National Institute for Learning Outcomes Assessment

September 2011

Gaining Ground:

The Role of Institutional Research in Assessing Student Outcomes and Demonstrating Institutional Effectiveness

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Foreword by Randy Swing

Occasional Paper #11

learningoutcomesassessment.org

About the Author

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Please cite as: Volkwein, J. F. (2011, September). *Gaining ground: The role of institutional research in assessing student outcomes and demonstrating institutional effectiveness*. (Occasional Paper No. 11). Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Contents

Abstract

Student learning outcomes are central to the purpose of educational organizations, and the assessment of these outcomes supplies some of the most important evidence demonstrating institutional effectiveness. Drawing on the results of a national survey of institutional research (IR) offices, this paper describes the varied organizational characteristics and analytical activities of these offices, giving special attention to IR's role in assessing student outcomes. The IR profession has evolved over the past 50 years. At many institutions of higher education, IR now serves as a major vehicle for gathering and delivering evidence of educational effectiveness. The national survey data show that most IR offices in higher education engage in a collage of outcomes assessment activities. This paper, first, describes the variable maturity among IR offices and summarizes the roles and responsibilities of IR staff. Second, the paper identifies some of the complexities and challenges associated with assessment and evaluation, including the important role of accreditation as a driver of assessment activity. Last, the paper suggests some strategies for demonstrating institutional effectiveness and building a culture of evidence.

Foreword

Like most aspects of higher education, there is great diversity in how colleges and universities approach the assessment of student learning. But central to all credible assessment efforts is the use of data – both quantitative and qualitative – to document the degree of learning achieved by students. It is this reliance on data that is at the core of all measurements of student learning outcomes and the connection to the field of institutional research which this NILOA Occasional Paper addresses.

Fortunately, many in the academy are trained in the use of data and application of the scientific method of inquiry. Others have specialized skills in evaluating and decoding the human condition that includes assessing creative and artistic endeavors. In essence, higher education institutions are rich collections of skilled professionals with a variety of ready talents to apply to assessing student learning outcomes. So why would an institution need to hire individuals to specialize in the work of institutional research? What are the unique tasks undertaken by institutional research officers in support of student learning outcomes assessment?

In this NILOA Occasional Paper, Fred Volkwein not only answers these questions but does so by modeling good institutional research practice himself. He reports data, puts those data in context, and builds a story that leads the reader through the complexities of this topic. The central plotline is that assessment of student learning in support of accreditation, departmental reviews, institutional improvement, and quality assurance efforts is a large and rapidly expanding component of the field of institutional research. Fred makes the case that institutional researchers have, over the past 50 years, grown to be trusted partners with faculty, student affairs officers, and administrators in selecting the most appropriate data collection, statistic analysis, and effective reporting methods relating to student learning.

In fact, trust is one of the essential assets that an institutional researcher brings to the role. I invite the reader to review the Association for Institutional Research's (AIR) *Code of Ethics* to add additional perspective to the way IR Officers approach their work (see http://www.airweb.org/?page=140)

As Fred notes, observers of the field of IR acknowledge that IR Officers are in the "organizational intelligence" business which requires converting data into information that can be used for institutional improvement, transparency, and quality assurance. Over the years technology has provided new means for collecting data about the activities and experiences students choose and new survey instruments collect more information about how students engage in learning. Combined with an array of cognitive skill and knowledge tests, many colleges find that they are swimming in a sea of assessment data. The backlog has added pressure for institutions to expand their IR staff to assure that the data are analyzed and converted to decision-support information.

From his faculty role at The Pennsylvania State University, and building on his early career as an institutional researcher, Fred has taught scores of graduate students the techniques of converting data into usable information. He brings a deep appreciation of the complexity of action research in real-life settings where the optimal controls of a laboratory experiment are rarely, if ever, possible. It is this combination of scholarship and practical application that guides this paper's exploration of the critical partnership that institutional researchers have with faculty, staff, and administrators in the assessment of student learning outcomes.

Randy Swing

Executive Director
Association for Institutional Research

Gaining Ground: The Role of Institutional Research in Assessing Student Outcomes and Demonstrating Institutional Effectiveness

J. Fredericks Volkwein

The Assessment Context

America's complex society has created a diverse educational system that, in turn, requires varied mechanisms of quality control. Diverse students and varied employment needs drive curricular variety as colleges and universities attempt to serve their various local, regional, and national constituencies. While competition for favorable ratings and rankings encourages higher education institutions to become more alike, strong American values favoring local control and a free market encourage the opposite. The openness and competitiveness of this system has encouraged the entry of new educational providers as well as the development of market niches by existing colleges and universities—generating an industry of public and private institutions that vary significantly in their missions, curricular offerings, delivery modes, sources of funding, organizational sizes, geographic spans, student characteristics, administrative complexities, and resources. To maintain and enhance their competitiveness and academic reputations, many of these institutions engage in internal quality control while facing an external array of public and private demands for accountability, quality assurance, accreditation, and certification of their graduates.

To maintain and enhance their competitiveness and academic reputations, many of these institutions engage in internal quality control while facing an external array of public and private demands for accountability, quality assurance, accreditation, and certification of their graduates.

In this intensely competitive environment, colleges and universities everywhere are hungry for good information about the impact they are having on their students and about the quality of student learning at their institutions. To obtain such information, most higher education institutions are investing in their analytical and research capacities, creating a relatively young profession generally known as institutional research (IR). The IR offices seeking this information are playing a growing role in assessing student outcomes and building a culture of evidence.

