Chapter 3 — Meeting Criterion 3 with Purpose: Student Learning and Effective Teaching

Statement of Criterion: The organization provides evidence of student learning and teaching effectiveness that demonstrates it is fulfilling its educational mission.

Introduction

Purdue’s commitment to its learning mission is articulated explicitly in its 2001–2007 strategic plan, which states: “the University promotes and champions learning by providing a variety of instructional settings where students and faculty can share and create new knowledge … [and] seeks to prepare its graduates to succeed as leaders, professionals, informed consumers, responsible citizens, and lifelong learners” [1]. By establishing Launching Tomorrow’s Leaders as one of the three main goals of the 2008–2014 plan, the centrality of learning and teaching is being extended into “the next phase in the life of Purdue University.” The University seeks specifically to “promote excellence in learning experiences and outcomes, fostering intellectual, professional, and personal development to prepare learners for life and careers in a dynamic, global society” [2].

This chapter reflects on Purdue’s fulfillment of its educational mission by reviewing efforts and activities to facilitate effective learning and teaching. The first section describes the framework for assessing student learning, resources and strategies devoted to its implementation, documentation of effort, and future directions. The second section provides examples of rewards and recognitions established to encourage and support excellence in teaching. The chapter’s third section focuses on how the faculty and staff create, maintain, and continually improve an academic environment that fosters and supports learning and teaching. Finally, the resources provided by the University to help support teaching and learning are outlined and specific examples are highlighted.

Core Component 3a. The organization’s goals for student learning outcomes are clearly stated for each educational program and make effective assessment possible.

Learning expectations at Purdue are defined by eight university core competencies for undergraduate students and four core competencies for all PhD students. In many cases, competencies established for PhD programs have also been adopted by master’s programs. Moreover, the vast majority of undergraduate and graduate programs report learning outcomes at the program level. This section will discuss the assessment of those learning outcomes by briefly revisiting the 1999 accreditation review; describing the University’s assessment framework, resources, and strategies used for advancing and documenting assessment since then; and reflecting on the future of assessment at Purdue.
Purdue’s Framework for Assessment of Student Learning

Looking Back: Accreditation Review in 1999

The 1999 review team concluded that “the university has developed a strong student outcomes assessment plan [that] has been implemented under the leadership of the University Assessment Council. . . . In keeping with Purdue’s decentralized structure, the faculty of each school define and implement their own assessment programs, but do so with an institutional model and a set of common principles set forth in the general university plan. . . . Within a relatively short period of time and with a remarkable level of faculty involvement and commitment, student outcomes assessment has been successfully established at Purdue as a university initiative. The framework is in place for continued progress, and leaders are committed to fostering this progress at both the school and university levels [3].”

The review team also observed that, while there is a “university-wide emphasis on developing intended learning outcomes as the basis of assessment . . . progress beyond formulating outcomes is somewhat uneven across departments. While the vast majority of units are using assessment results to modify the curriculum and instructional approaches, a few have yet to or are just beginning to collect data. Faculty have made more progress assessing learning in their undergraduate programs than they have in their graduate programs, and to this point appear to use indirect measures of learning (e.g., alumni, employer, student surveys) more than direct measures of learning (e.g., papers, projects, portfolios, performances).” Purdue has built upon the strengths identified by the review team in 1999 and addressed the shortcomings the team observed.

Since 1999: the Last 10 Years and Purdue’s Current Assessment Framework

Purdue’s basic framework for assessment is constructed upon the same four key components used in 1999. These key components, illustrated in Figure 3-1, guide faculty in completing the assessment loop by asking what they want their students to learn (Define); how they will help their students to learn (Facilitate); how they will know if and why their students have, or have not learned (Assess); and how they will use assessment information to improve their students’ learning (Improve).

Figure 3-1. Purdue’s Framework for Assessment of Student Learning

Source: Director of Assessment, Office of the Provost
The assessment framework has been enhanced by creating the Boilermaker Accreditation and Learning Outcomes Tracking Site (BALOTS) [4]. This Web site, shown in Figure 3-2, serves as the central repository for assessment reports and was commissioned by the University-wide Student Learning Outcomes Assessment Workgroup (SLOAW), a group which will be discussed later in this chapter. BALOTS is an important tool for documenting assessment efforts in a systematic, structured, and unified manner. This is accomplished by translating Purdue’s assessment framework and key assessment questions into specific reporting features, as shown in Table 3-1.

**Figure 3-2. Snapshot of the BALOTS Web site**

![Snapshot of the BALOTS Web site](source: BALOTS Web site, Purdue University)

**Table 3-1. Relationship between Purdue’s Assessment Framework and Reporting in BALOTS**

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Key Question</th>
<th>Reported in BALOTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define</td>
<td>Q1: What do you want your students to learn as a result of completing your program?</td>
<td>Learning Outcomes and Performance Criteria</td>
</tr>
<tr>
<td>Facilitate</td>
<td>Q2: How will your students achieve the intended learning?</td>
<td>Learning Activities and Environments *</td>
</tr>
<tr>
<td>Assess</td>
<td>Q3: How will you know to what degree your students have achieved the intended learning?</td>
<td>Assessment Methods and Environments *</td>
</tr>
<tr>
<td></td>
<td>Q4: Do your students learn what you want them to learn? Why or why not?</td>
<td>Assessment Findings and Evidence</td>
</tr>
<tr>
<td>Improve</td>
<td>Q5: How do you monitor and improve your students’ learning on an ongoing basis?</td>
<td>Review Process, Changes and Rationale, Impact of Changes, and Self-Reflection</td>
</tr>
</tbody>
</table>

* Environments are courses and other segments of the curriculum (for example, internships and study abroad) in which learning activities and assessment methods take place.

Source: BALOTS report, fall 2009
Resources and Strategies for Advancing Assessment

Purdue manifests its commitment to assessment by providing leadership at various levels, offering a variety of resources, and establishing clear expectations.

Assessment Leadership

One of the challenges presented by the University’s decentralized structure is coordination and direction of assessment efforts at the campus level. This challenge is underscored by the gradual dissolution of the University Assessment Council in the early 2000s. In 2007, however, Purdue reinforced the importance of centrally coordinated assessment by forming the Student Learning Outcome Assessment Workgroup (SLOAW) group, with representation from all ten colleges/schools (both for undergraduate and graduate programs) and other relevant campus units (Academic Advising, the Graduate School, Information Technology, and the Office of International Programs). The University also created a campus-wide director of assessment position, whose responsibilities include leading the SLOAW group and leading learning outcomes assessment, a task previously delegated to administrators with many other responsibilities.

Assessment leadership is also provided at the college level and in other units on campus. Several of the colleges/schools have created assessment positions, such as the director of strategic assessment in the College of Education, the assessment director in the College of Engineering, and the Outcomes-Based Program Improvement Committee in the College of Agriculture.

Each academic program on campus has at least one person responsible for documenting the program’s learning outcomes assessment on the BALOTS Web site. Examples of assessment leadership in non-academic units include the assessment coordinator for the Discovery Learning Center, educational assessment specialist in Information Technology at Purdue, assistant vice president for student services technology and assessment in Student Services, and the campus-wide Academic Advising Assessment Committee.

Resources

Best practices regarding assessment are communicated and shared in a variety of ways. This includes assessment-related workshops offered by the Center for Instructional Excellence (CIE), training sessions for BALOTS users, workshops and consultations available to academic units and faculty upon request, and online resources integrated into the BALOTS Web site. Feedback is another venue that is used for disseminating assessment knowledge and practices. Programs receive general feedback about common problems that emerge as BALOTS reports are reviewed. Best practices and practical insights for assessment strategies have been further facilitated and highlighted through invited visits from nationally and internationally recognized assessment experts such as Trudy Banta, Tom Angelo, and Gloria Rogers.

In 2007 Purdue joined the HLC’s Academy for Assessment of Student Learning. The academy provides assistance with learning outcomes assessment and opportunities to learn best practices from fellow members. Financial resources have been allocated for standardized testing (as part of the University’s participation in the Voluntary System of Accountability), travel to professional conferences on assessment, and the development and maintenance of the BALOTS Web site.
Establishing Clear Expectations for Assessment

In addition to receiving guidance through a sound assessment framework, programs are also given direction and focus by reporting timelines for BALOTS. Moreover, expectations for assessment are reinforced by asking that proposals for internal funding opportunities and new academic programs integrate assessment plans.

Forces outside the University also drive assessment activity. Many programs on campus are accredited by outside organizations that include focus on learning outcomes, including the National Council for the Accreditation of Teacher Education, ABET, Inc., and the Association to Advance Collegiate Schools of Business. Results of all external program reviews are reported annually to the provost [5].

Documentation of Assessment at Purdue

The effectiveness of Purdue’s resources and strategies devoted to advancing learning outcomes assessment is best examined when considering the actual assessment activities on campus. Purdue’s assessment efforts will be described according to the four components of the assessment framework (Define, Facilitate, Assess, and Improve) and how stakeholders (e.g., faculty, staff, alumni) share responsibilities for student learning.

Assessment Component #1: Define Learning Outcomes

Undergraduate Programs

While Purdue has no common core curriculum at the University level, core competencies were outlined in the 1995 Campus Assessment Plan [6] and in the 2001–2007 strategic plan [1]. These core competencies for Purdue students are:

- Critical Thinking: the ability to read and think critically;
- Communication: the ability to communicate, both orally and in writing, with clarity and precision;
- Methods of Inquiry: competency in quantitative and scientific reasoning;
- Global Awareness: awareness of the cultural, social, political, and economic forces, and the technologies that shape our world;
- Content Knowledge: depth of understanding of both the essential content and principal modes of inquiry in their areas of specialization;
- Ethics: familiarity with ethical issues facing their chosen fields;
- Information Literacy: competency in information literacy; and
- Lifelong Learning: ability to demonstrate that they are prepared for a lifetime of continual learning.

The responsibility for establishing and assessing learning outcomes within, and beyond the parameters of the core competencies rests with the faculty. Seven of Purdue’s ten colleges/schools (Agriculture, Consumer and Family Sciences, Education, Engineering, Liberal Arts, Science, and Technology) have defined learning outcomes. Based on the fall 2009 BALOTS report, 89 percent of the 215 undergraduate programs have identified and reported their learning outcomes.
The level of support for the core competencies at the program level can be seen in Figure 3-3, which reflects how colleges/schools and programs mapped their learning outcomes to the core competencies. All eight core competencies are supported by the majority of the reporting programs. Still, there is room for improvement, especially in the support of lifelong learning, ethics, and information literacy.

