



CHAPTER 8

The Graduate and Professional Student Learning Experience

“The limited size of the student body and the favorable student-faculty ratio create an atmosphere of friendliness and informality. Students enjoy a degree of access to faculty that students would rarely find at a larger institution. Small classes, more personalized instruction, and a diverse curriculum are strong traditions.”

—*Jerry Parkinson, former Dean and Professor of the College of Law*

THE UNIVERSITY’S COMMITMENT TO LEARNING

(Core Components 2b, 2c, 4c, 4d)

The university has a strong commitment to academically rigorous graduate programs, including courses delivered by distance technologies to place-bound students in some disciplines. It has strategically adopted new graduate degrees to focus on areas of distinction, as outlined in UP 3. (4c) Over the last 10 years the university has created new programs, instituted regular program reviews, and implemented best practices to enhance graduate education. Two surveys were administered in fall 2008 to collect qualitative perceptions: the 2008 Graduate and Professional Student Survey and the 2008 Graduate Program Coordinator Survey. The analyses of the findings are described in sections that follow. (2c)

The university’s graduate programs expect students to partner with faculty in the pursuit of new knowledge and in the translation of knowledge to enhance the public good. The essence of the university’s graduate programs is to help students make the transition from novice to expert scholars, that is, accomplished, self-directed, lifelong learners. Graduate education at the university contributes not only to personal growth but to the public good through economic development, leadership, and contributions of an educated citizenry. (4d)

Until 2009, the Graduate School administered all graduate degrees except for two professional degrees and oversaw the designation of graduate faculty from all academic colleges. In spring 2009, as one response to the governor’s request to reduce the university state budget by 10 percent, the university eliminated all positions within the Graduate School and the administrative personnel were retrenched. The administrative functions were redistributed to other offices. Chapter 10 provides

more detail about this budget reduction process. Shortly after this decision, the provost appointed the Graduate Education Taskforce convened by the associate provost and composed of senior graduate faculty scholar leaders and pertinent student services directors to address these changes. Their task was to define a graduate program administrative structure that is largely decentralized, partly to the academic colleges and partly to existing support offices.

The taskforce determined three elements of graduate education that logically need to be centrally administered by the provost: allocation of graduate assistantship budgets, orientation and recognition events, and overall program assessments. Deans, department heads, and program directors are responsible for administration within their units. Benefits of this restructuring include improved efficiency of processes, elimination of some duplication of paperwork and effort that existed previously, student program checks, updates to all graduate education regulations, and a single electronic university catalog for all students. The taskforce's ongoing recommendations are approved by the provost and then provided to the university community via the WyoWeb portal. The university will critically monitor these changes to ensure that program quality is maintained across the university. The university's intent is to retain all funding and functions essential for the advancement of graduate education, but to reduce the administrative overhead required. (2b)

THE DIVERSITY OF THE UNIVERSITY'S GRADUATE STUDENTS AND THE CONSTITUENCIES SERVED

(Core Components 1b, 2a)

The university currently offers 59 degrees at the master's level, one Education Specialist degree, 30 degrees at the doctoral level, and two degrees at the professional level. Degrees offered include Master of Science, Master of Science in Teaching, Master of Arts, Master of Arts in Teaching, and masters of a designated area, including Master of Fine Arts in Creative Writing, Master of Music, Master of Music Education, Master of Planning, Master of Public Administration, Master of Business Administration, and Master of Social Work. Other graduate degrees offered include Education Specialist, Doctor of Philosophy, and Doctor of Education. In addition to these graduate degrees, the university offers two professional degrees: the Juris Doctor and the Doctor of Pharmacy.

The university also offers interdisciplinary graduate degree programs (cross-departmental or cross-college). Some examples of these include doctoral programs in ecology, molecular and cellular life sciences, neuroscience, and reproductive biology, and masters programs in American studies, environment and natural resources, natural sciences, water resources, food and human nutrition, and international studies. In addition to these programs, the university offers an interdisciplinary studies degree which is available as either a Master of Arts or a Master of Science degree.

At the university, the traditional MA/MS, EdD, and PhD programs typically require a combination of coursework and a thesis or dissertation, or in some cases a rigorous service learning experience, depending on the program. Professional programs have

varied requirements. Many require only coursework while others require a combination of coursework and professional work such as internships, clinical experiences, or service learning activities. The Outreach School provides graduate students in some programs with distance learning options as part of their degree and certificate programs. (2a)

As shown in Table 8.1, the number of graduate degrees awarded has increased over the last 10 years. There has been a 12 percent increase in the number of master's degrees awarded, a 10 percent increase in the number of Juris Doctor degrees awarded, and an 11 percent increase in the number of PharmD degrees awarded. (1b)

Preparing for the future: Enrollment trends

(Core Components 1b, 2a, 2c, 5a)

Table 8.1. Graduate Degrees Awarded

	Academic Years 1999-2000 versus 2008-2009				
	1999-2000		2008-2009		10 Year Change
	Number	% Degrees	Number	% Degrees	
Master's	377	66%	423	68%	12%
Education Specialist	2	0%	0	0%	0%
Doctorate	73	13%	69	11%	-5%
Juris Doctor	73	13%	80	13%	10%
PharmD	46	8%	51	8%	11%
TOTAL	571		623		9%

