, for some students, not enough attention to technology applications. Some courses are being modified to address a broader array of systems for organizing and representing knowledge, while a number of faculty members have added technology applications to their assignments to replace print-based papers. Future assessment will determine whether these changes improve student outcomes as desired.

School of Medicine
Once again, the School of Medicine met all established targets for its nine undergraduate degree and certificate programs, except for a single small item: only 87 percent of health professions graduates found employment within six months of graduation. (The target is 90 percent.) Faculty will monitor this objective for the next three years to determine whether it needs attention.

School of Nursing
Graduates of the BS in Nursing program in 2009 continued to pass the NCLEX-RN exam at rates higher than the national average, but the School of Nursing has raised its own benchmark for passing and will hold students accountable for remediation if their performance falls below the benchmark. The school completed its disciplinary reaccreditation process with all criteria met. Employers continue to report that IU graduates are prepared with knowledge and skills consistent with practice expectations. Preceptors of MS in Nursing students indicate that graduating students meet program outcomes, but students themselves express lower-than-expected confidence in their basic statistical skills, so faculty will review the core curriculum in Fall 2010 to explore ways to strengthen these skills. Certification rates for MSN graduates in advanced practice roles range between 80 and 100 percent. In 2010-11, the Ph.D. advisory committee will begin preparation for external review of the Ph.D. program in Nursing, focusing particularly on areas of performance students find most difficult on the qualifying exams.

School of Physical Education and Tourism Management
Internship supervisors of students in Exercise Science consistently rate students as "high performers"; in fact, 30 percent of interns were hired by their placement site. (The remaining 70 percent are pursuing graduate degrees.) Physical Education teacher candidates' pass rate on the

State PRAXIS II exam was 100 percent, and student-teaching supervisors rated students highly at 2.87 out of 3.0.

Because of student and employer feedback about the need for stronger business communication skills among Tourism, Convention, and Events Management graduates, faculty developed rubrics for written and oral communication for use in the department's ePortfolio project. These rubrics have been piloted successfully and will be adjusted as needed for continued use. The department also expects to develop rubrics to assess TCEM student learning of the other PULs. In addition, in Spring 2010 the department received a small grant for 2010-11 to review and assess its extensive service learning program to determine how that practice helps TCEM students achieve both the PULs and core TCEM competencies.

School of Public and Environmental Affairs

The School of Public and Environmental Affairs is pleased to report that its one-year retention rate has steadily increased over the past five years, while its probation/dismissal rate has dropped by 50 percent. An online student success seminar provides academic assistance for students not in good standing. A "World of Work" series of guest speakers and field trips helps students learn about career opportunities in public affairs. The BS in Health Services Administration program shifted its practicum from one to three credit hours to provide students greater opportunity to practice writing and other professional skills in the field. Similarly, based on student feedback that the HSA one-credit internship was insufficiently meaningful, the requirement was dropped, and students will be encouraged to take a two- or three-credit elective internship. Internship supervisors continue to report high satisfaction with student interns, rating over 90 percent of them as excellent or good.

School of Science

All departments participated in the campus-wide PUL assessment. Computer and Information Science uses an external, nationally normed field test to assess student learning outcomes, with overall results at the 70^{th} percentile for all institutions and the 95^{th} percentile compared to a group of ten peer institutions. IUPUI students scored lower than desired in the domains of computational theory, complexity, and algorithms, so faculty decided to reinstate a course in computational theory eliminated several years ago; it will resume in 2010-11. The Psychology Department provided organizational support and training for faculty involved in Spring 2010 PUL assessment, assisting them with identifying appropriate assignments to use in the assessment. An updated schedule for 2010-11 will enable PUL assessment in all Psychology courses in order to generate a complete set of data to work with prior to the 2012 reaccreditation team visit. The department also developed an internal summary report for each instructor to use, and is soliciting ideas for changes that might improve any low-rated areas, as well as ideas for implementing and evaluating the results of such changes.

School of Social Work

The school continues to restructure social work degree programs to be consistent with the new competency-based approach adopted by the Council of Social Work Education (CSWE), in preparation for reaccreditation of its BSW and MSW programs in Spring 2012. Faculty have linked all ten CSWE competencies to objectives of each course in the two curricula; the competencies will be assessed by field practica supervisors as well as by faculty. CSWE has also

identified 41 foundational practice behaviors, all of which have been included in the curriculum mapping, along with the PULs. IU participated in a national pilot program to develop assessment of student achievement of the CSWE competencies via a tool for field instructors to use; although full results from the pilot were not available at the time of report preparation, early indicators show that field instructors rated students at or above competence on nine of the ten core competencies. The tenth area was research, so faculty will review the two BSW research courses to determine what changes may be needed to increase student achievement.