Figure 3-3. Support of Core Competencies by Academic Units

In order to better support and enable student success, the University is considering development of a core curriculum, which is a key priority/investment area in the New Synergies strategic plan. More specifically, Purdue plans to “undertake the initiatives toward a University-wide core curricular experience for integration into all degree programs, in response to the need for core competencies the graduates must demonstrate, reflecting the value of curricular synergies that render them as informed graduates in a global society” [7].

Graduate Programs

The following four learning outcomes were established by the Graduate Council in 2007 for all PhD programs:

- Knowledge and scholarship: Students will be able to demonstrate the ability to identify and conduct original research, scholarship, or creative endeavors.
- Communication: Students will be able to effectively communicate in their field of study.
- Critical thinking: Students will be able to think critically and creatively, and to solve problems in their field of study.
- Ethical and responsible research: Students will be able to demonstrate the ability to conduct research in an ethical and responsible manner.

Based on the fall 2009 BALOTS report, 90 percent of the 165 graduate programs have identified and reported learning outcomes, with many of the master’s programs using the PhD student learning outcomes as their model. The establishment of learning outcomes for graduate programs signifies that Purdue has responded to the observation by the visiting team in 1999 that, “faculty have made more progress assessing learning in their undergraduate programs than they have in their graduate programs” [8].
Chapter Three

Assessment Component #2: Facilitate Learning

Undergraduate Programs

Research for undergraduate students was a focus area of the 2001–2007 strategic plan. The impact of the greater focus on undergraduate research opportunities is evidenced by the fact that in 2007, 45 percent, and in 2008, 51 percent of the seniors who completed the Graduating Students Learning Outcomes Survey (GSLOS) indicated that they had participated in research activities [9]. Examples of these research opportunities include the Discovery Park Undergraduate Research Internship, which involves students in interdisciplinary research projects [10]; the Center for Authentic Science Practice in Education, an innovative effort aimed at providing undergraduate science students with earlier exposure to research experiences [11]; and the Summer Undergraduate Research Fellowship program for students in science, technology, and engineering [12].

The impact of Purdue’s commitment to providing students with a wide variety of learning activities and contexts is reflected in their satisfaction with their educational experience. In the 2008 GSLOS, the majority of the 1,132 participating seniors either agreed or strongly agreed that they were satisfied overall with their majors (86 percent) and with their educational experience at Purdue (88 percent). The same survey showed that the majority of students also agreed or strongly agreed that their education at Purdue had provided them with access to innovative learning experiences (77 percent); that they had ample opportunity for interactive (81 percent), team-based (81 percent), experiential (76 percent), and interdisciplinary (72 percent) learning; and that they had ample opportunity to interact with faculty (82 percent). Still, as shown in Figure 3-4, a comparison of students’ level of participation in learning activities and their perceived importance of those activities for academic success indicates the potential for improving the effectiveness, or adjusting the frequency of some learning activities.

Figure 3-4. Enriching Educational Activity Participation and Impact on Academic Success

<table>
<thead>
<tr>
<th>Participation</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership activities</td>
<td>42%</td>
</tr>
<tr>
<td>Activities that increase understanding of diversity</td>
<td>10%</td>
</tr>
<tr>
<td>Learning communities</td>
<td>5%</td>
</tr>
<tr>
<td>Team-based learning</td>
<td>32%</td>
</tr>
<tr>
<td>Extracurricular service activities</td>
<td>21%</td>
</tr>
<tr>
<td>Service learning in a course</td>
<td>7%</td>
</tr>
<tr>
<td>Interdisciplinary projects</td>
<td>6%</td>
</tr>
<tr>
<td>Study/work abroad</td>
<td>12%</td>
</tr>
<tr>
<td>Internships</td>
<td>45%</td>
</tr>
<tr>
<td>Research</td>
<td>24%</td>
</tr>
</tbody>
</table>

1 Percentage of students who indicated they participated in a particular activity during their time at Purdue.

2 Percentage of students who indicated a particular activity had the most impact on their academic success.

Source: Graduating Students Learning Outcomes Survey (GSLOS), spring 2008
Graduate Programs

BALOTS reports offer evidence that graduate programs also provide students with a wide variety of learning experiences. These include collaboration/team-based learning, demonstrations, discussions, homework, laboratories, lectures, problem-based learning, projects, readings, research, teaching other students, and writing exercises. Moreover, substantial learning occurs as doctoral students prepare for preliminary and qualifying examinations and as they go through the process of writing and defending their theses/dissertations. The graduate student learning process is further enhanced as they are mentored by advisors and participate in professional activities such as attending and presenting at conferences, writing papers for publication, and engaging in grant/proposal writing activities.

Assessment Component #3: Assess Learning

Undergraduate Programs

The assessment of student learning occurs both at the institutional and program levels. Assessment methods at the institutional level include surveys such as the Cooperative Institutional Research Program [13], GSLOS [9], and the National Survey of Student Engagement [14]. Academic programs employ a wide variety of methods to assess student learning. The 1999 accreditation review team concluded that faculty “to this point appear to use indirect measures of learning (e.g., alumni, employer, student surveys) more than direct measures of learning (e.g., papers, projects, portfolios, performances).” The BALOTS fall 2009 report, however, provides evidence that faculty now use direct measures more than indirect measures to assess student learning at the course and program levels. As illustrated in Figure 3-5, the most frequently used assessment methods are all direct measures.

Figure 3-5. Assessment Methods Used Most Frequently by Undergraduate Academic Programs

Source: BALOTS report, fall 2009 (percentages are based on 188 reporting undergraduate programs)
One innovative assessment method developed by Purdue is Signals, an early intervention system that identifies students at risk of being academically unsuccessful and provides them with the opportunity to adjust their behavior, thereby improving their chances of successful course completion [15]. Signals uses a predicted student success algorithm, based on secondary analysis of information from a course management system and a student information system that is applied at the end of each academic week. A visual cue in the form of a traffic signal — where green indicates satisfactory progress and red indicates danger of failing the course — is assigned to each student, as shown in Figure 3-6. This cue indicates how the student is progressing and provides suggestions for receiving additional help. The Signals intervention approach is blind to the students' demography, which is a dramatic shift from the many support programs that target students based on predetermined “at risk” demographics, such as socio-economic or racial minority status. When Signals was launched in fall 2007, it served 220 students; the system was expanded to serve approximately 10,000 students in fall 2009.

**Figure 3-6. Signals System for the Identification of At-risk Students in a Course**

[Image: Signals System for the Identification of At-risk Students in a Course]

Source: Signals Web site, Purdue University

Faculty in the College of Agriculture have developed a rubric for communication skills, and are currently developing another for critical thinking skills, as a basis for assessing students in those two areas. The Department of Child Development and Family Studies has used course evaluations as a means to let students rate their perceived performance-level for college and course learning outcomes. Teacher education programs at Purdue have a gateway system that includes grade point average, standardized test results, and rubric scores on common assessments of teaching performances.

Findings from three institutional surveys (shown in Table 3-2) suggest that students generally agree that a Purdue education instills learning. The strongest impact appears to be on students' content knowledge, critical thinking, and quantitative reasoning skills. Based on students' perceptions, the greatest needs for improvement are in helping students develop ethics, communication skills, and aspects of global awareness. It should also be noted that, although the University does not have a core curriculum, the majority of NSSE respondents — 75 percent of freshmen and 80 percent of seniors in 2004, 81 percent of freshmen and 83 percent of seniors in 2007 — indicate that their Purdue experience has helped them acquire a broad general education.
Evidence of learning at the program level includes:

- The pass rate in the National Association for Accreditation of Clinical Laboratory Sciences examination taken by School of Health Sciences medical technology graduates has been 100 percent for the past several years.
- College of Education 2001 to 2008 Title II assessments of teacher preparation and licensing show pass rates at or near 100 percent [16].
- Graduates of Purdue’s Veterinary Technology program regularly exceed the national average on the Veterinary Technician National Examination, which students must pass to be licensed, certified, or registered in any state [17]. The total pass rate for Purdue students among first-time test takers from 2000–2008 is 99 percent.

Table 3-2. Findings Related to Core Competencies from the Institutional Surveys NSSE, YFCE, and GSLOS

<table>
<thead>
<tr>
<th>Source: Office of Institutional Research</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>NSSE*</th>
<th>YFCE**</th>
<th>GSLOS***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freshman</td>
<td>Senior</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Thinking Skills</td>
<td>78%</td>
<td>88%</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking clearly and effectively</td>
<td>60%</td>
<td>59%</td>
</tr>
<tr>
<td>Writing clearly and effectively</td>
<td>56%</td>
<td>61%</td>
</tr>
<tr>
<td>Speak with clarity (effectively)</td>
<td>77% (78%)</td>
<td>75% (78%)</td>
</tr>
<tr>
<td>Write with clarity (effectively)</td>
<td>71% (74%)</td>
<td>71% (74%)</td>
</tr>
<tr>
<td>Methods of Inquiry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyzing quantitative problems</td>
<td>70%</td>
<td>74%</td>
</tr>
<tr>
<td>Global Awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding people of other racial and ethnic backgrounds</td>
<td>45%</td>
<td>46%</td>
</tr>
<tr>
<td>Interact with diverse groups of people</td>
<td>80%</td>
<td>83%</td>
</tr>
<tr>
<td>Understand values, ethics, and global issues in society</td>
<td>77%</td>
<td>78%</td>
</tr>
<tr>
<td>Understanding of problems facing your local community</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>Understanding of national issues</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Understanding of global issues</td>
<td>57%</td>
<td></td>
</tr>
<tr>
<td>Use technologies new to me</td>
<td>81%</td>
<td>80%</td>
</tr>
<tr>
<td>Using computing and information technology</td>
<td>78%</td>
<td>83%</td>
</tr>
<tr>
<td>Content Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of a particular field or discipline</td>
<td>93%</td>
<td></td>
</tr>
<tr>
<td>Ethics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing a personal code of values and ethics</td>
<td>44%</td>
<td>50%</td>
</tr>
<tr>
<td>Lifelong Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning effectively on your own</td>
<td>71%</td>
<td>75%</td>
</tr>
</tbody>
</table>

* Percentage combines “very much” and “quite a bit” responses to the question, “To what extent has your experience at this institution contributed to your knowledge, skills, and personal development of the following?”

** Percentage combines “much stronger” and “stronger” responses to the question, “Compared with when you entered this college, how would you describe your…?”