Source: Office of Institutional Analysis

Because of the University of Wyoming's unique position as a relatively small public research university with a statewide expectation to offer programmatic breadth, some departments operate with less than optimal graduate enrollments. An increasing number of graduate students pursue a master's degree at the university, and while the university is working to expand doctoral and professional degree programs overall, both the quality and quantity of graduate enrollments remain issues. Interdisciplinary programs are alleviating the problem of low enrollments to some extent, but all departments require a critical mass of their own students for a vibrant graduate program. (5a)

From fall 1999 to fall 2008, enrollment in graduate programs at the university increased from 2,704 to 3,503, or 30 percent. The 3,503 graduate and professional students enrolled at the university represent more than 25 percent of the total student body. Table 8.2 shows other characteristics of the university's graduate students, including racial and ethnic diversity and gender. (1b)

Compared to national enrollments in post-baccalaureate programs as noted in the *Chronicle of Higher Education*, ethnic minority students at the University of Wyoming are particularly underrepresented. (2c) Ethnic minority student enrollment in graduate and professional programs mirrors the university's low undergraduate ethnic minority enrollment (9 percent for undergraduates and 6 percent for graduate and professional students).

Table 8.2. Graduate and Professional Student Characteristics

Fall 1999 versus Fall 2008					
	1999-2000		2008-2009		10 Year Change
	Number	% of Students	Number	% of Students	
Race/Ethnicity					
Minorities	148	5%	205	6%	39%
Caucasian, non-Hispanic	2,183	81%	2,415	69%	11%
International	172	6%	284	8%	65%
Ethnicity unknown or unreported	201	7%	599	17%	198%
Gender					
Females	1,530	57%	2,239	64%	46%
Males	1,174	43%	1,264	36%	8%
Site					
Laramie campus	1,884	70%	1,829	52%	-3%
Outreach	820	30%	1,674	48%	104%
Degree Level					
Master's students	1,112	41%	1,176	34%	6%
PhD/EdD	434	16%	537	15%	24%
Professional students	427	16%	442	13%	4%
Non-degree & professional development	731	27%	1,303	37%	78%
Graduate certificates	—	—	45	1%	—
TOTAL	2,704		3,503		30%

Source: Office of Institutional Analysis

The low percentage of minority graduate students is possibly related to minority student undergraduate enrollment: many current graduate students report that they chose the University of Wyoming after attending as an undergraduate. Anticipated future increases in ethnic minority student enrollment among undergraduates, coupled with retention and graduation of underrepresented students, have the potential to enhance ethnic diversity in the university's graduate and professional degree programs. (2a)

Sixty-four percent of graduate and professional students are female, with Caucasian females representing almost 50 percent. The *Chronicle of Higher Education* projected that, nationally, women would earn over 60 percent of graduate and professional degrees in 2009. At the University of Wyoming, the rate at which female students earn post baccalaureate degrees is lower than this rate of enrollment. In 2008-2009, 57 percent of graduate and professional degrees were awarded to women and 43 percent awarded to men. Women earned master's and PharmD degrees at a higher rate than men, while men earned more PhDs. JDs were awarded at equal rates. (1b)

Table 8.3. Graduate Tuition

Academic Year 2008-2009				
Degree Program	Resident Tuition per Hour	Public Doctoral Percentile	Non-resident Tuition per Hour	Public Doctoral Percentile
Graduate Program, General	\$174	3rd	\$498	12th
College of Law	\$288	1st	\$643	3rd
School of Pharmacy	\$262	—	\$586	—
College of Business (EMBA)	\$550	—	\$550	—

Source: University of Wyoming Fee Book and Office of Institutional Analysis

Meeting graduate constituencies' needs

(Core Components 1a, 5a)

The increasing cost of graduate education nationally has the potential to affect access in the future; however, as a land-grant university, the University of Wyoming remains a quality option at a relatively low cost. Many students have confirmed that they are drawn to the university because of the low cost of tuition according to the 2008 Graduate and Professional Student Survey. (1a) Currently, graduate tuition is \$174 per credit hour for residents and \$498 per credit hour for non-residents. Students receiving state-supported stipends are also granted tuition and fee waivers and health insurance. Three programs within the university charge differential tuition due to high market demand for limited capacity: the JD offered by the College of Law, the PharmD offered by the School of Pharmacy, and the Executive MBA program offered by the College of Business. Even when considering these differential rates of tuition for programs in high demand, a graduate education from the University of Wyoming is inexpensive compared to its regional comparators, as evidenced by the examples in Table 8.3. (5a)

Preparing for the future: Graduate assistantships

(Core Component 2b)

The university provides financial support to graduate students through graduate assistantships, which are available on a competitive basis through each department. In fall 2008, approximately 40 percent of the university's graduate students were supported with a graduate assistantship, and additional students were funded through the university's research enterprise. The base stipend in 2008-2009 for a master's student was \$11,072 and \$15,408 for a doctoral student. An analysis of stipend levels in Figure 8.1 shows that the university has made significant progress in increasing stipends since 2000. In addition, health insurance is now offered as part of the standard graduate assistant (GA) package. While these improvements are substantial, the university must continue its efforts to further increase stipends since the university's graduate assistant funding for 2008-2009 was 9 percent below the average for the Association of Public and Land-grant Universities. In the 2008 Graduate Program Coordinator Survey, faculty graduate coordinators across the institution reported that low stipends and in some cases low numbers of GAs inhibit their