The second major innovation for the school is an ePortfolio, which students will prepare for faculty assessment of practice behaviors. Faculty in all required courses will work with students to identify appropriate educational products for inclusion. The faculty have endorsed the prototype ePortfolio and plan to develop individual rubrics for each of the 41 practice behaviors, to be piloted in Fall 2010. In addition, the school has offered training workshops for Social Work faculty in assessing the PULs in BSW courses.

Recent MSW graduates report that the program prepared them well or very well in most cases. Areas where they would have liked better preparation, including statistical analysis, research methods, social policy formation, and therapeutic intervention with groups and families, have been noted by faculty for attention as the entire curriculum begins a transition to competency-based education. Pass rates for IU MSW graduates on the entry-level licensure exam continue to exceed national rates (67 versus 58 percent; note that Social Work is a system-wide school, and campus-level data are not available).

An ongoing goal for the Ph.D. program in Social Work has been to internationalize its curriculum. That goal was addressed in two ways in 2009-10: (1) appointment of a visiting scholar from Ethiopia, who participated in a variety of research and teaching activities and gave two public lectures at the school; and (2) creation of a service learning/international study course that compares U.S. and Chinese health care and was offered in Beijing, China in Summer 2010. Seven IUPUI students were joined by 21 Chinese students from the Peking University Health Sciences campus. Faculty collaborators at PKU were very pleased and have requested a second offering in Summer 2011; IUPUI student participants have made campus presentations about the course, generating interest from 20 Social Work students and another 25 IUPUI students. A second goal has been to strengthen research foundations, so that all Ph.D. students are equally well prepared for advanced coursework in research methods. During 2010-11, the quantitative research course will be revised to a two-course sequence on research methods.

Division of Student Life

As noted above, the Division of Student Life undertook a significant planning initiative in 2009-10 with its first-ever division-wide plan for assessment of student learning. The initiative represents the first of two phases, to be completed in 2010-11 with collection of data and subsequent use for improvement of practice.

The planning initiative represents an improvement effort arising from results of a campus survey conducted as part of the division's program review. In that survey, both faculty and staff recognized the division's programs, services, and activities as important educational components of the IUPUI student experience, but student awareness of these services was low. A major

component of the initiative is a comprehensive communication plan to increase student awareness. The alignment of the new division learning outcomes with specific programs also seeks to help students make connections between their classroom experiences and their co-curricular involvement.

University College

The work of University College is critically important to improving IUPUI retention and graduation rates. Both rates have improved steadily over the past decade, in part because University College conducts regular assessment and program evaluation for nearly every activity and service, acts promptly on the results, and continues measuring and fine-tuning. Assessment includes large-scale initiatives, such as first-year learning experiences, tutoring and advising services, orientation and Summer Bridge Programs, and the Upward Bound and Twenty-first Century Scholars Success Programs, as well as more routine support structures like web server security, telephone usage, and accessibility of assessment results to all UC faculty and staff.

Assessment of the First-Year Seminar program exemplifies a consistent practice across the college. In Fall 2009, 90 percent of all entering freshmen enrolled in a First-Year Seminar (FYS), and these participants earned statistically significantly higher grade point averages (at 2.62) than did non-participants (at 2.37), even after allowing for such factors as high-school GPA, SAT scores, age, and gender. Similarly, FYS students were retained from the first to the second year at higher rates (77 percent) than were non-participants (68 percent). Student course evaluations suggested several areas in need of improvement, including lessons fostering critical thinking, level of intellectual challenge, and number of assignments that contribute directly to learning. In response, the FYS course template has been revised to strengthen academic rigor, support assessment of the PULs, and make foundational goals clearer to students.

As a result of a Fall 2008 assessment of learning outcomes for the Personal Development Plan prepared by FYS students, faculty and advisors developed an online PDP, using the ePortfolio to make the PDP more portable and useful across the full undergraduate experience. The new "ePDP" will be pilot-tested in Fall 2010, with a more robust section on career goals and planning and a reconfigured emphasis on integrative learning. The PDP is intended, in part, to help students to integrate their curricular, co-curricular, and personal experiences throughout their educational journey. A revised long-term assessment plan will determine effectiveness of the PDP for students after the first year, focusing on learning outcomes, heightened personal and intellectual development, and faster progress toward degree completion.

One other example can serve to indicate University College's attention to the full assessment cycle. The Summer Bridge Program is an intensive two-week pre-entry class to help new students create personal networks with faculty, advisors, and other students and to develop study skills, such as note-taking and exam preparation, for success in college. The program especially targets minority and low-income students. Participants had significantly higher fall GPAs (2.96) compared to non-participants (2.78) and slightly higher retention rates overall; African Americans and Twenty-First Century Scholars were retained at substantially higher rates than non-participants (86 versus 69 percent and 74 versus 60 percent respectively). The college plans to award incentive scholarships to 50 qualifying students to encourage more students to take

advantage of this popular program. Fully 98 percent of participating students say they would recommend it to others.