*** Percentage combines “strongly agree” and “agree” responses to the question, “My experience at Purdue improved my ability to…”

For all NSSE questions, percentage for all categories are at least 80 percent or higher if “some” responses are included.
Graduate Programs

Graduate programs rely on a wide variety of methods to assess students’ achievement of learning outcomes. As shown in Figure 3-7, the most frequently used methods are all direct measures. Due to students’ individualized plans of study, graduate programs typically assess students at key points, such as the preliminary and qualifying examinations and the dissertation defense. Several graduate programs have created rubrics to clarify performance criteria and to guide them in their assessments. For example, the Department of Forestry and Natural Resources has developed rubrics that are used for written and oral preliminary examinations, and the thesis and dissertation.

Figure 3-7. Assessment Methods Most Frequently used by Graduate Academic Programs

The Department of English has surveyed all of its graduate students to assess their progress toward learning outcomes. Master’s students in the Department of Curriculum and Instruction and PhD students in the School of Engineering Education are required to complete a portfolio that reflects their achievement of relevant competencies. The MBA program uses a wide variety of assessment methods in addition to engaging a variety of stakeholders in the assessment process. For example, internship employers provide feedback on the quality of work delivered by student interns, and the students complete a self-assessment of their experience.

The Department of Physics assessed all four of its PhD learning outcomes using a rubric for the preliminary examination and the PhD defense. The collected data showed that its PhD students are able to identify and conduct original research, scholarship, or creative endeavors; effectively communicate their field of study; think critically and creatively, and solve problems in their field of study; and conduct research in an ethical and responsible manner. The data also assisted the department in identifying areas needing further investigation or improvement, such as collecting additional evidence to understand why communication scores are lower at the PhD defense level than at the preliminary examination level and how to improve communication skills.

Graduates of the Doctor of Pharmacy program take two national licensing examinations, the North American Pharmacist Licensure Examination and the Multistate Pharmacy Jurispru-
dence Examination. From 2005–2008, the pass rates for Purdue students for both examinations have been above 94 percent. Between 2007 and 2009, Sociology PhD students presented a total of 84 papers at national conferences and 76 papers at regional conferences. They also published more than 80 journal articles and chapters in edited volumes, either as sole authors or in collaboration with faculty.

**Assessment Component #4: Improve Learning**

**Undergraduate Programs**

A review process is crucial for ensuring that student learning is monitored on an ongoing basis and that assessment evidence is used for continuous improvement of student learning. Most academic programs have some or all of the following elements in their review process to ensure that the assessment loop is closed. Assessment evidence is analyzed and translated into findings, and desired changes are implemented to improve student learning. New evidence is then gathered to assess changes and to continuously monitor learning. Responsibilities for the review process are shared by key stakeholders and effective mechanisms are in place for implementing the process.

For example, the Materials Engineering program uses a course summary as a mechanism for its review process. Instructors report on student performance on course objectives and relevant ABET, Inc. outcomes; document efforts to improve student learning and efforts to implement suggestions from previous semesters; and suggest changes for future improvements in the course.

The University’s commitment to supporting and improving effective teaching and learning is underscored by the attention and energies the faculty and staff devote to improving student learning experiences associated with high-risk gateway courses. Gateway courses — which are defined as 100- and 200-level courses with enrollments of 50 or more students in which 25 percent or more earn a grade of D, F, or W (withdraw) — serve as a crucial milestone of progress toward degree completion. Assessment and evaluation of these courses have been underway at Purdue for more than a decade. Early efforts focused predominantly on the identification of high-enrollment D, F, W courses, for which outcome rosters were shared with departments, advisors, and other campus faculty and staff constituencies in order to increase awareness of low pass rates. As part of its Enrollment Management Collaborative with Edu-ventures, a third-party higher education research and consulting firm, the University commissioned an analysis of institutional data, which included outcomes in gateway courses. The resulting 2008 report, *Differences in Voluntary and Involuntary Attrition at Purdue University*, noted that retention and graduation rates may be boosted by making earlier identification of students who display signs of academic difficulty. “Placement testing for courses with currently high D/F/W rates of those who are not retained, more intense/targeted academic advising, tutoring, mentoring, or remediation might help those at risk from leaving, either voluntarily or involuntarily” [18].
Examples of improved student learning include:

- An instructor of a first-year biology course used the Signals system to monitor student learning and provide interventions to struggling students, which resulted in more students seeking help and fewer students receiving D and F grades.
- Instructors improved an introductory chemistry class by using more relevant and current examples; placing greater emphasis on teaching students how to think, rather than teaching only facts and skills; making the large class more personal by circulating among the students and providing feedback as they solved problems; and holding review sessions prior to examinations. Since the changes were implemented, the percentage of students earning a D, F, or W for the course has decreased significantly, from 42 percent in fall 2005 to 20 percent in fall 2007.
- Outcomes assessment in the undergraduate nursing program includes the use of pass rates on the National Council Licensure Examination (NCLEX). For October 2002–March 2003, the pass rate for Purdue’s first-time test takers was nine percentage points below the national average of 85 percent. A review of assessment evidence (admission, progression and readmission data, grades in key courses, and student and employer surveys) led to the integration of a computer-based NCLEX preparation program into core courses of the undergraduate curriculum; the creation of a senior capstone course; the requirement of a higher level of performance in core science courses prior to progressing to junior-level nursing courses; and clarification of the readmission policy. Subsequent NCLEX pass rates indicate that these changes have had a positive impact on student learning. From 2006 to 2008, the pass rate for first-time test takers was at least 89 percent and higher than the national average for each of those years.

**Graduate Programs**

The effectiveness of the review processes in graduate programs is reflected in subsequent curricular changes that are focused on improving student learning. Examples of these changes include:

- The Child Development and Family Studies PhD program implemented changes that place greater focus on critical thinking skills. Requirements were increased for methodology and statistics courses and preliminary examination questions were changed, placing greater emphasis on critical evaluation of current research.
- Addressing the need for discipline-specific training in responsible conduct of research, the Department of Physics’ PhD program created a seminar on ethics in research, including discussion of ethics in research during new student orientations. The Department of Chemistry’s MS program is creating a required online exercise to provide its students with ethics training. The program also added new grading forms that require faculty to assess students’ ethical behavior in research activities and their theses.
- After a year-long (2004–2005) review, the Department of Biomedical Engineering’s PhD program implemented a new qualifying process, replacing the standard examination with a mentored writing and critical thinking component called the Qualifying Literature Assessment (QLA). The QLA is intended to ensure that all PhD students possess the capabilities to conduct cutting-edge engineering research, practice analytical and critical thinking skills, integrate concepts, and write effectively.
Shared Responsibility in the Assessment Process

For both undergraduate and graduate programs, the responsibility for student learning is shared by a variety of stakeholders — including faculty, students, advisors, alumni, and employers — and in a variety of formats, including faculty meetings and retreats, committees and workgroups (such as advisory, curriculum, and undergraduate/graduate committees), open forums, and discussion boards. Stakeholders’ involvement in learning outcomes assessment is presented in Figure 3-8.

Figure 3-8. Stakeholders’ Involvement in Learning Outcomes Assessment of Academic Programs

Looking Ahead: Assessment in the Years to Come

The past 10 years have seen important developments in assessment as Purdue has built on previous accomplishments and responded to shortcomings. The University has a sound assessment framework in place and has developed BALOTS, an electronic means for tracking learning outcomes assessment. Graduate programs have made significant progress through the establishment of campus-wide PhD learning outcomes. These outcomes have also been adopted by many master’s programs. Furthermore, the assessment reports show that academic programs are now relying more on direct evidence than indirect evidence to assess student learning.

Assessment reports collected on the BALOTS Web site, however, suggest that progress is still somewhat uneven among academic programs and among the different components of the assessment framework. Fifty-two percent of all undergraduate and graduate programs have provided a full report on all components of the assessment report and 46 percent of the programs have reported on some, but not all components. As shown in Figure 3-9, the vast majority of the programs have provided full reports on their learning outcomes, stakeholder involvement, review processes, and performance criteria. At the same time, improvement is needed in the reporting of assessment findings, implementing changes in response to findings, and monitoring the impact of those changes.
Chapter Three

Figure 3-9. Reporting of Assessment Efforts, November, 2009

Addressing the uneven progress in assessment will be a focus area in the coming years. The provision of additional resources, better communication, and integration into existing practices are key strategies for advancement in the future. Specific strategies under consideration include developing a Web site that provides assessment resources and offering learning outcomes assessment grants. Brown bag sessions, the creation of a newsletter, and a campus learning impact report could enhance assessment communication. The continuation of a campus-wide learning outcomes assessment committee is another mechanism for facilitating communications.

In an effort to integrate assessment into existing practices, Purdue revised Form 40, which is used for proposing new courses and course revisions. In the new 2009 version, faculty are asked to provide learning outcomes for the courses. Adding an assessment report to the college dean’s annual progress report to the provost is also under consideration.

Better connections between assessments of relevant courses and of any future core curriculum could contribute to improved assessment by providing more direct evidence of students’ achievement of core competencies. BALOTS is providing an important step in that direction because learning outcomes at the program, college, and University levels are mapped to each other. The next step will be to aggregate and connect relevant assessment information at the course, program, and college levels in ways that will provide useful information about students’ achievement of core competencies. A campus-wide committee is currently discussing an outcomes-based core curriculum, which could be a crucial step in that direction.
Core Component 3b: The organization values and supports effective teaching.

Purdue has a long-standing reputation for excellence in undergraduate, graduate, and professional education. The University values this reputation and seeks to uphold it by providing faculty, future faculty (graduate students), and teaching staff with a wide range of effective teaching support programs, professional development opportunities, and technical and infrastructure support, and by recognizing and rewarding teaching excellence and innovation. Effective teaching that results in effective learning for all students remains at the core of Purdue’s mission. It begins with the faculty and is encouraged by an active and highly visible support and reward structure.

Center for Instructional Excellence

The Center for Instructional Excellence (CIE) [19] is the primary resource on campus for teaching and learning support services, and CIE has had a major impact on teaching and learning since its creation in 1998. CIE provides opportunities for faculty development through workshops, seminars, and teaching consultation. More than 50 teaching skills workshops are offered every year, and more than 800 faculty members attended these workshops in 2007–2008. Workshops address such skills as the basics of teaching (including effective lecturing, designing a syllabus, and leading discussions) and the more substantive elements of critical thinking, active learning, and testing and grading. Purdue faculty are integral to CIE’s mission and success, as workshop presenters and as consultants on teaching excellence for other faculty and academic units on campus; three faculty are partially funded each year for this purpose.