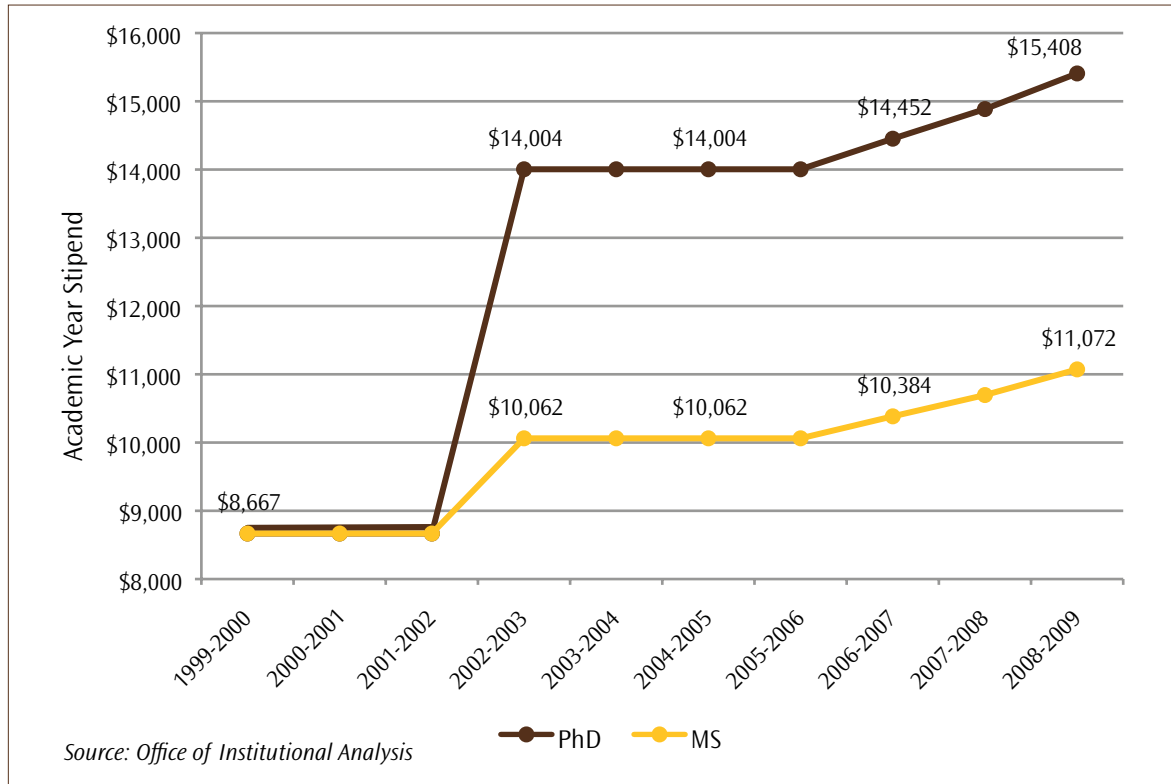


Figure 8.1. Graduate Assistant Stipends, Academic Years 1999-2000 to 2008-2009

ability to attract and retain qualified graduate students. From the student perspective, 50 percent of the students receiving stipends who responded to the survey indicated that the amount of the stipend was sufficient to cover basic living expenses. (2b)

The importance of graduate teaching and research assistants is woven into nearly every facet of the university. To that end, the university could receive additional benefits from an increase in the number of GAs, especially through the avenue of grant funding. The financial benefit of an assistantship, combined with the increased experiential learning, would certainly enrich the learning experience for many students while providing direct and tangible benefits to individual faculty and the university as a whole. The School of Energy Resources budget for assistantships and the recent hiring of endowed chairs may help to increase funding opportunities for graduate students. Similar to the challenges faced in appropriately balancing depth and breadth of majors and course offerings for academic programs is the challenge of balancing numbers of graduate students with the ability to recruit the most sought after graduate student applicants. (2b)

Financial support in the form of an assistantship is routinely identified as a key parameter contributing to graduate student success. In the 2008 Graduate and Professional Student Survey, financial considerations were consistently listed as barriers to success. To that end, increasing the number of GAs from all sources across the institution, along with careful attention to time-to-degree statistics to promote effective cycling of existing GA resources,

are important considerations for increasing graduate student retention. Furthermore, the quality of the benefit package in total should be improved, including better health benefits, more access to travel funds, and family-friendly benefits. Summer funding can also be a critical element of student success because summers are the peak months for research involving field work. Only 35 percent of graduate students surveyed say they have received summer funding. For many departments and programs, scholarships are largely awarded to undergraduate students, primarily because the donors financing the scholarships are more interested in supporting undergraduate students. Several colleges and departments are now working with donors to increase scholarships for graduate students. (2b) All issues related to funding will be important points of discussion as the university restructures the roles of departments, colleges, and central administrative offices in graduate education under the guidance of the Graduate Education Taskforce.