The Evolution of Institutional Research

The two most widely accepted definitions of institutional research are Saupe's (1990) notion of IR as decision support—a set of activities supporting institutional planning, policy formation, and decision making—and Fincher's (1978) description of IR as organizational intelligence. Terenzini (1993) has elaborated on this idea by describing three tiers of organizational intelligence. Volkwein (1999, 2008, 2011) and Peterson (1985, 1999) summarize the evolution of IR as a profession and place IR within the context of larger changes in society and in higher education. During the past 50 years, IR offices were established to help reshape and strengthen their institutions by analyzing both the organizations' effectiveness and the surrounding environment to match internal capacities with external needs and trends. Institutions witnessed particularly consequential shifts in budgeting, accountability, and accreditation during this time. In institutional finance, there was a shift from basing budgets largely on endowments to basing budgets principally on formulas, particularly in state systems, and more recently to basing budgets on the performance outcomes valued by policy makers. Similarly, accountability and accreditation have shifted institutions' emphases from resources

and reputation to goal attainment, program evaluation, and institutional effectiveness—with especially heightened emphasis on student learning outcomes.

The previous accreditation and accountability philosophy, most dominant before the 1980s, encouraged institutions to maximize the quality of inputs to guarantee the quality of outputs. While the accreditation pressure for maximizing input quality has diminished, growing external attention to performance outputs and outcomes (like academic achievement, graduation rates, and faculty publications) has forced institutional researchers to start at the end and look backwards at the conditions that produce performance. Moreover, the empirical connections between high inputs and high outputs remain strong. Institutions everywhere are finding it in their self-interest to devote greater attention to the quality of their faculty and student credentials on entry. Recent studies confirm that institutional reputation and prestige are highly predictable from data on institutional selectivity, enrollment size, and resources (Sweitzer & Volkwein, 2009; Volkwein & Grunig, 2004; Volkwein & Sweitzer 2006).

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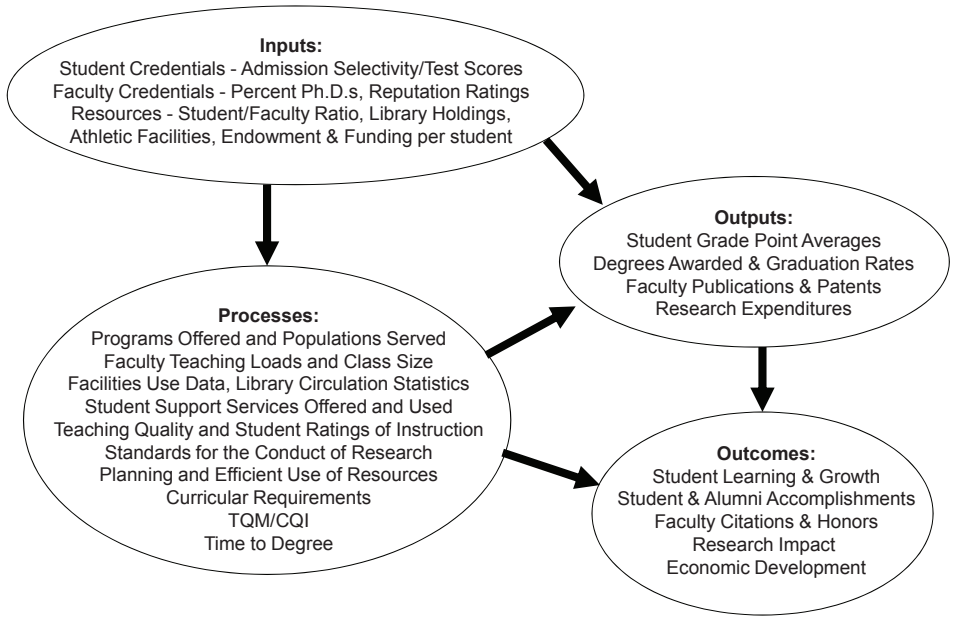
Figure 1. Evolving Focus of Accreditation and Accountability



The new accreditation philosophy, growing in strength since 1990, encourages institutions and their stakeholders to measure outcomes in order to judge the results of educational programs. Using a results-focused approach; however, risks providing information too late in the process to render anything but a summative, acceptable versus unacceptable judgment. Overly focusing on outcomes may not provide the formative information needed for internal development and educational enhancement that lie at the heart of modern assessment activity promoted by organizations like the National Institute for Learning Outcomes Assessment (NILOA).

To address this concern, process measures have been gaining renewed attention on the theory that good outcomes will not result from flawed educational processes and negative student experiences. Measurement at critical points during the educational process enables institutions to determine which student experiences are having the greatest (and least) impact and to make corrective intervention. Research evidence indicates, moreover, that outcomes such as student growth and satisfaction are most heavily influenced by those campus experiences that produce student

academic and social integration and engagement—outcomes that, in turn, are associated with desired student learning outcomes (Pascarella & Terenzini, 2005). This tension between the formative versus summative purposes of accreditation requires assessment researchers to consider the multiple perspectives provided in Janusian thinking, thinking that considers multiple perspectives (Volkwein, 1999). Thus, for assessment researchers the ideal set of needed measurements is as follows:

- Inputs—because of their empirical links to key performance outcomes like academic achievement, graduation rates, and institutional reputation;
- Student engagement and critical student experiences inside and outside the classroom—because of their influences on student growth and performance outcomes and because such measurement facilitates corrective intervention;
- A variety of outputs and outcomes—because results matter most.

Driven substantially by trends in accreditation, the desire to assess student learning outcomes, and the growing pressure to report these outcomes, the IR profession is developing rapidly both domestically and internationally.

The National Survey

Much of what we know about the profession of institutional research comes from several multistate and national surveys conducted in the 1980s and 1990s of AIR and regional members (Knight, Moore, & Coperthwaite, 1997; Lindquist, 1999; Muffo, 1999; Volkwein, 1990). To update these surveys, the Center for the Study of Higher Education at Penn State conducted the National Survey of Institutional Research Offices in 2008–09. The survey has since been repeated at universities in Japan, Africa, and the Middle East (Ehara, Volkwein, & Yamada, 2010; El Hassan & Cinali, 2010).