CIE also provides faculty with a number of support services, including a proctor pool to assist with test administration; instructional data processing (scoring bubble sheets); consultation with academic units and individual instructors on specific classroom teaching improvements; and an online resource with teaching topics and tips, ranging from cooperative and collaborative learning techniques to large class teaching and learning styles. Examples of programs offered by CIE solely, and with Information Technology at Purdue (ITaP), include the popular Brown Bag Teaching and Technology series, teaching workshops designed specifically for early career faculty, and the provost’s Teaching for Tomorrow program series. CIE-facilitated workshops are assessed through pre- and post-workshop surveys to measure learning and workshop satisfaction. These results drive the design and facilitation of future workshops and other CIE services.

CIE plays a proactive role and provides stewardship for the scholarship of teaching and learning through its affiliate membership in the Carnegie Academy for the Scholarship of Teaching and Learning [20]; as an active member of the Big Ten’s Committee for Institutional Cooperation directors of teaching centers group; beginning a new program for improving teaching and retention in chemistry gateway courses; and providing leadership for service learning. Under the CIE leadership, service learning courses on campus have increased from 32 in 2001 to more than 200 in 2009. Academic units also conduct teaching workshops, often with CIE input, designed specifically to the pedagogical aspects of their discipline.
The Teaching Academy

The Teaching Academy [21] is a group of master teachers brought together through a competitive nomination process to create a collective voice for teaching and learning on campus. The academy’s mission is to provide leadership and resources to enhance the quality of undergraduate, graduate, and outreach teaching and learning. More than 200 teaching fellows have been inducted into the academy since its founding in 1999. Academy fellows lead a seminar series, Conversations about Teaching, on important educational issues, and the academy regularly invites prominent teaching and teaching assessment scholars to present seminars on campus. The academy’s faculty mentoring network connects fellows with junior faculty members to support their development as scholarly teachers, and the competitive travel grant program provides financial support for travel to professional conferences focused on teaching and learning. Faculty, professional teaching staff, and graduate teaching assistants are eligible for membership in the academy.

Teaching Awards and Recognitions

Purdue enhances the visibility of effective teaching by sponsoring numerous activities, awards, and recognition programs. At the conclusion of each academic year, award-winning teachers and high-achieving undergraduate students from each college and school are recognized at the University-wide Honors Convocation. Honoring faculty and students at the same event recognizes the relationship between excellence in teaching and learning. Many academic departments also present outstanding teacher awards, which are usually presented during spring receptions hosted by the departments, schools, and colleges.

At the University level, the Charles B. Murphy Outstanding Undergraduate Teaching Award is presented annually to recognize up to six faculty members who each receive a stipend of $10,000 (increased from $5,000 in 2006, to reflect the importance of the award). In 2009, a $5,000 professional expense account was added to each award. The Murphy Award is the University’s most prestigious teaching recognition and is funded through an endowment.

The Office of the Provost coordinates and supports a number of coveted and highly competitive teaching awards. The Teaching for Tomorrow (TfT) Fellowship Awards Program pairs junior faculty members with faculty mentors known for their teaching excellence. Together, they participate in structured programs that address such matters as adjusting teaching modes to class size, student readiness and learning styles, cultural diversity, and experiential and student-centered learning. Stipends are provided to TfT fellows to assist implementation of new classroom innovations developed during the program.

Induction into Purdue’s Book of Great Teachers occurs only once every five years, following nomination by students, faculty, and alumni. The names of those selected are displayed prominently on a large bronze plaque in the west foyer of the Purdue Memorial Union; as of 2009, the Book has 316 members. A more complete description of this award, and others, can be found on the Office of the Provost Web site [22].

“Purdue’s Teaching Academy has offered me an invaluable opportunity to learn from and collaborate with the greatest pedagogical practitioners from across the University. They exemplify how great teaching goes beyond the tasks of the classroom to incorporate educational scholarship and service to the educational community. Their example represents a template for how I envision my career as a faculty member.”

— Matthew Verleger, engineering education doctoral student and associate fellow, Teaching Academy
The Indiana Professor of the Year is an annual award administered by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support for Education, to recognize excellence in undergraduate teaching and mentoring. Since 2000, five Purdue professors have received this prestigious award.

**Graduate Students as Teachers**

Graduate students are an essential component of undergraduate education at Purdue. For those aspiring to academic careers, the development of teaching skills and credentials is an important part of their graduate education. Of the 7,427 graduate students enrolled in the University in fall 2008, 25 percent held an assistantship with responsibilities for teaching or teaching support. Teaching contact hours for fall 2008 are summarized in Figure 3-10. In 2008, 21 percent of all teaching contact hours on the West Lafayette campus was provided by graduate assistants; this teaching occurred primarily in laboratory courses and recitation sections for large enrollment freshman and sophomore-level courses. Graduate student teaching assistants (GTAs) have access to the wide array of teaching support services available to faculty on campus.

![Figure 3-10. Teaching (weekly student contact hours) by Employment Classification](source: Office of Space Management and Academic Scheduling)

The Committee for the Education of Teaching Assistants (CETA) is a group of faculty, graduate teaching assistants, and staff appointed by the provost and led by CIE to help prepare graduate students in their roles as teachers [23]. Prior to the beginning of each fall semester, CIE conducts “get ready to teach” workshops for new GTAs, more than 400 of whom participated in the 2008 workshop. All participants have opportunities to practice-teach and receive performance feedback from Teaching Academy fellows and CIE professional staff. CETA sponsors an annual awards banquet to honor excellence in graduate student teaching, a prestigious campus-wide event at which academic departments are invited to recognize their outstanding teaching assistants [24]. Graduate assistants may further enhance their teaching skills and credentials through CIE’s Graduate Teacher Technology Certificate program [25].

Many graduate teaching assistants become highly-skilled educators throughout the course of their graduate experience. Their teaching responsibilities often increase and evolve as they progress in their studies and develop mastery in their teaching skills. In 2005 the classification “graduate lecturer” was created to recognize their senior status and teaching expertise [26]. Twenty-seven students were designated as graduate lecturers in spring 2009.

―Leah Jamieson, dean, College of Engineering, at CETA’s 2009 Celebration of Graduate Student Teaching

“Learning at Purdue takes place because of the synergy between excellent students and excellent instructors.”
In response to concerns about the placement of non-native English speaking graduate students in the classroom, in 1987 the University Senate adopted the Oral English Proficiency Program (OEPP) to screen and certify the language proficiency of all international teaching assistants (ITAs). OEPP offers English as a second language instruction for those who do not pass the certification assessment and, each semester, conducts a verification survey to ensure that ITAs involved in student instruction are certified. Academic departments’ participation in OEPP is very high. In 2007 — 2008, fewer than three percent (37 of 1,424) of the ITAs were found to be non-certified; OEPP subsequently follows up with departments to assess and certify those students [27].

In 2005, OEPP began actively recruiting undergraduate students to participate in ENGL 620 Classroom Communication for International Graduate Students, a course designed to assist ITAs with English proficiency. In 2008 — 2009, over 1,100 undergraduates volunteered to observe ITA presentations, participate in impromptu question and answer sessions, and provide feedback on the communication skills of ITAs.

Support for Professional Development

All new faculty are invited to an orientation program, organized and sponsored by the Office of the Provost [28]. This annual event includes a faculty panel that outlines the most important components for a successful career at Purdue: contributions to discovery, learning, and engagement. In 2009, in response to participants’ requests for more focus on teaching, a follow-up CIE workshop on topics such as academic policies, teaching pedagogy, and course/instructor evaluation was added to the teaching support activities. A Web site [29] outlining resources and contacts to assist new faculty was developed and made available to the campus community.

Opportunities for faculty to explore interdisciplinary approaches to teaching and to develop new pedagogies and technologies for the classroom, through sabbatical leaves [30] and the Fellowships for Study in a Second Discipline program [31], are described in Chapter 4. Additional opportunities available through affiliation with the Discovery Learning Research Center are described later in this chapter.

Faculty are encouraged and expected to remain current in their fields of study. Each academic dean receives an allocation of supply and expense funds, which are further allocated to the academic departments and then made available to faculty for travel and other expenses associated with professional development in their disciplines. Funding to support acquisition of new classroom and laboratory equipment, and exploration of new pedagogies is available through the provost’s Instructional Innovation and Equipment competitive grant programs. New faculty are often assigned reduced teaching loads during their first year of employment in order to focus on course development and to launch their research programs.

Contributions to the University’s learning mission are considered in the annual review of all instructional faculty and staff, and are an important component of the promotion and tenure review process for faculty. End-of-semester student evaluations have been required for all courses since 2000. Teaching evaluations must be included in the promotion document regardless of the bases for promotion (learning, discovery, and/or engagement). Other teaching-related contributions typically reported include new course and curriculum development, course revisions, design and application of new pedagogies, co-curricular activities, and publications.
Core Component 3c. The organization creates effective learning environments.

Purdue is a community of diverse learners and diverse learning environments. Its students represent a vast array of cultural backgrounds, social and political perspectives, past experiences, learning styles, and varying levels of preparation for college. This complex mix of learners provides a unique learning environment, enriched by individual differences, while also presenting a challenge for instructors to create conditions that are equally effective for all. The University strives to provide a variety of learning environments and pedagogical styles to meet the needs of its diverse student population.

In addition to assessments of learning and student engagement, described in the previous sections, Purdue is carefully monitoring retention and graduation rates. These data are analyzed in multiple ways and shared throughout the University community to build awareness and provide motivation to develop effective teaching, programs, and services. Analyses also include comparisons with peer institutions.

In the mid-1990's, the campus recognized a need to address student retention and graduation rates. For freshman student cohorts entering Purdue in the years 1990-1995, six-year graduation rates hovered at 64 percent. This led the University to initiate a carefully planned, ambitious effort in 1997 to increase six-year graduation rates by five percentage points. With $5 million initial funding from the Lilly Endowment, retention-related efforts such as learning communities, first-year seminars, expanded/enhanced orientation programs, and new learning opportunities and assistance programs were launched. These efforts deliberately focused on freshmen, given that nearly half of all students who left Purdue voluntarily did so during or immediately after their freshman year.