MAINTAINING AND STRENGTHENING THE QUALITY OF GRADUATE STUDENTS

(Core Components 2a, 2b, 2c, 5a)

According to the 2008 Graduate and Professional Student Survey, the top three reasons for attending the University of Wyoming were cost of attendance (49 percent), location (45 percent), and availability of assistantships and funding (40 percent). In contrast, graduate faculty coordinators identified the top three reasons for students attending the university as availability of assistantships (75 percent), quality of faculty in the field (57 percent), and specialized degree programs (55 percent). This difference of perceptions may explain, in part, some of the recruiting difficulties faced by some colleges and programs. The university must recognize why its students are attracted here and focus on those strengths while working on perceived weaknesses. (2a)

Students and graduate coordinators also differed in their evaluation of recruitment methods. For example, only 21 percent of the student survey respondents reported that they were actively recruited to attend the university, with 72 percent indicating that they learned about the university's graduate programs from being an undergraduate student, from the university's Web site, or from family, friends, and alumni. In contrast, 84 percent of the graduate program coordinators reported that they actively recruit graduate students, citing personal emails and meetings with students visiting campus as examples. A total of 75 percent of the coordinators placed the university's Web site in the top three modes of effective recruiting. Less than half of graduate coordinators—41 percent—were satisfied with their abilities to recruit students to their programs, and an even lower number (29 percent) were satisfied with their ability to recruit a diversified graduate student body. (5a)

In the last two years, several departments and colleges have begun to address issues of recruitment. Recognizing the importance of Internet-based recruitment, the College of Arts and Sciences is providing guidelines to help departments improve their graduate program Web sites. The restructuring of graduate education presents an opportunity for the

university to engage in some broad discussions about improvements in recruitment of quality graduate students through improved Web site designs and Web 2.0 tools.

The university offers a general orientation to incoming graduate students, which is voluntary, and a required orientation for all GAs with first-time teaching responsibilities. The College of Law requires all first-year students to attend a three-day orientation in which they are introduced to the study of law. Departments and programs that have a significant population of GAs with substantial teaching responsibilities, such as English, the life sciences program, mathematics, and communication and journalism, also require pre-semester seminars in which they provide the GAs with the tools to teach. (2b) Orientation provides a mechanism for students to learn about graduate program and department expectations, meet fellow students, and gain a better understanding of the distinctions between undergraduate and graduate cultures at the university. Perhaps not surprisingly, in their survey responses students and graduate coordinators differed in their perceptions of orientation effectiveness. For instance, 80 percent of the graduate coordinators believed graduate assistantship responsibilities are covered in the orientations, whereas only 37 percent of the students indicated this topic is covered. Similarly, 73 percent of the faculty said they discuss the academic program of study whereas only 46 percent of the students believed the program of study is covered in orientation. The apparent discrepancy between faculty and students perceptions of orientation indicate that this is an area for improvement. (2c)

Strong graduate student faculty mentoring and advising is expected at the university. The 2008 Graduate and Professional Student Survey responses suggest room for improvement. Only 63 percent of the respondents indicated they had a formal advisor. Graduate committee advisor and committee composition policies are described in the *Graduate Bulletin*. These policies are being revised with the intent of providing stronger graduate student committee composition and best mentoring practices.

IMPROVING THE GRADUATE LEARNING EXPERIENCE

(Core Components 1b, 2c)

A high-quality learning environment for graduate students requires state-of-the-art technology and forward-thinking curricula in order to be competitive in today's world. It also requires available access to tools that support timely communication and information sharing. (1b) Designing learning experiences supported by information technology is becoming an important skill for all academics. The university has a range of quality measures being implemented, including the development of new programs and capital improvement plans designed to enhance student learning, but it needs to do more to examine its graduate-level instructional strategies and learning environments. (2c)

Strengthening the quality of the learning environments

(Core Components 1d, 2a, 2b, 3c, 4d)

Noted several times in this report are the significant new building and remodeling projects over the past 10 years to create state-of-the-art learning environments. (3c) Five projects deserve

mention again for enriching learning at the graduate level: the Health Sciences Complex, the Archaeological and Anthropological Research Facility, the Information Technology Center, the College of Business Building, and the Berry Biodiversity Conservation Center. (1d)

The Health Sciences Complex allows co-location of most of the various health disciplines that were spread across the campus prior to 2005, except the Department of Kinesiology and Health, which needs to use physical activities spaces on the east side of campus. The facility gives students the opportunity to study in interprofessional environments that reflect the way health care services are delivered in the field, and it facilitates interdisciplinary research. The vision of the health science facility is an example of infrastructure improvements that enrich the graduate experience beyond technological improvements. (2b)

The anthropology building is especially noteworthy in light of the university's approval of the PhD program in anthropology in 2001. For the first time, all of the anthropology collections, containing three million artifacts, are now accessible for faculty and student research in one building. Anthropology faculty have increased laboratory space, and the building also includes major labs, technology spaces, and lounges for graduate students. (2b)

In Academic Plan II, the university identified computational science as an area of distinction for the university. Building on this strength, over the last six years the university has hired 15 faculty members in such computational science fields as fluid mechanics, geosciences (including climate change) materials science, biosciences, and bioinformatics. (2b)

Modeling complex phenomena in science and engineering requires enormous computational resources. In the last two decades, these resources have evolved from centralized computer mainframes to decentralized computer clusters utilizing large parallel architectures. The increase in numbers of computer clusters has been commensurate with the increased hiring of computationally-oriented faculty. Computer clusters pose serious resource challenges. Each cluster ordered by an investigator requires special space which has increased power and air conditioning demands. Remodeling enough rooms for this purpose is simply not feasible. In addition, security of these machines, both virtual and physical, is a major issue as the cost of these machines can be several hundred thousand dollars, and each machine is a potential gateway for hackers. To address the growth of computers and their demanding environmental needs, the data center was moved to the Information Technology Center in 2008. The data center was designed with 6,000 square feet of machine space to house IT's servers—enough room to support the growth of university computing for several decades. The Division of Information Technology now provides state-of-the-art facilities for research-based computer clusters, for any faculty research group that wants it. Most of the university's computationally intensive research groups use this facility. (2a)