In the U.S. and Canada, our survey received responses from over 1,100 IR offices containing over 3,300 professional staff. The survey found that 38% of these offices in colleges and universities have office names including traditional terminology like "institutional research," "analysis," "information," "reporting," or "studies." A second large group (35%) has office names including words like "assessment," "accountability," "accreditation," "evaluation," "effectiveness," and "performance." There is a wide array among these offices of other names and combinations of names with "planning" and "IR." Institutional researchers and IR functions are also embedded in offices of strategic planning, enrollment management, budget, policy analysis, information technology, and even the registrar. In this paper, the terms "institutional research" or "IR" encompass all of these variations. Moreover, whatever is called institutional research is not limited to colleges and universities. We know from these surveys that foundations, government bureaus, state education departments, and research-oriented organizations of many varieties also hire people with training in research and analysis, and that these institutions constitute about 10% of Association for Institutional Research (AIR) membership nationally.

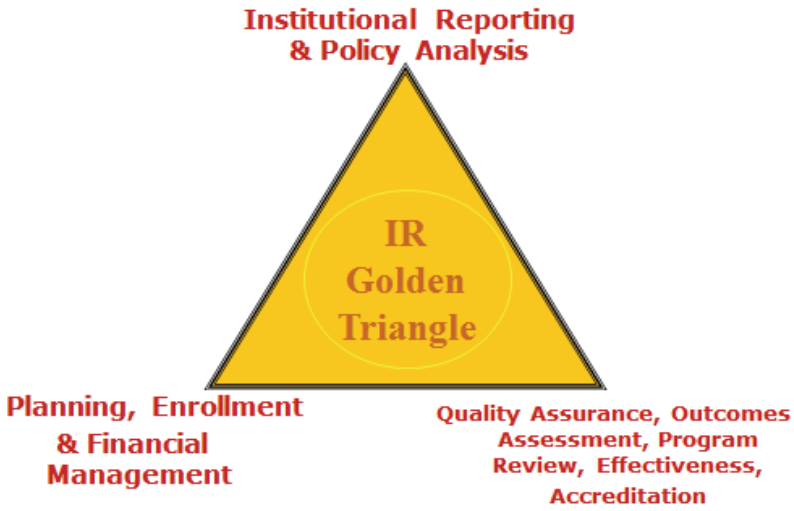
Driven substantially by trends in accreditation, the desire to assess student learning outcomes, and the growing pressure to report these outcomes, the IR profession is developing rapidly both domestically and internationally. AIR and its state and regional affiliates have experienced a four-fold growth in membership since the 1970s. In the U.S. and Canada, about 65% of offices report increases in IR staffing and budget in the decade between 1998 and 2008, compared to less than 14% reporting reductions in resources.

Three analytical functions comprise the "golden triangle" of institutional research (see Figure 2) and dominate most IR practice in the U.S.: 1) Institutional reporting and administrative policy analysis; 2) strategic planning, enrollment, and financial management; and 3) outcomes assessment,

program review, accountability, accreditation, and institutional effectiveness. Campuses differ in the extent to which they combine these functions or keep them separate, and the part of the triangle that gets emphasized depends substantially on whether the office reports to the president, the provost, or one of the other vice presidents (Volkwein, 2008, 2011). As discussed below, however, it appears that the assessment and evaluation part of the triangle is a bit larger than the others and is growing.

The profession of institutional research (IR) has evolved from providing accurate numbers, descriptive statistics, and fact books to meeting demands for quantitative and qualitative analysis and evaluation. Now, IR professionals, especially assessment researchers, are using multivariate analysis and modeling skills to project admissions yields, to identify student experiences that produce beneficial outcomes, to model alternative scenarios of tuition and financial aid, and to examine their impact on enrollment and revenue (Volkwein, 2008, 2011).

Figure 2. The Golden Triangle of Institutional Research Analysis



IR and Assessment

Which offices at colleges and universities are more likely to engage in student outcomes assessment? Based on the earlier IR studies, we entered our study in 2008 expecting that larger offices reporting to senior management and staffed by more experienced professionals with doctoral preparation would indicate relatively more developed and mature institutional research and assessment on campus. We also expected that these more mature offices would be more likely to conduct sophisticated analytical studies like assessing student learning and researching the outcomes of the college experience. Thus, we used the survey data to create a measure of "IR maturity" from indicators of staff size, reporting level, years of experience, and level-of-degree preparation).

Our survey analysis, in general, revealed a core of relatively centralized analytical tasks conducted by the vast majority of IR offices around the country. The majority of these centralized IR activities fall within the upper point of the golden triangle, institutional reporting and policy analysis, and include such tasks as collecting and reporting campus and national data, maintaining the campus fact book, and responding to guidebooks and federal/state data requests.

The combined assessment, effectiveness, and evaluation activities—the right-hand point on the IR golden triangle—made the largest contribution to

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the average office's task hierarchy score (see Figure 3), which we created by summing high, medium, and low ratings on a variety of functions, as well as the degree of IR office involvement. Our survey also found that the name of the office reflected the office's analytical workload. Offices with names including "assessment," "evaluation," or "effectiveness" were three times more likely to score in the top one third on the assessment task hierarchy.

A more complete picture of IR work appears when we examine the responsibilities that IR offices share with other offices across the campus. Combining the centralized and shared IR tasks, we see not only a larger array of analytical challenges but also a high proportion representing the assessment/evaluation point on the IR golden triangle. For example, Table 1 shows that over 90% of IR offices are engaged in activities related to institutional and departmental self-study and accreditation. About 8 of every 10 IR offices collaborate with relevant others or themselves conduct studies of student tracking, performance, progress, engagement, and/or satisfaction; in addition, they measure performance indicators and study institutional goal attainment. Other areas of frequent IR involvement and collaboration include many evaluation and assessment tasks like student outcomes research (64%), assessments of student general education skills (62%) and personal growth (55%), studies of employee satisfaction (59%), continuous quality improvement (56%), alumni studies (56%), and evaluations of student services (60%) and administrative offices (52%).