Appendix
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, described above, 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 and courses in their major fields of study.

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://academicaffairs.iupui.edu/plans/pul/), the definition of each of these principles 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 new Principles of Graduate and Professional Learning (http://academicaffairs.iupui.edu/plans/graduatePrinciples.cfm) 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). Most of these experiences occur within courses, but all will be highlighted on students' transcripts. The faculty, administrators, and units responsible for the RISE to the IUPUI Challenge Initiative have agreed to include the PULs in these experiences. Many RISE experiences include a reflective component that is incorporated, along with other relevant materials, into students' ePortfolios or other records to facilitate 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, among other values, the pursuit of best practices. These "best practices" are intended to support students' success in achieving their educational goals, particularly by enhancing 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 a variety of first-year experiences to assure that students get off to a good start. 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 (introductions to a field of study that 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 analyses of engagement levels, surveys eliciting student perceptions, and data on percentages of students who persist 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 find explanations that shed light on why students encounter difficulties with particular courses or concepts. Similarly, when an intervention to improve some aspect of student academic support is implemented, a program evaluation approach is often the best means to follow up to assure the desired improvement. Forms of indirect assessment that go beyond ascertaining academic competencies are thus necessary and useful in helping academic programs function more effectively and efficiently.

Structures supporting assessment

Primary responsibility for assessment of learning 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, particularly its offices of Information Management and Institutional Research (IMIR),

Institutional Effectiveness, and Testing Center. The Office of the Executive Vice Chancellor for Academic Affairs provides 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 procedures assure timely reporting of 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 directed to comment on the quality of curricula, methods of instruction, and the evidence of student learning in general education (based on the PULs), as well as in the major field of study. Annually, each educational unit prepares an Assessment Report to the Program Review and Assessment Committee (PRAC). These "PRAC reports" provide the main foundation for this report on learning assessment at IUPUI and are available at http://planning.iupui.edu/43.html.

IUPUI also includes as part of its annual Performance Report a variety of performance indicators designed to chart progress on ten mission-critical goals, including student learning outcomes. Underlying each of the macro-indicators related to teaching and learning is a set of sub-indicators based on direct and indirect evidence. A standard red/yellow/green dashboard provides a quick overview of progress for each indicator. Dashboard "colors" for the indicators are determined by committees of appropriate faculty members and administrators convened annually to review the past year's data. The *IUPUI Performance Report* is published early each calendar year in print and online. (See www.iport.iupui.edu.)

Common methods of assessment

Grades. While assignment and course grades may not be considered to be direct evidence of learning for purposes of program or institutional assessment, 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 that necessary interventions can be undertaken. 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 practica. 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 enrolled undergraduates. The locally developed IUPUI Continuing Student Survey 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. Comparison of average responses of lower- and upper-division students provides 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. Other surveys can be particularly valuable in understanding student perceptions of the extent to which they are learning the PUL skills and knowledge they are expected to master.

Another example of survey-based indirect evidence is the survey of 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 provide alumni with perspectives on their learning that are more realistic than their perceptions prior to graduation. 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 Continuing Student Survey 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 particular fields (e.g., nursing, business, engineering) periodically survey employers of their graduates to assure that students are indeed acquiring the kinds of abilities and knowledge needed to thrive professionally. In other cases, graduates must pass a state- or nationally-normed examination or other review process in order to enter a profession (e.g., teachers, nurses and allied health professionals, some kinds of social workers, and others). Pass rates of IUPUI graduates on these exams provide important feedback to faculty about areas showing solid learning and opportunities for improvement. Similarly, student scores on various graduate entrance examinations or their acceptance rates into graduate school can supply helpful external validation for many departments.

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 flexibility of IUPUI's ePortfolio. IUPUI's system has been designed to serve both assessment and instructional purposes, with a particular view to assessment of the PULs as they are learned in varied contexts, including first-year experiences, courses and projects in the major, RISE experiences, and senior capstone courses. Data derived from authentic evidence (that is, evidence drawn from varied learning experiences rather than one-time-only examinations) collected, reflected upon, reviewed, and evaluated in IUPUI's ePortfolio system can increasingly be aggregated via digital reporting mechanisms to provide information at program and campus levels. As departments incorporate the ePortfolio into their curricula, they refine courses and entire programs to address desired learning outcomes ever more deliberately and effectively. Thus, the ePortfolio supports improvement in learning outcomes at the same time that it demonstrates these outcomes.