While the new center provides high-tech computational facilities on the Laramie campus, an important future computational resource for the university's graduate education is the recent decision to build the next NCAR supercomputer in Cheyenne. In addition to the NCAR facility itself, the university is developing student and faculty exchange

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opportunities with NCAR researchers. Collaborations with these researchers and access to the NCAR supercomputer will provide opportunities for graduate students that are rarely available on a national scale. (4d)

The new building for the College of Business was designed with space to allow faculty and student growth in anticipation of a new doctoral program focusing on sustainable business practices offered by the Department of Management and Marketing. The building supports current learning enhancement technology, a behavioral research lab, and a trading room that will support graduate and undergraduate programs. (4d)

The planned Berry Biodiversity Conservation Center is another example of the growing graduate facilities at the university. This new center will provide a place for interdisciplinary research and education across the sciences. The center will house university and visiting scientists from a variety of fields supporting biodiversity study. It will also house core research facilities, such as the university's Stable Isotopes Laboratory. In addition, the center has an outreach mission spanning from K-12 through adult education, providing a learning service covering Wyoming and the Rocky Mountain region. (4d)

New graduate programs focusing on the university's areas of distinction (Core Component 2d)

Because graduate programs are so fundamental to the identity of the University of Wyoming's research enterprise, careful planning needs to guide its decision about augmenting existing programs and creating new ones. The university has allocated resources among the six areas of distinction defined in Academic Plan I to achieve balance and academic excellence in graduate education. (2d) With the infusion of resources that came with the establishment of the School of Energy Resources (SER), several graduate programs are benefitting from a substantial number of new GAs. Some of the more striking recent and proposed developments in the university's graduate programs are highlighted in the following brief sections organized by area of distinction.

Critical areas of science and technology (Core Component 5a)

Doctoral programs in chemical and petroleum engineering have been rejuvenated with faculty additions through increased legislative funding, through the School of Energy Resources, and through additional grant funding from such sources as the state's energy sector. Also in this area of distinction, UP 3 identifies development of a graduate program in computational science as a priority for the next five years, building on an undergraduate minor recently developed by faculty members in mathematics, mechanical engineering, and botany. Another priority is the development of a cross-college interdisciplinary water resources PhD program, a task that is currently underway with leadership in civil and architectural engineering. (5a)

Cultural assets, arts, and humanities**(Core Component 3c)**

The MFA in Creative Writing, established in 2005 with an infusion of award-winning faculty hires and GA support, is now drawing exceptionally talented writers to the two-year studio program. Special features include a flexible curriculum, cross-genre workshops, opportunities for interdisciplinary study, and a state-endowed Eminent Writers in Residence program, which brings distinguished authors to the university as visiting faculty to work closely with the students. (3c)

Environment and natural resources**(Core Component 4c)**

The Haub School of Environment and Natural Resources (ENR) offers the choice of a double major and a minor. The ENR program now offers a dual degree with the College of Law and new faculty expertise in collaborative resource management. (4c)

History and culture of the Rocky Mountain region**(Core Component 4c)**

Academic Plan I identified a doctoral program in anthropology as a niche with a solid base and immense potential. The focus of the doctoral program is on Paleoindian, plains, and hunter-gatherer archaeology. (4c)

Life sciences**(Core Components 2b, 5a, 5d)**

One of the major strategies in the university's plans has been to knit together faculty expertise in coherent focus areas of the life sciences—expertise that resides in as many as 10 departments in four colleges. A key element of this strategy is the establishment of interdisciplinary doctoral programs. A notable addition to graduate education is the Program in Ecology (PiE), an interdisciplinary doctoral program focusing on the scientific study of the relations between organisms and their environments. A critical component of the development of PiE was a four-year, \$7 million grant from the NSF EPSCoR to determine how global climatic and other environmental changes affect past and present ecosystems. (2b) In just four years, the interdisciplinary PiE boasts a collection of noteworthy successes—including a group of 27 outstanding and enthusiastic PhD students from the U.S., Canada, Argentina, Sweden, and India. The first group of doctoral students graduated in May 2009. The program has received national attention and is already considered a top program in the West. (5d)

Also noteworthy is the expansion of the interdisciplinary program in neuroscience, fueled by two stages of institution-level grant funding and faculty hiring supported by the NIH COBRE program. A third interdisciplinary PhD program in the life sciences, added in 2005, is molecular and cellular life sciences. This program, spanning the Colleges of

Agriculture and Natural Resources, Arts and Sciences, and Health Sciences, capitalizes on cross-college faculty expertise in genomics, proteomics, and bioinformatics. Finally, among the significant action items in UP 3 is the establishment of an interdisciplinary PhD program in biomedical sciences to capitalize on institution-level funding through the NIH INBRE program. (5a)

Professions critical to the state and region

(Core Component 5a)

In response to critical needs in the region, the School of Nursing has been challenged to prepare a proposal for a new Doctor of Nursing Practice program. In addition, the school created an accelerated BS degree in nursing for nontraditional students with baccalaureate degrees in other fields. In the College of Education, the addition of four endowed faculty chairs with emphases in science and math education and literacy education are beginning to add growth to the college's graduate programs. (5a) In addition, the Board of Trustees recently approved a doctoral degree in management and marketing focusing on sustainable business practices in the College of Business.