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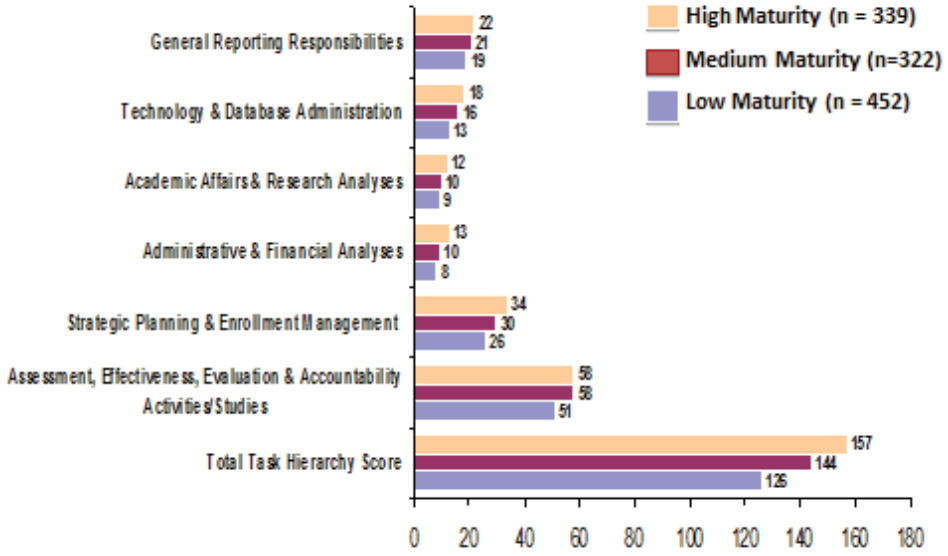
Figure 3. Average Task Hierarchy Scores for the 3 Levels of IR Office Maturity



Volkwein, Liu & Woodell, Penn State University

The profile presented in Table 1 suggests, overall, that teamwork is a nessary and valuable part of IR work and that IR has become an important contributor in building a culture of evidence. The majority of IR offices play a dominant role in analyzing student attrition/retention outcomes, student engagement, and student satisfaction. However, IR offices are more likely to share--rather than lead--the assessment of student learning outcomes like basic skills, general education, personal growth, and learning in the major field.

Table 1. Assessment and Evaluation Activities by Offices of Institutional Research, from Results of the National Survey of Institutional Research Offices, 2008–09

	Percentage of Offices Reporting		
Assessment, Effectiveness, Evaluation and Accountability Activities/Studies	Activity Centralized in IR Office	IR Activity Shared w/ Others	Activity Not in IR*
Supplying information and analysis for institutional self-study and accreditation	38	55	7
Attrition/retention/graduation analysis	66	25	9
Supplying information for academic program reviews and program accreditation	41	48	11
Studies of student satisfaction/opinion	58	28	13
Compiling/reporting institution-level performance indicators	50	35	15
Studies of student academic performance/progress	46	37	17
Studies of student engagement	59	22	20
Conducting research on college/campus /system issues/policies	32	47	21
Compiling/reporting unit level performance indicators	30	44	26
Studies of the first year student experience	34	33	33
Participating in evaluation/review of academic programs	19	48	33
Studies of students to support administrative policy making	32	33	35
Coordinating measurement of student learning outcomes	24	41	36
Assessment/measurement of student general education knowledge/growth	21	41	38
Evaluating student services	17	42	40
Assessment/measurement of student basic skills (reading, writing and math)	19	37	43
Conducting alumni studies	23	33	44
Coordinating continuous quality improvement activities	22	35	44
Assessment/measurement of student personal and social growth	25	30	45
Studies of campus climate & race relations	24	30	46
Evaluating administrative offices	17	35	48
Reporting/analyzing statistics on student ratings of instruction	31	20	49
Assessment/measurement of student knowledge in the major	13	35	52

*We do not know from the survey if this analytical activity was conducted elsewhere with no IR involvement.

Several clear conclusions emerge from the analysis of our national survey results:

- The profession of institutional research and assessment is still young and growing and has not yet achieved as much definition as established professions like medicine, law, engineering, and teaching.
- IR offices vary considerably in name, organizational location, staff size, staff experience, staff educational preparation, and tasks performed.
- Although a core set of responsibilities and analytical tasks appears to be carried out by 80% of IR offices, a large portion of the IR workload varies with the office's organizational location.
- These differences among IR offices are NOT strongly associated with institution type, but they do serve as markers of variable IR maturity.
- The IR offices scoring as most mature are those with 6+ professionals, reporting to the president, and headed by a person with a doctoral degree and 20+ years of IR experience.
- Analytical activities associated with assessment, evaluation, and effectiveness—especially in cases where these words appear in the IR office name—currently make the largest contribution to the task hierarchy of the typical office.

The average IR office is likely to have centralized responsibility for analyzing attrition/retention, student engagement, and opinion/satisfaction outcomes, but it is more likely to have shared responsibility for analyzing student learning outcomes.

Internal Improvement vs. External Accountability

Most offices of institutional research divide their time between their internal and external responsibilities. Internal IR responsibilities include providing data and analysis and survey research to assist managerial policy making, enrollment management, and student outcomes assessment, among other purposes. External responsibilities include forecasting admissions applications, benchmarking the institution against national and peer databases, alumni studies, environmental scanning, and transmitting official numbers to government agencies and guidebooks. The classic Janusian challenge for most IR professionals is to resolve the potential conflict between their internal, more formative role and their external, more summative role. Thinking about these opposing forces as inspirational versus pragmatic—doing something because you want to versus doing something because you have to—can help to resolve this tension (Volkwein, 1999, 2007, 2010). This line of thinking is entirely congruent with views expressed by Ewell (2009).

The classic Janusian challenge for most IR professionals is to resolve the potential conflict between their internal, more formative role and their external, more summative role.