Six years later, the six-year graduation rate for the fall 2002 cohort was 72 percent, an eight percent increase over the benchmark year. As illustrated in Table 3-3, the University has made incremental positive improvements in retention and four- and six-year graduation rates throughout the past decade. Some of this success can be attributed to the improved academic profile of admitted students, and much of it to the launch and expansion of student success efforts. Many of the projects funded by the Lilly Endowment Retention Initiatives grant were sustained with recurring institutional funds when the grant expired. In 2005 a number of these initiatives were ultimately housed in what has become the Student Access, Transition, and Success programs.

### Table 3-3. Retention and Graduation Rates for Full-time Freshmen

<table>
<thead>
<tr>
<th>Entry Year</th>
<th>Number Entered</th>
<th>Retention Rate 1-Year</th>
<th>Cumulative Graduation Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4-Year</td>
</tr>
<tr>
<td>1998</td>
<td>6,844</td>
<td>82.6%</td>
<td>34.9%</td>
</tr>
<tr>
<td>1999</td>
<td>7,119</td>
<td>84.8%</td>
<td>36.1%</td>
</tr>
<tr>
<td>2000</td>
<td>6,588</td>
<td>86.4%</td>
<td>40.2%</td>
</tr>
<tr>
<td>2001</td>
<td>6,720</td>
<td>85.9%</td>
<td>39.2%</td>
</tr>
<tr>
<td>2002</td>
<td>6,383</td>
<td>86.4%</td>
<td>39.9%</td>
</tr>
<tr>
<td>2003</td>
<td>6,507</td>
<td>85.5%</td>
<td>39.4%</td>
</tr>
<tr>
<td>2004</td>
<td>6,852</td>
<td>85.1%</td>
<td>40.4%</td>
</tr>
<tr>
<td>2005</td>
<td>7,270</td>
<td>84.0%</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>7,523</td>
<td>84.8%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>6,935</td>
<td>86.1%</td>
<td></td>
</tr>
</tbody>
</table>

*Source: Office of Enrollment Management*
Despite these overall improvements, there is potential and intent for the University to more closely align with its peers on these standard student success measures. A comparison of six-year graduation rates, presented in Table 3-4, shows that Purdue has one of the lower outcomes among both its Big Ten and aspirational peer groups.

### Table 3-4. Aspirational Peer and Big Ten Public Six-Year Graduation Rates

<table>
<thead>
<tr>
<th>Cohort Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penn State</td>
<td>90.1%</td>
<td>91.0%</td>
<td>92.0%</td>
</tr>
<tr>
<td>Cal Berkeley</td>
<td>88.9%</td>
<td>88.1%</td>
<td>89.6%</td>
</tr>
<tr>
<td>Michigan</td>
<td>86.9%</td>
<td>88.3%</td>
<td>87.8%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>79.3%</td>
<td>80.4%</td>
<td>82.3%</td>
</tr>
<tr>
<td>Illinois</td>
<td>81.5%</td>
<td>81.6%</td>
<td>82.3%</td>
</tr>
<tr>
<td>Texas A&amp;M</td>
<td>76.6%</td>
<td>77.7%</td>
<td>78.3%</td>
</tr>
<tr>
<td>Texas - Austin</td>
<td>76.9%</td>
<td>77.4%</td>
<td>77.8%</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>77.0%</td>
<td>77.6%</td>
<td>77.2%</td>
</tr>
<tr>
<td>Michigan State</td>
<td>75.9%</td>
<td>76.5%</td>
<td>77.1%</td>
</tr>
<tr>
<td>Ohio State</td>
<td>71.1%</td>
<td>71.2%</td>
<td>72.7%</td>
</tr>
<tr>
<td>Indiana</td>
<td>71.7%</td>
<td>72.0%</td>
<td>72.4%</td>
</tr>
<tr>
<td>Purdue</td>
<td>71.0%</td>
<td>70.6%</td>
<td>72.0%</td>
</tr>
<tr>
<td>Iowa</td>
<td>65.5%</td>
<td>65.9%</td>
<td>66.1%</td>
</tr>
<tr>
<td>Minnesota</td>
<td>60.9%</td>
<td>63.7%</td>
<td>65.7%</td>
</tr>
<tr>
<td><strong>Average (excluding Purdue)</strong></td>
<td><strong>82.1%</strong></td>
<td><strong>82.7%</strong></td>
<td><strong>83.4%</strong></td>
</tr>
<tr>
<td>Aspirational Peers</td>
<td>82.1%</td>
<td>82.7%</td>
<td>83.4%</td>
</tr>
<tr>
<td>Big Ten Public</td>
<td>75.9%</td>
<td>76.7%</td>
<td>77.6%</td>
</tr>
</tbody>
</table>

*Source: Office of Institutional Research*

The focus on learning and opportunities conducive to learning begins even before students arrive on campus and continues beyond their graduation. This section of Chapter 3 will describe those opportunities and, in some cases, their specific impact on student learning and retention. Even greater detail on student success initiatives can be found in the 2008 Governance Report to the Board of Trustees [32].

### Undergraduate Admissions

Student learning and success begin with effective pre-college preparation. Recruitment messaging at Purdue emphasizes the academic challenge and effort expected of students, coupled with the programs and services that enhance student success. Admissions requirements also help convey the University’s expectations. In 2009, the curriculum committees of all undergraduate colleges and schools approved standard high school course requirements for admissions that both institutional and national studies demonstrate are important predic-
tors of student success. Beginning in 2011, Purdue will be one of very few universities in the country that will require four years of college preparatory mathematics for freshman admission. The admissions review process is holistic. Primary emphasis, however, is on the complete academic record: grades in core academic courses, the trend of those grades, and the rigor of the elected curriculum relative to the offerings available to the student. Prospective students are strongly encouraged to pursue advanced placement, international baccalaureate, and dual enrollment courses if these opportunities are available to them.

**Student Access, Transition, and Success Programs**

Student Access, Transition, and Success Programs (SATS) provide pre-college preparation and college success initiatives and services for undergraduate students and their families. The interconnected programs in SATS assist students in progressive stages of development, and have as their ultimate goals an increased rate of student degree completion, future employment or study, dedicated citizenship, and responsible leadership. Student success is at the forefront of every SATS effort. The following are examples of SATS programs:

- **Summer Transition, Advising, and Registration (STAR)** is a daylong summer advising and registration program that occurs before new undergraduates start their fall semester at Purdue. This revamped orientation program, previously known as Day on Campus, was launched for fall 2009 and more than 6,100 students (92 percent of domestic freshmen and transfers) attended. Students participated in campus orientation sessions, met with academic advisors, and registered for classes.

- The University views participation in summer orientation as extremely important. Analysis shows a significant difference in the first-to-second year retention rates of students who attended the Day on Campus summer advisement and registration program, compared to those who did not attend. For example, 2006 participants had an 85 percent first-to-second year retention rate, compared to 77 percent for those who did not attend the program. Minority students participating in 2006 had a 92 percent first-to-second year retention rate, compared to 84 percent for those who did not attend. As a result, effective fall 2009, attendance is required for all new domestic freshmen and transfer students.

- **STAR** is designed to be inclusive of accompanying family members. Families of first-generation students, and those with family members who went to college before first-year and transition program options existed, are provided information that will enable them to be partners in enhancing their students’ success.

- **Boiler Gold Rush (BGR)** is a voluntary welcome week orientation for new undergraduate students, held before the start of fall semester classes. BGR includes programming that addresses an array of academic, personal, and social college transition needs. In 2008 more than 5,350 new freshmen and transfers participated, nearly 75 percent of the new first-year student population. Students were charged $320 to take part in the 2009 BGR, with SATS funding 200 full and 100 partial scholarships to support participation by low-income students. As shown in Table 3-5, one-year retention rates for 2007 BGR participants are significantly higher than those for nonparticipants.
Table 3-5. One-year Retention Rates for Boiler Gold Rush Participants

<table>
<thead>
<tr>
<th>Classification</th>
<th>Participants</th>
<th>Non-Participants</th>
<th>Point Difference for Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>86.4%</td>
<td>78.6%</td>
<td>+7.8</td>
</tr>
<tr>
<td>Female</td>
<td>86.9%</td>
<td>75.7%</td>
<td>+11.2</td>
</tr>
<tr>
<td>Caucasian</td>
<td>87.2%</td>
<td>78.0%</td>
<td>+9.2</td>
</tr>
<tr>
<td>Minority*</td>
<td>81.5%</td>
<td>79.3%</td>
<td>+2.2</td>
</tr>
<tr>
<td>Total</td>
<td>86.6%</td>
<td>78.6%</td>
<td>+8.0</td>
</tr>
</tbody>
</table>

* Includes African American, Asian American, Hispanic/Latino, and Native American students.

Source: Student Access, Transition and Success Programs

- Learning Communities (LC) are defined at Purdue as academic programs that co-enroll a group of 20-30 first-year undergraduate students in two or more courses based on an academic major or theme, place a group of first-year students in the same residence hall based on an academic major or theme, or both. The University’s coordinated LC program began in the fall of 1999 with two communities enrolling a total of 46 students; by the fall of 2008, student participation totaled 1,410 first-year students. Growth of the LC program since its inception is presented in Figure 3-11.

Figure 3-11. Learning Community Participation, 1999–2008

A hallmark of Purdue’s Learning Community program is curricular cohesion, the process whereby instructors connect what they teach in their respective courses, so that learning overlaps and is reinforced in the courses included in the community [33]. In addition, instructors are provided with co-curricular programming funds to conduct out-of-class learning activities that reinforce what is taught in the classroom. An example is Coaster Physics, in which students in the Engineering Honors Learning Community test phys-
ics principles during experiments they perform while riding roller coasters at a nearby amusement park.

Assessment of the LC program shows that participating students earn higher grades, make friends faster, and have significantly higher retention rates than comparable non-participants. As shown in Table 3-6, retention rates are especially improved for minority students.

Table 3-6. First-to-Second Year Retention Rates for Learning Community Students

<table>
<thead>
<tr>
<th>Group</th>
<th>Learning Communities Students</th>
<th>Students Not in a Learning Community</th>
<th>Percentage Point Difference for LC Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>92.4%</td>
<td>85.4%</td>
<td>+ 7.0</td>
</tr>
<tr>
<td>Minorities</td>
<td>91.7%</td>
<td>80.0%</td>
<td>+ 11.7</td>
</tr>
<tr>
<td>All Students</td>
<td>91.5%</td>
<td>84.5%</td>
<td>+ 7.0</td>
</tr>
</tbody>
</table>

Source: Student Access, Transition and Success Programs

In addition, women and minorities are represented in Learning Communities at significantly higher levels than in the first-year student body as a whole. For example, during fall 2007, minorities constituted 18 percent of the LC participants, compared to 14 percent of the new first-year class. During fall 2007, women constituted 56 percent of participants, compared to 44 percent of the new first-year class.