Improving curricula for future leaders in a changing society

(Core Components 3c, 4b, 4c)

The curricular requirements for graduate students are as varied as the programs they enter. A small number of programs, such as the Executive MBA, are delivered entirely online while others require full-time residency. A few have a mixture of on-campus and distance delivery. Some degree requirements can be met in as little as one year while others require an indeterminate number of years to complete. The university has monitored average time-to-degree completion, especially in doctoral programs, and an action item in UP 3 calls for explicit time limits on financial support for graduate students. In all cases, students are expected to master the knowledge and skills required of the discipline or interdisciplinary area. (4c)

Over the past decade, graduate learning environments have increasingly incorporated assignments that involve team work, problem-based learning, service learning, interviewing or observing of professionals at work, and applied projects that ask students to make connections between theory and practice. For example, the Master of Public Administration (MPA) program focuses on training policy administrators for all levels and fields, including state and local government. Graduate students in accounting and the MBA program routinely work on team projects and case studies. Students in the MS program in the School of Nursing present two-hour seminars in which they teach their fellow students about topics in advanced therapeutic care. The change in the nature of assignments that has occurred in some graduate programs has added significantly to the number of opportunities for graduate students to obtain leadership experience. (3c)

Most, but not all, graduate and professional programs require a culminating experience as part of the degree program, or as an expectation upon graduation to demonstrate mastery of the subject matter. Graduates of the College of Law sit for the bar examination, and students in several professional health programs are required to complete a clinical experience. All PhD students are required to write a dissertation, and some degree programs, such as the PhD in geology and geophysics, require students to publish their work as a condition of graduation. (4b) This last requirement directly gauges students' readiness for the research expectations they are likely to face after they earn their degrees.

Role of clinical work, practica, and internships

(Core Components 2a, 4a, 4b, 4c, 5a)

Required practical experiences are staples of graduate education in the health and education disciplines. Of necessity, students in such fields as psychology, pharmacy, nursing, social work, communication disorders, counselor education, and educational leadership receive significant practical training in the field as part of their degree programs. (2a) The work of university graduate students in on-campus clinics and in clinical assignments at off-campus sites benefits the state's communities as well as the university's graduate students. The Speech, Language, and Hearing Clinic, the Psychology Clinic, and the Counselor Education Clinic are examples of programs on the Laramie campus that offer free services to community members, drawing clients from as far away as Rawlins and Saratoga, Wyoming. (5a)

For several graduate programs, an elective internship experience holds more value than writing a traditional thesis because such experiences lead to a life of learning and in many cases social responsibility. As a result, increasing numbers of internship opportunities are listed as part of the Plan B options. Students in the Department of Accounting can complete an internship or a service learning project in lieu of preparing a capstone project or taking a comprehensive examination. (4b) The international studies program advertises the Master's International Peace Corps degree as an alternative to the traditional degree which combines coursework, two journal-length papers, including an applied research project, and Peace Corps service. For programs that require a thesis, voluntary internships often become the basis for this work. Law students are encouraged to participate in externships after their first year of law school and to secure paid internships after their second year. The College of Law also sponsors five elective clinics for its third-year students. Several of the programs that encourage voluntary internships devote considerable department resources to help students secure positions. (4a)

Almost all graduate programs provide the opportunity for their graduate students to register for variable internship credit as part of their degree requirements. In programs where internships are not actively encouraged, the decision to include an internship experience may be made by the student and his or her graduate committee. (4c)

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Ethics instruction**(Core Component 4d)**

In the 2008 Graduate Program Coordinator Survey, faculty were asked to identify how they provide instruction in ethics, important for professional conduct in both research and practice. About a third of the programs require students to take formal credit bearing courses. A majority of the programs, 68 percent, embed ethics instruction in other coursework, and a small percentage, 16 percent, create department workshops. Most programs also provide ethics instruction through one-on-one mentoring. As a result of the Kaiser Ethics Project, the pharmacy program started an ambitious plan of infusing ethics into their entire curriculum. In addition to these departmental efforts, the Office of Research & Economic Development now offers a series of university-wide ethics workshops on a variety of issues. (4d) This office has also revised and expanded its Institutional Review Board Policies and Procedures Manual to guide the increasing number of faculty and graduate students who conduct human subjects research.

Leadership activities to encourage lifelong learning**(Core Component 4b)**

Co-curricular and professional activities are designed to enhance students' graduate experience. The university's graduate programs include opportunities for students to both engage in voluntary leadership activities as well as receive formal and informal instruction in leadership development. (4b)

Involvement in professional, disciplinary communities**(Core Components 4d)**

Graduate faculty strongly advise their students to join professional, disciplinary organizations and to present poster or paper presentations at professional conferences. Approximately 86 percent of the programs have found it important or very important that their students deliver research or teaching presentations at conferences. For the professional programs, student chapters of national professional organizations offer important leadership opportunities. (4d)

Involvement in departmental, college, and university committees**(Core Component 4a)**

Participation in committee work, which involves governance, curriculum development, planning, and assessment, is a significant way for graduate students to develop leadership skills and to become acculturated to the full life of the department and of the academic institution. Half of the graduate programs reported that their students formally serve on departmental, college, or university committees. Graduate students also participate in committee work on an ad hoc basis. Graduate students in the Department of English are

important members of the committees that shape and govern the department's delivery of English 1010, the required first-year writing course. When seeking new faculty, nearly all departments with graduate programs arrange meetings between candidates and graduate students as part of the hiring process. (4a)