The *inspirational* foundation for evaluation and assessment is doing it for self-improvement, especially for the enhancement of student learning and growth. We in higher education are at our best when we carry out educational change, assessment, and evaluation not to please external stakeholders but to satisfy ourselves—to achieve an organizational climate of ongoing development and continuing improvement.

The *pragmatic* foundation for evaluation and assessment recognizes the external need for us to be accountable to our stakeholders: legislators and trustees, taxpayers and tuition payers. Moreover, assessing institutional effectiveness enables universities to successfully compete for enrollments and resources and to gain strategic advantage. In an atmosphere of scarcity, campus departments and programs that can measure their effectiveness and reshape themselves will do better than those that cannot in the competition for enrollments, resources, and faculty (Volkwein, 2007, 2010). The simultaneous and competing needs for both internal improvement and external accountability, thus, provide the first foundation for demonstrating institutional and program effectiveness and for guiding the institutional research assessment agenda.

Five Assessment and Evaluation Questions

The second foundation for effectiveness and assessment engages us in evidence-based thinking by asking five key evaluation questions. As drivers for assessment activity, each of the concerns behind these questions—attaining goals, improving performance, meeting standards, comparing favorably, and being cost effective—has a relevant contribution to all levels of effectiveness (cf., Volkwein, 2007, 2010).

1. **Is the student or program or institution meeting educational goals?** Internal-referenced, goal-driven assessment is important and relevant at every level—individual students and faculty, classroom, program, department, and institution. What should our students be learning? What are the goals and purposes of this program? What is the institution's mission? Answers require clear, measurable goals and objectives. This formative assessment concentrates on narrowing the gap between goals and

actual performance and, thus, requires measures or judgments about goal attainment.

2. Is the student or program or institution improving? This improvement-driven, self-referenced evaluation compares institutions, programs, and individuals against themselves over time. Formative, self-comparison requires consistent, longitudinal data, or at least Time 1 and Time 2 data. It also recognizes that students, institutions, and programs are at different starting points and assumes that every student, faculty member, and program can improve.

3. Does the student or program or institution meet standards? Summative, criterion-referenced evaluation is the traditional accreditation approach, requiring the assessment of institutions, programs, and individuals against criteria established by an external authority. Consequently, this criterion-based form of assessment overrides local control and autonomy and places a high priority on ensuring minimum levels of competence or performance. It also requires agreement and clarity about standards and how they are to be measured. Whether applied at the institution, program, or individual level, such assessment usually leads to summative decisions about passing versus failing, continuance versus discontinuance, and earning versus not earning a credential.

4. How does the student or program or institution compare? Answering this question requires norm-referenced comparison to appropriate peer groups. Common examples include grading students on a curve, administrative benchmarking, and academic rankings. Comparison assessment recognizes that institutions and programs are competing and that constituents and stakeholders often wish to identify the most successful or least costly or otherwise most noteworthy among competitors. This explains the interest in the *US News & World Report* ratings and rankings. The assumption in support of comparison assessment is that competition for faculty and students drives institutions to improve—or they see their market position deteriorate. Whether based on perceived reputation or objective statistics, comparison assessment requires no consensus about performance levels or standards. It merely shows how an institution stacks up against the competition. As an effective driver for outcomes assessment, comparison assessment requires the selection of appropriate reference groups and consistent information about them.

5. Is the student or program or institution cost effective? This productivity question compares costs with benefits, i.e., expenditures and resources with results. The costs of higher education constitute an enormous national investment, and universities are under pressure to demonstrate that teaching, research, and service programs are being conducted economically. These external accountability concerns are stimulating current legislative and trustee interest in productivity indicators like class size, faculty workload, administrative salaries, time to degree, loan default, economic impact, and research output, among others. Such cost-effective analysis usually involves a high degree of professional judgment—along with the measurement.

As drivers for assessment activity, each of the concerns behind these questions—attaining goals, improving performance, meeting standards, comparing favorably, and being cost effective—has a relevant contribution to all levels of effectiveness (cf., Volkwein, 2007, 2010).

Effectiveness in Higher Education

The trends in accountability and accreditation described above have stimulated both national and campus conversations about institutional and educational effectiveness. The literature on higher education reflects the issues of effectiveness and quality assurance at four major levels:

1. Institution: regional accreditation, performance reporting, governance control
2. Academic and administrative department, program, and services: review, evaluation, and accreditation
3. Faculty: assessment of teaching, scholarship, research, and service
4. Classroom, course, and student: assessment of student performance, certification, and learning outcomes

The costs of higher education constitute an enormous national investment, and universities are under pressure to demonstrate that teaching, research, and service programs are being conducted economically.

Table 2 indicates who the major actors are with primary, although not exclusive, responsibility at each of these four levels and separates the evaluative foci for quality assurance into two concerns: efficiency/cost versus effectiveness/quality. I discuss each of these in the paragraphs below, except the faculty (c.f., Volkwein, 2007). The focus on efficiency and cost often occupies the attention of stakeholders inside and outside the university, represented in the center column of the table, including those who fund the institution and its faculty and students as well as those who administer and control those funds after they are received. The assessment and promotion of effectiveness and quality, however, is influenced most by those represented in the right hand column of the table.

Table 2. Levels of Evaluation and Quality Assurance in the U.S.

	Twin Foci of Evaluation and Primary Responsibility for Quality Assurance	
Level of Evaluation	**Efficiency/Cost**	**Effectiveness/Quality**
Institution	State and local government Boards of trustees	Presidents and chancellors Regional (voluntary) accreditation bodies
Discipline/Program/ Department	Campus financial officers	Professional associations State education departments Campus provosts/deans/faculty
Faculty/Researcher/ Instructor	Federal and foundation grant providers	Federal and foundation review boards Campus provosts/deans/faculty
Student/Classroom	Campus financial and enrollment management officers Federal and state financial aid authorities	State and professional licensure such as for teachers, lawyers, nurses, physicians, accountants, social workers, engineers, architects Faculty

Institutional Effectiveness

At the institution or campus level, presidents or chancellors and trustees are the obvious first line of quality assurance, followed by the various national and regional accrediting bodies. In addition, the use of externally mandated performance indicators for publicly supported institutions is now well established. Early state initiatives to mandate testing have been largely abandoned in favor of less expensive and more practical institutional performance indicators (Ewell, 2005).