• In fall 2009, Purdue launched one of the largest common reading programs in the nation [34]. During the summer 2009 STAR orientation, first-year and transfer students were provided with a complimentary copy of the book *Stealing Buddha’s Dinner* and were advised to return to campus that fall prepared to discuss the book. The semester began with an academic colloquium featuring the book’s author, Purdue Professor Bich Minh Nguyen. Other book events were integrated into course assignments, learning community activities, and BGR.

The Undergraduate Studies Program

While the great majority of students entering Purdue as freshmen are admitted directly to a college, some first-year students have a variety of academic interests that do not point immediately to a specific major. The Undergraduate Studies Program (USP) was created in 1995 to give these students opportunities to discover academic and career interests before declaring a major [35]. A team of ten USP advisors typically serves approximately 1,000 students each year. While USP students must declare and enter a degree-granting program by the end of their fourth semester of enrollment, most declare a major during their second or their third semester. USP students have moved on to every available major on campus.

Tracking students after they leave USP shows that, while 40 percent of all Purdue students change their major at least once, 90 percent of students who begin in USP stay in their chosen
majors until graduation. Additionally, students starting in USP graduate at the same rate as, or better than their counterparts admitted to specific colleges and schools at Purdue.

**Honors Programs**

In 2002 the University identified the creation of an honors program as a major priority. It was envisioned that the program would fulfill, in part, Purdue’s 2001 strategic plan commitment to preeminence in learning. Following extensive taskforce planning, and with unanimous endorsement by the University Senate [36], the University Honors Program (UHP) was launched in fall 2005 [37].

The goals of the UHP are to provide a thriving academic community for students with exceptional potential from across the University, attract excellent faculty, and collaborate with existing honors programs in five of the academic colleges (Agriculture, Engineering, Consumer and Family Sciences, Liberal Arts, and Science). In 2008–2009, UHP enrollment was 374. Mean SAT scores of newly-admitted students have increased steadily, from 1,410 in 2005 to 1,450 in 2009. To receive an honors diploma, UHP students must have a 3.6 GPA and 24 hours of honors credit. During the UHP’s short history, 78 honors courses have been offered, with topics ranging from aviation safety, to vampires, to genetics, to malaria. Examples of enrichment activities available to UHP students include focused study abroad courses, assistance with applications for post-baccalaureate scholarships and fellowships (for example, Fulbright and Rhodes), and the Lyceum, a learning community for first-year UHP students.

Faculty from across the University serve on the Honors Circle, a group that counsels the UHP. Current challenges faced by the UHP include the need for additional resources to sustain enrollment growth, new courses, and co-curricular activities, and making better use of the UHP as a recruiting tool for high-ability students. In fall 2009, an external review team visited campus to advise the UHP on future directions and strategies to meet its goals.

**Distance Learning**

Purdue has engaged in distance learning since it began broadcasting engineering courses on the University radio station, WBAA, in 1922. The incorporation of distance learning in undergraduate instruction began in 1994, when the University became a founding member of the Indiana Partnership for Statewide Education (IPSE). Members of this consortium, which includes all of the public and many of the private institutions in the state, agreed to make their distance learning courses available to students at all IPSE member institutions. The University’s participation was minimal in the early years, but, as illustrated in Figure 3-12, it has gained momentum since 2001. While relatively slow in developing and gaining acceptance by Purdue faculty, distance learning is expected to continue to grow.

Purdue Continuing Education offers financial support and technical assistance to faculty for designing distance courses. This support has dramatically increased course offerings; by 2007–2008, nearly 40 percent of the University’s students enrolled in distance courses were enrolled in courses originating on the West Lafayette campus. The Teaching and Learning Technologies division of Information Technology at Purdue (ITaP) also supports distance education through the Distance Education Incentive Awards Program, which offers assistance and awards to faculty for the development of high-quality distance education courses.
Chapter Three

Student Learning and Success through Involvement in Co-curricular Activities

Student learning and development is nurtured through co-curricular activities in hundreds of student-run organizations. In the 2008–2009 academic year, there were 878 student organizations, up from 635 in 2000 (Figure 3-13), and participation in these groups continues to grow. Co-curricular organizations include highly-specialized groups like Habitat for Humanity, Equestrian Team, Ballroom Dance, Trap and Skeet Club, Crew Team, fraternity and sorority life, and cooperative housing.

Participation in student organizations has a positive impact on student success, as measured by retention rates. A 2008 survey by Purdue's Office of Enrollment Management and SATS, in conjunction with the Eduventures research collaborative, showed that members of Greek organizations reported a significantly higher likelihood of returning to the University in the subsequent year than students who did not report participating in fraternity or sorority life [38]. With almost 5,000 student members in 81 chapters (16 percent of the undergraduate population), the University ranks third nationally in Greek organization membership. The Eduventures survey also revealed that students who listed participation in student organizations was a priority had a reported first-to-second year retention rate of more than 92 percent, compared to 85 percent for students who reported rarely participating in a student organization during their freshman year at Purdue.
Student Learning and Success through Leadership Development

Leadership opportunities and programs promote learning among all students, freshmen through graduate students. Leaders in student organizations gain real-life experience working with budgets, appreciating diversity, handling conflict, and developing skills that will complement their Purdue degrees. Examples of leadership opportunities on campus include [39]:

- Leadership courses such as EDPS 300A/B Student Leadership Development and 301D Peer Counseling and Training, in which students have opportunities to interact directly with President France Córdova and First Gentleman Christian Foster, as well as campus, community, state, and national leaders.
- The Leadership Journey, a structured four-tier leadership development program that combines academic and co-curricular requirements. The tiers include Emerging Leaders, Impacting Leaders, Engaging Leaders, and a Senior Capstone experience.
- Conferences and retreats, including the Student Leaders Retreat, Women in Leadership Conference, Emily Mauzy Vogel Sophomore Leadership Development Conference, Indiana Greek Leadership Conference, and the LeaderShape Institute.

Student Learning and Success through Experiential Learning

The *New Synergies* strategic plan recognizes the need for innovation in all aspects of university life in order for Purdue, and its students, to effectively face the challenges of the twenty-first century. Among the chief goals of the plan is extending “transformational learning opportunities that actively engage students.” To meet this goal, the University offers students multiple experiential learning opportunities. Examples such as study abroad, service learning, research, and focused learning opportunities (e.g., the Entrepreneurship Certificate program) are described in Chapter 4; service learning is also described in Chapter 5.

Purdue Convocations

Initiated in 1902, Purdue Convocations is among the oldest collegiate performing arts providers in the United States. Convocations’ Curricular Connections program [40] integrates artists into the classroom through artist residencies, master classes in specialized fields, and opportunities to attend performances with a $10 subsidized ticket when faculty members connect performances to the curriculum. Students at the local community college are also included in this program. As reported in Table 3-7, participation in Curricular Connections has grown substantially since first offered in 2004.
### Table 3-7. Students Reached through Convocations’ Curricular Connections Program

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>In-class</th>
<th>Subsidized Tickets</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–2005</td>
<td>124</td>
<td>598</td>
<td>722</td>
</tr>
<tr>
<td>2005–2006</td>
<td>139</td>
<td>747</td>
<td>886</td>
</tr>
<tr>
<td>2006–2007</td>
<td>307</td>
<td>1,111</td>
<td>1,418</td>
</tr>
<tr>
<td>2007–2008</td>
<td>933</td>
<td>1,698</td>
<td>2,631</td>
</tr>
<tr>
<td>2008–2009</td>
<td>308</td>
<td>1,832</td>
<td>2,140</td>
</tr>
</tbody>
</table>

Source: Purdue Convocations

### Technology Support for Learning Environments

Many classrooms on the West Lafayette campus are equipped with computers and projection equipment, software is made universally available across the campus Intranet, and many instructors now make their lectures available via podcasts. Personal computers are available for instructional use in more than 250 classroom locations.

Information Technology at Purdue (ITaP) manages these centralized computing and instructional resources for the University, as well as many of the computer laboratories for student use. There are 53 centrally-managed computing laboratories available to students, with over 1,800 individual machines. An additional 3,500 seats are provided in computer laboratories managed by the academic units.

Purdue has adopted Blackboard Vista as its online course management tool, and sponsors both training and support on technical and pedagogical use. During spring 2009, there were 3,963 courses in the system, with 80 percent of faculty and 84 percent of students participating. ITaP has also developed a centralized Customer Support Center to streamline all support requests, providing a single point of contact for students, faculty, and staff. The virtualized software access system implemented by ITaP, Software Remote, enables staff and faculty remote access to most software licensed by the University; the application and service won the EdTech IT Leadership Award in the Public Institution category in 2006. The Digital Learning Collaboratory, located in the Hicks Undergraduate Library, offers an interdisciplinary instructional program, integrated with the curricula in a state-of-the-art facility, staffed and equipped for multimedia development.

The Teaching and Learning Technologies (TLT) unit of ITaP supports innovative and evolving use of technology to facilitate learning in and beyond the traditional classroom environment [41]. TLT provides and maintains instructional computing laboratories, mobile learning environments, and online course management tools such as Blackboard. The unit conducts outreach events to promote and enhance the use of instructional computing resources, consults with faculty on integrating instructional tools and multimedia content into curriculum, and offers instructional grants to promote research on instructional technologies. TLT sponsors the Teaching and Technology Brown Bag Seminars [42], informal luncheon dialogues among faculty and other instructors on using technology to help students learn. TLT’s Assistive Technology Center provides access to technological resources for students with disabilities, and provides consultation and training to those who teach these students. The Envision Center
for Data Perceptualization [43] is a high-performance visualization facility that supports research and learning at Purdue. Undergraduate students have access to the facility to learn use of its hardware and software, and engage in projects and other learning opportunities. The Envision Center also supports projects and presentations by both undergraduate and graduate students. Center staff also collaborate with faculty to develop courses and units of instruction using specialized hardware and software. Faculty in communications, engineering, technology, science, theatre, audiology, and other disciplines have used the center to develop instructional material using 3D immersive stereo, high-definition computer graphics and video, and haptics to enhance teaching and learning.