Notably, only 11 percent of the students responding to the 2008 Graduate and Professional Student Survey reported that they have served on formal or informal committees of any kind, including hiring or admissions committees. This low number may reflect the fact that although there are opportunities for students to participate on committees, only a few are elected to do so. A department may elect one graduate student per year to serve on one committee. The fact that only half of the departments formally include students in their committee work, which constitutes important service opportunities as well as leadership development, suggests a need for institution-wide discussion of graduate student roles in departmental governance. The university should explore additional opportunities to involve graduate students in committee work at the departmental, college, and university level. These experiences are particularly important for those students preparing for a career in academia. (4a)

Student organizations and civic engagement

(Core Components 4b, 5b)

Graduate students belong to many of the Recognized Student Organizations (RSOs), in which they have the opportunity to serve as officers, lead projects, and promote social responsibility. In focus groups, graduate students reported that undergraduate students often regard them as mentors who have more knowledge and greater experience. Certainly one of the major benefits of a research university with a variety of graduate programs is this kind of dynamic mentoring relationship between undergraduate and graduate students. The mentoring relationship is especially strong in the disciplinary-based student organizations, some of which include both undergraduate and graduate student membership. The presence of disciplinary-based student organizations parallels the classroom learning experiences in several programs that have cross-listed 4000 and 5000 level courses. (4b)

According to the student survey, 55 percent said that civic engagement is important to them. Some departments actively encourage civic engagement. For example, graduate students in accounting serve the local community through the Voluntary Income Tax Assistance Program and law students also participate in periodic events organized to provide free legal advice in the community. Less than half of the students report that the university or their departments provide tools and resources to promote their engagement in civic activities. Students were asked to identify the civic activities they engage in. The resulting list is impressively diverse, and it suggests that given some encouragement and resources, more students might participate in volunteer or civic activities, both at the university and in their communities. (5b)

*Career services***(Core Component 2a)**

The professional programs in law, pharmacy, and business have created substantial career service offices that offer multiple ways for students to network with professionals and gain leadership experience. A few other departments have created in-house mechanisms for students to receive formal or informal career mentoring that includes advice about job searches and interviewing. In many departments, career counseling is primarily the role of advisors who work closely with their graduate students and who can offer important connections and resources in their career pursuits. (2a) The university's graduate programs in general are tasked in UP 3 to better follow their graduates' careers.

“Most departments in which GAs teach courses conduct orientation and professional development sessions to prepare them for the task, and many provide faculty mentors. The supervised teaching experience is a critical element in the preparation of future faculty.”

ROLE OF GRADUATE STUDENT TEACHING ASSISTANTS IN UNDERGRADUATE LEARNING**(Core Components 3b, 3c)**

Graduate student teaching assistants (GAs) are an indispensable component of the university's teaching and research enterprise. Graduate students are directly responsible for teaching approximately 10 percent of the credit bearing classes at the university. Graduate teaching assistants play an important role in the delivery of the University Studies Program through their teaching efforts in science laboratories, mathematics courses, writing and oral communication courses, and discussion sections of large lecture classes. GAs are involved, either as the responsible teacher or in a teaching support role, in an estimated 30 percent of the university's lower division courses. (3b)

Most departments in which GAs teach courses conduct orientation and professional development sessions to prepare them for the task, and many provide faculty mentors. The supervised teaching experience is a critical element in the preparation of future faculty. Student evaluations reveal that GAs are doing a good job of teaching undergraduate students. The university encourages and rewards excellent teaching by graduate students with departmental and all-university recognition, such as the annual Ellbogen Graduate Student Outstanding Teaching Award. (3c)

In addition, GAs often serve in key mentoring roles for undergraduate students in laboratories, field work, music performance groups, and other experiential education. The Department of Music distributes mid-year questionnaires to both its general graduate student population and to its GAs. Students are asked to assess program content, relationships with advisors, their own preparedness and progress, and leadership or mentorship opportunities. Other graduate programs could benefit by adopting this model to assess the multiple roles that graduate students play. (3b)

ASSESSMENT OF GRADUATE STUDENT LEARNING

(Core Components 1d, 2c, 3a, 3d, 5a, 5b)

The university's philosophy and history of assessment is fully described in Chapters 3 and 7. Institutional resources allocated to establishing successful assessment processes and practices apply to both undergraduate and graduate programs. (1d, 3d) When the university first began implementing its assessment processes, it focused on the undergraduate programs. As assessment evolved, departments and programs began including assessment of graduate programs at both the master's and doctoral level, but generally progress is a few years behind that of the undergraduate programs. (3a)

Assessment of graduate and professional programs occurs within the departments and programs. The process described for department and program assessment in Chapter 7 also applies to the graduate and professional programs. Department chairs provide an annual update of their assessment progress in their annual reports due to the deans each summer. The University Assessment Coordinators Committee reviews the assessment section of the annual reports and provides separate feedback to the departments regarding graduate program assessment. In addition to this internal review, select programs and colleges go through external accreditation review processes, making them accountable to other constituencies and communities. (5a, 5b) Examples include pharmacy, law, counselor education, and communication disorders.

The methods of assessment at the graduate level are varied and include multiple measures in order to provide the university reliable evidence regarding student learning. (2c) The primary direct assessment methods include the use of culminating experiences such as the dissertation, thesis, Plan B papers, qualifying or preliminary exams, portfolios, and internships and practicums. With regard to indirect assessment, individual programs and central university offices examine indicators such as time-to-degree, attrition, faculty productivity, number of student publications, passing rates on licensure exams, and student job placement or continuation in further graduate studies. Other indirect assessments conducted at the program level include alumni surveys, exit interviews, and focus groups.