Internally, campus leaders have imported an array of management tools to monitor and improve institutional performance including the Baldridge Seven Quality Criteria, Six Sigma, and Dashboard Performance Indicators. A growing number of universities, like DePaul, Penn State, Ohio State, Miami University, Tufts, and Illinois State, have developed elaborate scorecards or performance "dashboards" to annually track and monitor their own progress and effectiveness compared to a group of peers. In their study of performance dashboards, Terkla, Wiseman, and Cohen (2005) report 11 broad categories of indicators with one to five subgroups containing 6 to 100 different indicators in each subgroup.

Most of these dashboard indicators include measures of admissions; measures of enrollments; profiles of faculty and students; and measures of finances including tuition, employee compensation, financial aid and fellowships, endowment, alumni giving, and Moody's ratings of financial health. Institutions are struggling to add indicators of academic and student performance, but few have moved beyond retention and graduation rates, degrees awarded, class size, student/faculty ratios, honors and study abroad participation, student/faculty/alumni satisfaction, research funding/expenditures/patents, employment/graduate school attendance by graduates, library rankings, and reputational ratings. While the public associates many of these indicators with quality, the meta-analysis by Pascarella and Terenzini (2005) has found only indirect associations between them and students' actual educational experiences and learning outcomes.

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Diverse performance indicators, thus, receive both internal and external attention—and generate significant workload for IR offices. Moreover, these indicators also reflect diverse ideas about measuring efficiency and cost versus effectiveness and quality. Among the competing models or philosophies employed in determining the excellence of educational institutions, three are dominant (Burke & Minassians, 2003; Burke & Serban, 1998; Volkwein, 2007):

- The resource/reputation model. The academic community traditionally embraces the resource/reputation model, although it has been disapprovingly articulated by Astin (1985). This model assumes that an institution's quality is indicated by its reputation ratings, financial resources, faculty credentials, student test scores, external funding, and rankings by experts. Under this model, faculty—sometimes joined by accreditation bodies—argue for more resources to support educational effectiveness and to boost the institution's academic standing.

- The client-centered model. Many parents, students, and student affairs professionals cling to a client-centered model. Derived from the literature on quality management, this market-oriented, customer-centered model emphasizes all possible student services, faculty availability and attentiveness, student and alumni satisfaction, as well as low tuition and high aid. Seymour (1992) articulates this model in his book, *On Q: Causing Quality in Higher Education*. Under this model, institutions that best meet the needs of their constituents are considered to be the most effective.

- The strategic investment model. Generally used by the civic and government community, the strategic investment model emphasizes the importance of return on investment; cost-benefit analysis; and results-oriented and productivity measures such as admissions yields, graduation rates, time-to-degree rates, and expenditures per student (Burke & Minassians, 2003; Volkwein, 2007). Under this model, government officials and even trustees evaluate each new initiative in terms of its perceived payoff (Ewell, 2005).

Because these competing views of educational and institutional excellence are interpreted differently by different higher education stakeholders, there is a potential for misunderstanding if not outright conflict among the stakeholders. Presidents—who often feel caught in the middle between the conflicting interpretations of faculty and accreditors, students and parents, government officials and trustees—often ask their institutional researchers to help them develop multiple responses to multiple audiences.

Ewell (2005, 2009) has described the history of accreditation and state policy attempts to promote institution-centered assessment in higher education and has expressed disappointment that so little has changed since the 1980s. Our study found, however, that IR involvement in accreditation activities grew from about half to 93% of the responding offices between 1989 and 2009 (c.f., Volkwein, 1990). Both regional and specialized accreditors have shifted their focus substantially away from judging institutions based on rigid standards for inputs and resources and toward judging educational effectiveness based on measurable outcomes (Volkwein, Lattuca, & Terenzini, 2008). Until now, only a few studies have attempted to measure the impact of these changes (Volkwein, Lattuca, Harper, & Domingo, 2007). NILOA has recently examined the assessment approaches by regional accreditation bodies and the impact they are having (Provezis, 2010). Chief academic officers surveyed by NILOA cited accreditation as the primary reason their institutions assess student learning (Kuh & Ikenberry, 2009). Outcomes assessment evidence is increasingly expected to be the centerpiece of institutional effectiveness, and using that evidence to improve is viewed to be the hallmark of a healthy learning organization. In any case, accreditation pressures for outcomes assessment at the level of discipline, department, and program now appear to be having significant impacts.

Outcomes assessment evidence is increasingly expected to be the centerpiece of institutional effectiveness, and using that evidence to improve is viewed to be the hallmark of a healthy learning organization.

Department and Program Effectiveness

At the program level, the picture is less complicated than at the institution level. There are two major types of program evaluation: (internal) program review and (external) program accreditation. Both contribute to institutional effectiveness.

Specialized academic and vocational accrediting bodies and professional societies scrutinize and accredit officially recognized programs in an array of specialties. This quality assurance activity—which began first in some of the most mature disciplines like medicine, law, and engineering—now includes nearly 100 fields of study ranging from accounting to music, chemistry to journalism, librarianship to nursing, forestry to physical therapy, and public administration to teacher education. Nearly all of these accrediting bodies are moving in the direction suggested in Figure 1—away from measuring resources, faculty credentials, and student seat time and toward results-oriented and outcomes-based approaches. Institutions are eager to meet the standards set by these accreditors because accredited programs attract the best students as well as federal, foundation, and state funding.

A number of scholars in higher education (e.g., Banta, Lund, Black, & Oblander, 1996; Barak & Mets, 1995) maintain that the most effective form of institutional assessment and improvement is the campus-based program review. This conclusion is reinforced by various accrediting bodies that have for the past decade called upon institutions and programs to create a culture of evidence that promotes academic self-renewal.