**Providing Outstanding Spaces and Resources for Learning**

Classroom and instructional laboratory space has increased significantly since the last accreditation visit, through construction of new buildings such as Rawls Hall, the Neil Armstrong Hall of Engineering, the Lawson Computer Sciences Building, and the Beck Agricultural Center, and through renovations of existing space. Although classroom space is readily available for most needs, there continues to be a pressing need for large lecture classrooms. In fall 2008, the 25 rooms on campus with 100 or more seats averaged 43 hours of use per week for classes, excluding exams and additional events. The largest four rooms average 47.5 hours per room, out of the 50 hours available in the scheduling week.

One of the newest state-of-the-art teaching resources on campus is the Ideas to Innovation (i2i) Learning Laboratory [44]. The i2i is a $4.3 million facility of the School of Engineering Education that serves more than 1,600 students annually through the First-Year Engineering Program. In the summer months, the i2i laboratory is used by P-12 administrators, counselors, and teachers taking part in engineering summer academies and other University programs. It consists of several team-focused collaborative spaces: the Design, Innovation, Prototyping, and Demonstration Studios, and the Fabrication and Artisan Laboratories.

**Fundamental Research to Improve Learning**

The Discovery Learning Research Center (DLRC) [45], which is part of Discovery Park, is a unique facility for the advancement of research aimed at improving learning in the STEM disciplines of science, technology, engineering, and mathematics. Through externally-funded research projects, innovative programs, and collaborative partnerships, the DLRC is committed to refining educational practices and creating innovative learning environments that have immediate impact and nurture lifelong learning for students and citizens of a global community. As of August 2007, the DLRC had 369 affiliated Purdue faculty, staff, and students, representing all 10 colleges/schools and 59 departments and units. In addition, over 115 companies, with 51 external collaborators, currently participate in joint research efforts to enhance learning and expand the development of Purdue students beyond the classroom. In 2009 the DLRC moved into its new building in Discovery Park to foster collaborations with other centers aimed at improving learning and application of new knowledge across a wide range of interdisciplinary themes. The new DLRC building provides flexible, state-of-the-art facilities for educational research and learning laboratories.
Athletics and Recreational Sports

Purdue’s Division of Intercollegiate Athletics enables qualified undergraduates to engage in competition at the highest level, offering 20 varsity sports, with teams and individuals competing in the Big Ten Conference and at the Division I level of the National Collegiate Athletic Association (NCAA). Each year, approximately 500 varsity student athletes compete for Purdue. Athletics supports the University’s educational mission in its pursuit of academic achievement and graduation. Through participation in intercollegiate athletics, students learn self-discipline, build self-confidence, develop competitive skills, and learn practical life lessons such as teamwork, sportsmanship, winning and losing, and hard work. The University’s student athletes achieved its highest cumulative grade point average on record in the spring 2009 semester, a 3.03, marking the twenty-fourth consecutive semester that the student athlete cumulative GPA was higher than that of the student body, overall. Purdue aspires to achieve membership in the “25/85” Club, a group of institutions that finish in the top 25 of the overall National Association of Collegiate Directors of Athletics Directors’ Cup standings and achieve an 85 percent NCAA Graduation Success Rate. In 2008 Purdue Athletics achieved final certification from the NCAA, designating that the University operates its program in substantial conformity with operating principles adopted by NCAA Division I membership.

The Division of Recreational Sports offers a variety of opportunities for students, including:

- Intramural Sports offers more than 30 different sports and activities throughout the year, ranging from team sports such as flag football and basketball, to individual tournaments in tennis and badminton, to special events such as euchre night, and golf tournaments. Nearly 19,000 students participate in intramural sports each year.
- Club Sports are student organized and managed, and provide students opportunities to develop leadership, organizational, and time management skills. Approximately 2,000 students are members of 30 club sports teams.
- Nearly 50 fitness/wellness classes are offered weekly. The Colby Fitness Center provides approximately 200 pieces of strength and cardiovascular equipment, and access to personal trainers.
- The Boiler Challenge is a team program that offers both low- and high-challenge courses. More commonly known as a ropes course, this is an excellent opportunity for groups to work on skills such as trust, communication, responsibility, and conflict resolution. Over 2,000 students participate in the Boiler Challenge Program each year.

Residential Life

The West Lafayette campus has the largest university housing system in the country without a live-in requirement. In fall 2008, 89 percent of new freshman and 33 percent of all undergraduates opted to live on campus. Residence hall capacity for 2009–2010 was 11,061 students, plus 757 occupants in family housing. This capacity includes the $52 million, 356-student First Street Towers, which opened fall 2009 and is the first new residence hall added to the campus since 1993. Residential Life, a division of Housing and Food Services, helps students become productive citizens by fostering respect for self, for others, and for the community, and by offering opportunities for developing life skills. Residential Life strives to achieve these goals by offering initiatives such as these:
• The Faculty Fellow Program promotes a personalized experience for students by association with faculty and staff on an informal basis outside the classroom and office. Faculty fellows come from all walks of the University: vice-presidents, deans, department heads, administrators, faculty, and staff.

• The colleges of Science and Engineering offer a free tutoring program in Earhart Residence Hall, which is the home of the Residential Program for Women in Science and Engineering. The tutors are trained upper-level honors students who have applied to work with beginning students.

• Students are provided opportunities to serve as Resident Assistants (RAs) in the residence halls. Annually, over 275 students are selected to be RAs, who are expected to lead by personal example, provide assistance to residents for the normal range of problems students face during their collegiate careers, be responsible for building a sense of community among their residents, and encourage students to focus on achieving excellence in their academic endeavors. Through the fulfillment of their responsibilities, RAs have many opportunities to develop their leadership abilities, learn about themselves and others, and grow as members of the community.

Core Component 3d: The organization’s learning resources support learning and effective teaching.

Purdue has invested significantly in the provision and distribution of resources throughout campus to support learning and effective teaching. The University also has created the necessary infrastructure to help support the laboratories, clinical settings, equipment, and other learning environments for its academic programs. While creating a student-centered learning environment begins with the faculty, it also relies upon many other dedicated and informed individuals. Professional staff — including information technology professionals, laboratory technicians, academic advisors, instructional designers, and other clerical and administrative staff — are readily available to contribute and support the University’s learning mission.

Academic Support through Help Laboratories and Tutoring Programs

Each year, thousands of students participate in the learning enhancement opportunities provided by department-based support laboratories and tutoring programs. Table 3-8 summarizes a variety of the services provided.

Table 3-8. Selected Academic Support Laboratories and Inventory of Services

<table>
<thead>
<tr>
<th>Resource Laboratory/Service</th>
<th>Type of Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Liberal Arts Academic Success Center</td>
<td>Walk-in consultation for general skills support in areas such as time management, memory improvement, note taking, and test taking skills</td>
</tr>
<tr>
<td>Biology Resource Center</td>
<td>Walk-in consultation for general biology courses and special tutoring by appointment</td>
</tr>
<tr>
<td>Chemistry Resource Room</td>
<td>Walk-in consultation for general chemistry courses</td>
</tr>
<tr>
<td>Math Help Room</td>
<td>Course-specific review sessions</td>
</tr>
<tr>
<td>Physics Help Room</td>
<td>Walk-in consultations for PHYS 149, 172, 218, 219, 220, 221, 241, and 272</td>
</tr>
<tr>
<td>English Department Writing Laboratory and Online Writing Lab</td>
<td>Walk-in and online consultations and appointments for writing projects and assignments</td>
</tr>
</tbody>
</table>

Source: Student Access, Transition and Success Programs
These resources receive extensive use. During the 2007–2008 academic year, the Writing Lab’s Heavilon Hall location (one of three sites) served 2,348 individual users and provided 3,780 consultations. The Online Writing Lab (OWL) provides writing assistance to students and teachers throughout the world; during 2007–2008, the OWL Web site received more than 111 million hits [46].

Purdue supplements these academic support services with additional departmental and academic unit-based tutoring programs. Some of these efforts target specific populations, such as the Women in Engineering and Women in Science tutoring program, the Span Plan (for adult, nontraditional learners), and the Horizons and Purdue Promise (for low-income and first generation college students) tutoring programs. Others take the form of department-approved tutoring lists that are promoted broadly to all students, regardless of demographic.

**Academic Advising as a Learning Environment**

Academic advisors are key partners in creating a supportive learning environment for students. The advising model takes numerous forms on Purdue’s campus, such as professional advisors in specific disciplines; general professional advisors in colleges/schools; faculty advisors in specific majors; and student peer advisors, as needed. For all advising models, the underlying mission is the same: to partner with students, faculty, staff, departments, and administrators empowering students in developing and implementing individualized plans for academic success, and personal and career development. Advising also focuses on helping students understand the nature, purpose, and value of a college education. As of May 2009, there were 208 professional academic advisors serving students on the West Lafayette campus.

Recognizing that the quality of advising is paramount, a University advising assessment committee was formed in 2006. The provost provided registration support for all of its members to attend that year’s National Academic Advising Association Advising Assessment Institute, with the provision that they subsequently develop an advising assessment plan for the University. Another major goal for this committee is that, as students move from one advising office to another, they are assured of receiving information and support consistent with the University’s stated goals and student learning objectives. The impact of these advising efforts is evident in results from the 2007 National Survey of Student Engagement, which found that 81 percent of freshmen and 72 percent of seniors rated the quality of advising they received at Purdue as good or excellent, compared to 77 percent and 70 percent, respectively, at peer institutions [14].

In support of the theme “advising is teaching,” the Purdue Academic Advising Association developed a University-wide advising syllabus that includes expected student learning outcomes [47]. The syllabus also serves as a catalyst for important conversations about the role of advising, the exploration of advisors as teachers, academic advising as a discipline with a curriculum and pedagogy, and how academic advising helps students navigate their educational experiences.
Preparing for a Career

The Center for Career Opportunities (CCO) strives to be a national leader in providing outstanding career development services that help Purdue students and graduates make informed choices that lead to lifelong career fulfillment and contribution to a global society. In collaboration with the University’s academic advising community and counselors in the Office of the Dean of Students, CCO offers a full range of career discovery and planning services that are relevant to students as early as the freshman year [48]. The center works actively with all students to help them prepare for employment, and provides a full slate of career services to University alumni.

CCO recorded 36,096 face-to-face student/graduate contacts during the 2008–2009 academic year; when combined with the number of online registrants, contacts total 60,332. A summary of interviewing activity at the CCO from 2000–2008 is presented in Figure 3-14. Campus interviewing trends indicate the impact of this century’s two recessions on the recruitment of students and graduates at Purdue. The recession early in this decade, triggered by the dot-com bust and accelerated by the tragic events of September 11, 2001, was reflected in employer campus recruitment activity in 2001–2002 and 2002–2003. The following five years marked a steady pattern of growth in the recruitment of both interns and new graduates. The decline in 2007–2008 was more indicative of Purdue students taking a strong job market for granted and being more selective in their choices of prospective employers, than of a weakening economy.