From a 2009 review of the departmental annual reports, the University Assessment Coordinators Committee concluded that 68 percent of graduate programs have established student learning outcomes, although some programs are still trying to distinguish between master's and doctoral level outcomes. (3a) About 44 percent have collected direct evidence to demonstrate the achievement of some of the stated student learning outcomes, and 58 percent have collected indirect evidence. The number of programs that have used their data to make decisions regarding program changes (approximately 37 percent) is less than the number collecting data. (2c) Reasons vary for this lack of progress. Many programs are finding it challenging to locate students once they leave the university in order to conduct any meaningful follow-up. In many cases, the number of data points collected during one year is low because of low graduate populations. These programs must continue to collect data over time in order to have an adequate number of

Table 8.4. Summary of Assessment Progress in Graduate Programs

	Arts & Sciences	Agriculture & Natural Resources	Business	Education	Engineering & Applied Science	Health Sciences	Law	Inter-disciplinary	UW
	N=23	N=7	N=3	N=5	N=6	N=6	N=1	N=6	N=57
Learning outcomes are identified on the department Web page.	87%	43%	100%	100%	17%	83%	100%	0%	68%
The department has collected direct evidence of student learning.	48%	14%	100%	80%	17%	50%	100%	0%	44%
The department has collected indirect evidence of student learning.	70%	14%	100%	100%	0%	67%	100%	17%	58%
The department is using its assessment results and making changes based on results.	35%	14%	0%	80%	0%	50%	100%	17%	37%
The department has made progress from the previous year.	87%	14%	100%	100%	0%	50%	100%	0%	61%

Source: University Assessment Coordinators Committee

data points to draw any conclusions. Table 8.4 provides a detailed summary of the status by college and for the university, where differential progress can be noted.

At the institutional level, the university conducted a survey of all graduate and professional students in fall 2008 to assist with the self-study process and to provide additional indirect measures of student learning. The Carnegie Foundation study entitled *The Formation of Scholars* served as a foundation for the development of many of the questions included on the 2008 Graduate and Professional Student Survey and the accompanying 2008 Graduate Program Coordinator Survey. The results from these surveys were instrumental in examining specific aspects of the graduate experience from the student perspective and aided significantly in the examination of the university's graduate and professional experience conducted for the self-study, as evidenced by the many references to and interpretations of the survey included throughout this chapter. (2c)

Because the university first focused on the assessment of its undergraduate learning experience when it developed its assessment processes a decade ago, assessment at the graduate level is not as developed as at the undergraduate level. The university acknowledges there is more work to be done in this regard. On a positive note, faculty seem to be clear

about the distinction between undergraduate and graduate assessment and are working to strengthen assessment at the graduate level. Department annual reports and the accompanying feedback now distinguish between undergraduate and graduate programs, and University Assessment Coordinators Committee members supply specific feedback regarding progress on graduate assessment. (2c)

A few other areas for further improvement are worth noting. One area of graduate education that remains problematic for some programs is the delivery of diverse courses. Forty-three percent of the graduate faculty coordinators indicated that they are dissatisfied with the ability to deliver the array of courses their department or program desires. Comments from students and faculty provide additional motivation for the university to strengthen its emphasis on learning goals in graduate programs and to continuously review course offerings to ensure that they correspond to the program goals. (2c)

From the review of the annual reports over time, it is clearly evident that most programs are using the dissertation or thesis experience as a primary method of direct assessment. In working with many of these programs, the university assessment coordinators and university assessment specialist have encouraged programs to design either rubrics or another type of scoring guide by which faculty would assess these particular culminating experiences. This would help focus faculty on specific aspects of the experience related to particular learning outcomes and would provide overall consistency to the assessment. (3a) Another observation is that very few programs are currently using events where students present their research in front of larger audiences as a natural opportunity for direct assessment of student learning.

CONCLUSION AND KEY FINDINGS

Graduate education at the University of Wyoming is a quality option at a relatively low cost. This study indicates that graduate students attend the university largely because it is a good value, it is convenient, and it offers the specific programs they are seeking. The university has used its planning processes to help allocate resources for expanding programs and creating new ones. The creation of the School of Energy Resources, the hiring of endowed chairs, and the completion of major building projects have elevated the profile of graduate education, and several of the recently established graduate programs are rapidly establishing excellence. While significant progress has been made, the university has identified the following:

- **There is a need to improve the recruitment of graduate students and the retention of those students by identifying the best uses of additional funding to support graduate education.** This effort could address the need to better retain a diverse, high-quality student body through increased marketing efforts of exemplary graduate programs, as well as by fostering and preparing undergraduate students at the university for a graduate education. (UP 3 Action Item 61)

- **The quantity and level of the university graduate assistantships is a critical aspect of the university’s success.** While significant improvements in GA stipends have occurred since 2000, the institution can still improve in this area. Specifically, master’s and doctoral stipends should be increased to the national average of land-grant universities. The university would also benefit from increasing the number of GAs and effectively cycling graduate students through the GA funding that currently exists. (UP 3 Action Item 61)
 - **Established assessment of student learning processes must continue to evolve and be applied to the university’s graduate programs.** While it is evident that progress is being made in the graduate area, assessment at the graduate level does not yet match the progress at the undergraduate level. The university is confident that improvements at the graduate level will happen over time as the processes and mechanisms in place have a track record of making widespread institutional improvements. (UP 3 Action Item 63)
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