Even in the absence of external accreditors, most campuses have their own provost-led and faculty-endorsed program review processes. Campus strategic plans depend on realistic assessments of internal strengths and weaknesses matched against external constraints and opportunity. Consequently, nearly every university has developed its own program review and quality control measures, often coordinating these internal reviews with those of the specialized discipline/profession. Program reviews, under ideal conditions, are integrated into the fabric of academic affairs and constitute a constructive process of self-examination and continuous improvement. This is sometimes accomplished by a campus-wide governance body or committee that reviews all program evaluations. The University of California at Santa Barbara, Florida International University, and the State University of New York at Albany have had such model review processes in the past. Additionally, in many parts of the nation there are state-mandated, periodic

reviews of academic programs, especially at the graduate level. Sometimes these are coordinated with and draw upon—rather than override—the internal and external academic program review processes described here.

In any case, IR office analytic support for academic program reviews has grown from 40% to almost 90% of responding offices between 1989 and 2009 (c.f., Volkwein, 1990). While the incoming stream of requested self-studies and site visits from regional, state, and discipline-based bodies may seem endless to IR offices—particularly at institutions with multiple academic programs—at least these program and accreditation reviews now focus mostly on educational effectiveness rather than on the latest reputation ratings, student selectivity, and per-student expenditures that have long dominated guidebook rankings.

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Student Success

The needs of students and the areas of their learning vary greatly among institutions and degree programs because students are very diverse and the dimensions of learning in American higher education are extremely complex. The assessment of students' educational performance is likewise extremely complex and, hence, difficult to aggregate at the institutional level.

A map of this complex outcomes terrain was first developed by Astin, Panos, and Creager (1967) in a conceptual scheme organizing college outcomes along three dimensions: type of outcome, type of data, and time of occurrence. This scheme further divided outcome type into cognitive and affective (or noncognitive), data type into psychological and behavioral (or observable), and time into outcomes occurring in college (time 1) and those occurring after college (time 2). Another useful and frequently cited framework is Terenzini's (1989) taxonomy of approaches to assessment. His three-dimensional conceptual framework divides assessment activity into the purposes of assessment (formative versus summative), the levels of assessment (individuals versus groups), and the objects of assessment (knowledge, skills, attitudes/values, and behaviors).

Most higher education scholars in the U.S. think of assessment in the ways articulated in the following statements from higher education leaders and professional organizations:

- Assessment is the systematic gathering, interpretation, and use of information about student learning for purposes of improvement (Marchese, 1997).
- Assessment tends to be locally designed and executed evaluation research intended to determine the effects of a college or university on its students, centered on learning outcomes, for the purpose of improving teaching and learning (American Association for Higher Education, 1992).
- Student outcomes assessment is the act of assembling, analyzing, and using both qualitative and quantitative evidence of teaching and learning outcomes in order to examine their congruence with stated purposes and educational objectives and to provide meaningful feedback that will stimulate self-renewal (Middle States Commission on Higher Education, 1996).

Each of these three statements suggests that student outcomes assessment is goal driven, empirically based, and improvement oriented. Thus, assessment is best thought of as a process, not a product—an ongoing activity not an end result.

Traditionally, student performance and learning are evaluated where learning takes place—in the classroom where faculty and students interact. In the 20th century, however, the very influential testing movement promoted norms in minimum standards by requiring particular levels of performance

on standardized examinations. These performance standards now range from college entrance tests (like the SAT and ACT exams), to tests of student basic skills (like College BASE or foreign language proficiency tests), general education skills (like the ACT Collegiate Assessment of Academic Proficiency [CAAP] and the ETS Measure of Academic Proficiency and Progress [MAPP]), and attainment in the major (like the ETS Major Field Exams). After graduation, individual students face not only graduate school entrance tests but also assessments of their qualifications to become a practicing professional in many fields like accounting (CPA exam), law (state bar exam), engineering (FE and PE exams), medicine (medical boards), and teaching (PRAXIS).

Standardized tests have limited usefulness, however. While they may be appropriate for particular areas of knowledge, they are not regarded as good measures of valuable workplace skills like teamwork, complex thinking, communication skills, and ethical behavior. Because of these limitations and because standardized tests may or may not fit the goals, curricula, or needs of particular institutions and programs, the field has developed an array of other assessment strategies for measuring student learning outcomes (Volkwein, 2007). These are some of the most common other sources of evidence for assessing student learning, and each has its advantages, as discussed by Volkwein (2010):

1. Locally developed comprehensive exams (including essays)
2. Appraisals of student performances, exhibits, and simulations
3. Assessment of student attitudes, values, experiences
4. Student self-evaluations of abilities, skills, and gains
5. Senior theses or research projects
6. Performances in capstone courses
7. Course embedded assessments
8. Rubrics and signature assignments
9. Student portfolios
10. External examiners
11. Student/faculty interviews
12. Analyses of transcripts, syllabi, and course content
13. Behavioral observations (including internships)
14. Post-graduation degree attainment, job placement, and career tracking data
15. Feedback from alumni and employers

The extent to which many of these assessment strategies are used at the program level is displayed in the most recent NILOA survey of department heads (Ewell, Paulson, & Kinzie 2011). Their use is now widespread, especially among programs subject to accreditation like engineering, business, teacher education, and the health professions.

While they [standardized tests] may be appropriate for particular areas of knowledge, they are not regarded as good measures of valuable workplace skills like teamwork, complex thinking, communication skills, and ethical behavior.

Conclusion

Although these various student assessment strategies may be quite useful for assessing one type of student learning or another, most of them are more appropriate for assessing student knowledge in the major than for assessing the institution as a whole. The difficulty of aggregating the results of student learning assessment up to the institution level presents a practical obstacle to using direct measures of student learning for institutional effectiveness.