In 2008–2009, the world recession had an immediate impact on college student recruitment. Nationally, it is expected that employer recruitment on college campuses will drop further in 2009–2010, due to high unemployment and the slow recovery of the labor market.

Figure 3-14. History of Student Interviewing Activity by Employers through the Center for Career Opportunities

The data in Figure 3-14 represents employer recruitment activity that is facilitated by the CCO. Although the center is recognized by peers across the nation as hosting one of the largest and most sophisticated campus recruitment programs in the United States, it does not reflect all employer recruitment on campus. For example, several job fairs at the University are conducted by academic colleges and departments, and student organizations. When considering all employer visits to campus, the number of unique organizations recruiting at Purdue surpasses 1,000 on an annual basis.
Employment upon graduation data is shown in Figure 3-15. These data are based on an extensive post-graduate survey by the Center for Career Opportunities, in cooperation with academic departments. The results are representative of baccalaureate and professional school graduates' employment status at six months following May commencement. Annual response rates of at least 65 percent were obtained throughout this time period, with a response rate of no less than 85 percent since 2005.

**Figure 3-15. Employment upon Graduation**

While the numbers of graduates accepting employment vary slightly from year to year, especially between 2001 and 2002, this consistent rate of employment speaks well of graduates' academic preparation, career maturity, and proven work ethic. When combining the number of Purdue graduates accepting employment with those enrolled for further study, and others confirming alternative plans such as post-graduate internships and community service, the placement rate of graduates has consistently exceeded 93 percent since 2003.

**Library Contributions to the Learning Environment**

The University’s library system contains thirteen discipline-specific libraries. Libraries are open daily an average of fourteen hours Monday through Thursday, ten hours Friday and Sunday, and five hours on Saturday. From 2000 to 2007, total library volumes increased by six percent, to a total of 2,504,803, and current serial subscriptions have more than doubled, to a total of 40,073 [49]. Weekly workshops highlight library services and technology. Flash-based online tutorials cover frequently-asked questions on topics such as citation, effective research strategies, and specific search tools. The Comprehensive Online Research Education tutorial covers planning a research project from beginning to end [50].

The libraries have developed several instructional support systems, including the Research Project Advisory Service, which allows undergraduates to schedule consultations with librarians for help starting research projects [51]. One indication that student learning is being
enhanced by the library system is data indicating an increase in student use of the libraries. Between 2000 and 2007, circulation increased 27 percent, with a 53 percent increase in total items loaned [52]. The Digital Learning Collaboratory (DLC) is increasing the numbers of technical training sessions for students, and a peer-to-peer training program uses well-trained undergraduates to conduct the sessions [53]. Between 2005 and 2008, the DLC offered approximately 252 student training sessions, many of which were coordinated with instructors in specific courses in preparation for multimedia assignments.

The Office of the Dean of Students Serves all Students

The Office of the Dean of Students (ODOS) is a central hub for student support, as well as a resource for faculty and staff in their service to students [54]. Programs and services offered by the ODOS include the following:

- Counseling support is provided via formal appointments and drop-in consultations. The bases for seeking assistance range from need for academic counseling to requests for emergency loans.
- The Disability Resource Center (DRC) provides academic adjustment support and services that enable students with disabilities to participate fully in all University-sponsored programs and activities. The DRC also serves as a resource to the campus community for disability information and referral.
- Horizons is a federally-funded TRIO Student Support Services program that provides assistance to eligible students from first-generation and/or low-income backgrounds, and students with disabilities. Services include counseling, mentoring, tutoring, career preparation activities, and cultural event opportunities.
- The Testing Center provides career exploration assistance and advanced credit placement. It hosts independent study course exams, opportunities to take CLEP (College Board) examinations for college credit, and national exams, including the Graduate Record Examination, Law School Admission Test, and Praxis teacher licensure and certification tests. Classroom examinations may be arranged by students on an individual basis to accommodate special needs for extra time or a distraction-limited testing environment. The frequency of examination services provided by the center from 2003–2007 is summarized in Table 3-9.

### Table 3-9. Examination Services Provided by the ODOS Testing Center

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Total Tests Administered</th>
<th>Advanced Credit Exams</th>
<th>National Exams</th>
<th>Number of Students Served</th>
<th>Adaptive Learners Taking Classroom Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007–2008</td>
<td>7,589</td>
<td>1,068</td>
<td>1,804</td>
<td>7,163</td>
<td>1,392</td>
</tr>
<tr>
<td>2006–2007</td>
<td>7,393</td>
<td>1,260</td>
<td>1,864</td>
<td>7,042</td>
<td>1,260</td>
</tr>
<tr>
<td>2005–2006</td>
<td>7,885</td>
<td>1,539</td>
<td>1,839</td>
<td>7,401</td>
<td>1,041</td>
</tr>
<tr>
<td>2004–2005</td>
<td>8,242</td>
<td>1,432</td>
<td>2,079</td>
<td>7,536</td>
<td>1,121</td>
</tr>
<tr>
<td>2003–2004</td>
<td>8,602</td>
<td>1,865</td>
<td>2,412</td>
<td>7,950</td>
<td>1,174</td>
</tr>
</tbody>
</table>

Source: Office of the Dean of Students
The mission of the Office of Student Rights and Responsibilities (OSRR) is to promote responsibility and encourage honesty, integrity, and respect among Purdue students through education and compliance with behavioral standards. The core functions of the OSRR include: administering the code of student conduct; serving as a consultant to and as a resource for students, faculty, staff, and parents concerning student conduct expectations and rights, and University policies and procedures related to student life; assisting and counseling victims and those accused of conduct violations; offering conflict/dispute management; and facilitating the processing of student grievances, as appropriate.

Span Plan Adult Student Services addresses the needs of adult, nontraditional undergraduate students. Helen Schleman, former dean of women at Purdue, started this program to fund the spouses of World War II veterans who wanted to pursue college degrees and careers. Today, this program provides services that include academic, career, personal, and re-entry counseling; an Adult Student Support Group; and free tutoring.

**Student Health Center**

As part of its commitment to promoting a healthy campus community, the Purdue University Student Health Center operates two programs that promote learning and academic success:

- The Student Wellness Office provides a variety of services to help students reduce their health risks and maintain positive health behaviors, including the Student Wellness Office Resource Room, campus presentations and bulletin board kits, involvement with the Indiana Campus Sexual Assault Primary Prevention Project, and nutrition counseling.
- Counseling and Psychological Services provides individual, couples, and group counseling; psychiatric services; drug and alcohol consultation; and developmental disorder screening.

**Budgeting Priorities Reflect Strong Support for Teaching and Learning**

Purdue's focus on teaching and learning is reflected in increased support for these top priorities. Analysis of the budget by functional area [55] shows remarkable increases in several of these areas during much of the period since the last accreditation visit in 1999. From 1998–1999 to 2007–2008, instructional and departmental research budgets increased by 57 percent, academic support funding increased by 48 percent, and student aid increased by 146 percent. The economic downturn in 2008–2009 placed great financial strain on the University. Although all academic units on campus experienced budget reductions as a result, the provision of academic courses and services needed by students remained among the University’s highest priorities.
Summary of Evidence

This chapter provides evidence of Purdue’s commitment to its learning mission, a commitment demonstrated emphatically, consistently, and continually through the dedicated contributions of faculty, staff, and administrators, and underscored in the two strategic plans drafted and implemented within the accreditation review period.

A robust plan for the assessment of student learning, at both undergraduate and graduate levels, has been developed and implemented throughout the campus. Both direct and indirect evidence is presented to show that students have achieved stated learning outcomes. Assessment feedback is used effectively to drive curricular and programmatic improvements. The BALOTS Web site for assessment reporting provides a useful framework for documenting assessment efforts and a resource for sharing learning improvement initiatives throughout the campus.

The University demonstrates its commitment to providing effective learning environments for its students by offering a broad array of learning opportunities and support services throughout all stages of their educational experience. Academic units receive extensive support from other campus units — such as the Student Access, Transition, and Success program — to assist students in achieving important learning outcomes and to have experiential, co-curricular, and leadership opportunities. Students are highly satisfied with their college experience; 87 percent of senior respondents in the 2007 NSSE survey indicated they would attend Purdue if they started over, and 91 percent rated their entire educational experience as good or excellent [14]. The University is committed to improving undergraduate retention and graduation rates, and has developed a number of learning-centered initiatives that are positively affecting these goals. Employer demand for graduates remains very strong, providing further evidence of learning and the quality of a Purdue education.

The University’s commitment to effective teaching is evident through its provision of a wide range of teaching support programs and services, professional development opportunities for instructional staff, technical and infrastructure support, and recognition and rewards for teaching excellence and innovation. Notable examples of teaching support provided by the University are the Center for Instructional Excellence, the Teaching Academy’s celebrations of teaching excellence, the interface of teaching and technology through ITaP’s TLT unit, and the interface of teaching and research in the Discovery Learning Research Center.

Resources dedicated to supporting the learning mission are readily available and significant in scope. Students have access to research laboratories, clinical settings, state-of-the-art environments (for example, the i2i Learning Laboratory and ITaP’s Envision Center), tutoring and help-laboratory assistance, an extensive university housing and residential life system, academic and career preparation, advising, and extensive information technology resources. These resources, and many others, are provided to support student success through effective teaching and learning.
Challenges and Opportunities

Issues Purdue seeks to address as it continues to fulfill its learning mission include:

- sustaining and improving the broad-based learning assessment activities embedded in academic programs;
- realigning the array of student services provided on campus into an easily accessible, centralized hub;
- developing new strategies to improve student recruitment, retention, and progress toward graduation (e.g., increasing scholarship opportunities, designing ways to recruit high ability students, creating a core curriculum, and enhancing the University honors program);
- coordinating the numerous surveys and other data-collection activities on campus to prevent survey fatigue and duplicative work, and improve access to the information;
- strengthening the University’s culture of recognition and appreciation for contributions to the learning mission, particularly as affected by promotion and tenure policies and reward structures; and
- increasing master’s degree offerings and numbers of degrees awarded annually by developing new professional graduate degrees in strategic areas of expertise and in convenient and accessible formats.
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