To overcome this obstacle, many universities conduct their assessment activities in two venues: 1) decentralized departmental efforts that assess outcomes for individual students and programs, often using direct measures of learning; and 2) centralized institutional efforts that assess outcomes of large populations of undergraduates, often using indirect measures like student engagement and self-reported gains (Volkwein, 2007, 2010). Indirect measures are, thus, more common at the institution level, where most IR offices live. This latter, more centralized approach relies heavily on the collection of self-reported student experiences, involvement, skills, and gains in knowledge. The use of self-reported measures to describe and assess relative differences among large groups of students and alumni is now widespread (Kuh, 2005; Kuh & Ikenberry, 2009). Many researchers believe that, under the right conditions, student self-reports are both valid and reliable, especially for measuring the outcomes of groups of students rather than of individual students (Volkwein, 2007).

A couple of decades of studies now exist indicating that student engagement, involvement, and effort are strongly associated with student learning. Since the conditions that foster student learning are easier and less costly to measure than is student learning itself, recent studies have focused on student involvement, commitment, engagement, effort, and integration as the more efficiently measured outcomes (Kuh, 2001; Kuh, Pace, & Vesper, 1997; Pascarella, Cruce, Umbach, & Wolniak, 2006; Porter 2006; Volkwein, 2007). Such research has spawned the use of a large number of instruments and scales for measuring student experiences and gains. These include the ACT College Outcomes Survey, the College Student Experiences Questionnaire, the National Survey of Student Engagement, the HERI College Student Survey, and an array of institution-specific and discipline-specific instruments.

The variety and complexity of these collective evaluation and assessment activities are enormous, presenting assessment researchers with daunting analytical and workload challenges.

Institutions, programs, and faculty have a complicated collage of assessment challenges before them. Faculty members assess individual students mostly by assigning them grades in individual courses. Although many professions like engineering, business, and the health professions have implemented outcomes-focused accreditation, rarely are undergraduate students evaluated holistically. Provosts, deans, and chairs evaluate individual faculty most thoroughly at the points of promotion and tenure. Federal and foundation sponsors, as well as publishers and editors, mostly evaluate particular manuscripts and specific research proposals of specific faculty. Seldom is a faculty member's contribution to educational and program goal attainment a matter of documented review. Program reviews are widespread and include both formative internal reviews as well as summative external reviews by specialized accreditors. With uneven success, the regional accreditors are pressuring institutions to provide evidence of student learning in their self-study documents at the point of reaccreditation. The variety and complexity of these collective evaluation and assessment activities are enormous, presenting assessment researchers with daunting analytical and workload challenges.

The good news is that the IR profession appears to be substantially engaged in meeting these assessment challenges. As recently as 1989, three studies found that few institutions were able to provide any evidence of student learning or gains in student achievement (Rogers & Gentemann, 1989; Ory & Parker, 1989; Volkwein, 1990). However, the data in Table 1 above, as well as data from the studies by Kuh and Ikenberry (2009) and by Ewell, Paulson, and Kinzie (2011), all suggest great progress over the past two decades. The majority of IR offices at responding institutions now conduct studies of at least one type of student learning—either as the office primarily responsible or as a shared responsibility with other campus actors. Moreover, 62% of these responding offices are engaged in assessing general education skills and outcomes.

Not surprisingly, the survey results summarized in Table 1 are in large measure consistent with the NILOA 2009 and 2011 national surveys. Institutions appear to use different strategies for program-level and institution-level assessments of student learning. Student and alumni self-reports of their engagement, learning gains, and satisfaction are the most common means of collecting institution-level evidence, whereas capstone courses, rubrics, and direct assessments of student performance are most common at the program level. IR offices are more heavily engaged in the former, less so in the latter.

Perhaps the most significant higher education trend in the past two decades is the growing recognition that student learning outcomes assessment supplies crucial evidence of institutional effectiveness. Indeed, student learning outcomes can show the degree to which an institution is accomplishing its educational mission. The greater the congruence between the institution's educational outcomes and its mission, goals, and objectives, the stronger the evidence of the institution's effectiveness. Our survey shows that most IR offices at U.S. higher education institutions are heavily engaged in this collage of analytical activity, demonstrating that IR provides the means for institutions to build a culture of evidence and to become more effective learning organizations.

Our survey shows that most IR offices at U.S. higher education institutions are heavily engaged in this collage of analytical activity, demonstrating that IR provides the means for institutions to build a culture of evidence and to become more effective learning organizations.

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NILOA Mission

NILOA's primary objective is to discover and disseminate ways that academic programs and institutions can productively use assessment data internally to inform and strengthen undergraduate education, and externally to communicate with policy makers, families and other stakeholders.

NILOA Occasional Paper Series

NILOA Occasional Papers are commissioned to examine contemporary issues that will inform the academic community of the current state-of-the art of assessing learning outcomes in American higher education.The authors are asked to write for a general audience in order to provide comprehensive, accurate information about how institutions and other organizations can become more proficient at assessing and reporting student learning outcomes for the purposes of improving student learning and responsibly fulfilling expectations for transparency and accountability to policy makers and other external audiences.

Comments and questions about this paper should be sent to niloa@education.illinois.edu.

About NILOA

- The National Institute for Learning Outcomes Assessment (NILOA) was established in December 2008.
- NILOA is co-located at the University of Illinois and Indiana University.
- The NILOA web site went live on February 11, 2009. www.learningoutcomesassessment.org
- The NILOA research team has scanned institutional websites, surveyed chief academic officers, and commissioned a series of occasional papers.
- One of the co-principal NILOA investigators, George Kuh, founded the National Survey for Student Engagement (NSSE).
- The other co-principal investigator for NILOA, Stanley Ikenberry, was president of the University of Illinois from 1979 to 1995 and 2009 to 2010. He also served as president of the American Council of Education from 1996 to 2001.
- Peter Ewell joined NILOA as a senior scholar in November 2009.

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Produced by Creative Services | Public Affairs at the University of Illinois for NILOA. 10.032

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