The Role of Research in the University of Wisconsin System

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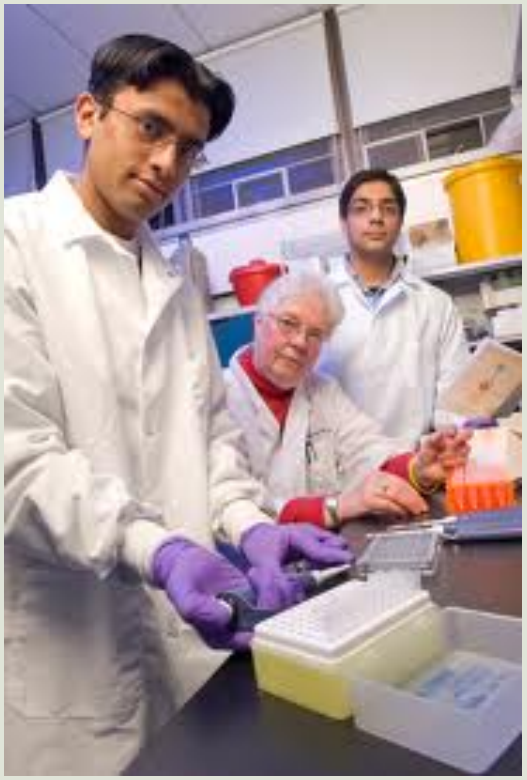
Faculty Scholarship

- Allows faculty to make contributions to their field
- Keeps faculty intellectually vigorous
- Increases the quality of classroom teaching
- Enhances the prestige of faculty/institutions
- Ability to bring in funding/economic development
- Provides an instructional mode for active learning
- Engages students in original scholarship



Landscape for Research at PUIs

- Virtually all newly hired faculty have research expectations
- Start up packages are now the norm in the natural sciences
- Tenure and promotion documents are being revised to incorporate these expectations
- Institutions are building or upgrading facilities to include research space and enhanced instrumentation
- Curricula are being modified to make them more “research rich”
- Teaching loads are being reduced so more research can be performed
- Grants and contracts offices are fueling interest in securing external funding

Engaged Learning

- Engaged forms of learning yield more educational effectiveness (transformational experiences)
  - National Survey of Student Engagement
  - *High-Impact Educational Practices. What They Are, Who Has Access to Them, and Why They Matter* (2008, AAC&U)
  - *College Learning for the New Global Century* (2007, AAC&U)
  - *Student Success in College: Creating Conditions that Matter* (2005, Jossey-Bass & AAHE)
  - *Greater Expectations: A New Vision for Learning as a Nation goes to College* (2002, AAC&U)
  - Others (e.g., NSF, NRC, PKAL, HHMI, Carnegie, Kuh et al., Barr & Tagg, Guskin, Astin, Pascarella, etc.)

Employers' Priorities

- Innovation in the Workforce (95% of employers say they give hiring preference to workers with skills that enable them to contribute to innovation in the workplace)
- Skills that cut across majors/disciplines
- Think critically
- Communicate clearly
- Solve complex problems
- Demonstrate ethical judgment
- Apply knowledge in real world settings

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Undergraduate Research Outcomes

- Innovation
- Skills that cut across majors/disciplines
- Think critically
- Communicate clearly
- Solve complex problems
- Demonstrate ethical judgment
- Apply knowledge in real world settings

Council on Undergraduate Research

- A national organization of individual (6,000) and institutional members (670) representing all disciplines and over 900 institutions of all types
- Eight disciplinary divisions: Arts & Humanities, Biology, Chemistry, Geosciences, Mathematics & Computer Science, Physics & Astronomy, Psychology, Social Sciences
- Two multidisciplinary divisions: At-Large and Under-graduate Research Program Directors

The mission of the Council on Undergraduate Research is to support and promote high-quality undergraduate student-faculty collaborative research and scholarship.

Student Benefits From UGR

Cognitive and Intellectual Growth –

Gains in Knowledge and Skills

- Greater gains in mastering both content and contextual knowledge
- Enhanced ability to put classroom knowledge into practice
- Increased creativity and critical thinking
- Enhanced problem-solving skills
- Enhanced communication skills, both oral and written
- Enhanced technical skills within the discipline
- Greater understanding of the intersections of disciplines

Student Benefits From UGR

Cognitive and Intellectual Growth –

Academic Achievement and Educational Attainment

- Higher retention rates
- Greater increases in course grades
- Greater persistence in the major
- Higher graduation rates
- Higher rates of acceptance into and enrollment in post-baccalaureate education (graduate/professional schools)

Other

- Increased connection to the major department and the institution
- Greater participation in intellectual activities within the discipline and the intellectual life of the campus

Student Benefits From UGR

Professional Growth and Advancement

- Enhanced ability to work collaboratively with others in teams
- Stronger relationships with mentors and other professionals
- Deeper integration into the culture and profession of the discipline
- Enhanced ability to identify and make informed decisions about appropriate career interests
- Enhanced professional credentials
- Higher rates of acceptance into and enrollment in post-baccalaureate education (graduate/professional schools) and/or directly securing employment in the workforce

Student Benefits From UGR

Personal Growth and Development

- Stimulation of curiosity
- Enhanced ability to learn independently
- Enhanced development of personal initiative
- Increased confidence
- Enhanced ability to understand the philosophy of lifelong learning
- Greater recognition by peers
- Enhanced opportunity to serve as an academic role model

CUR's Workshop Program –
Institutionalizing UGR

- *1996 – present*:
  - Offering 1-2 national-level workshops annually, as well as workshops to groups of institutions and/or to individual campuses upon request.
- *2007 – present*:
  - Offering several series of workshops in targeted programs funded by the National Science Foundation.
- Served teams from ~500 institutions to date (over 2000 faculty/administrators)

Scope of the Workshop Program – NSF-funded Efforts

- *2007-2009*:
  - Offered regional workshops designed for 90 **emerging institutions**, those that did not have a tradition or culture of campus-wide engagement in undergraduate research. (NSF-CCLI, Type 2 Award)
- *2010 – present*:
  - Offering workshops to assist **community colleges** to develop effective and sustainable undergraduate research programs. (NSF-CCLI/TUES)
  - Offering workshops for 6 **state systems and public and private consortia** to improve the quality of undergraduate education at each of the constituent campuses and within the larger systems/consortia. (NSF-CCLI/TUES, Type 3 Award)

CUR's Current System/Consortium Program

- Workshop program for **state systems and public and private consortia** to improve the quality of undergraduate education at each of the constituent campuses and within the larger systems/consortia.

- Systems/Consortia were selected on the basis of:
  - their need and readiness for participation in the project, and
  - their commitment to system/consortium-level change.

- The program was highly competitive:
  - 24 applicant systems/consortia,
  - 6 selected.

Participant Systems and Consortia

- 6 systems/consortia
- 80 institutions
- 292 faculty and administrators
  - Council of Public Liberal Arts Colleges (23 institutions)
  - University of Wisconsin System (8 institutions) – Sept 23-25, 2011
  - California State University System (9 institutions)
  - City University of New York System (11 institutions)
  - Great Lakes Colleges Association (10 institutions)
  - Pennsylvania State System of Higher Education (14 institutions)

Workshop Goals

- Provide teams with information on the status and landscape of undergraduate research at the national level
- Help the each System/Consortium in building and enhancing a culture that supports undergraduate research, both at the individual institution level and the System/Consortium level
- Assist Wisconsin and the constituent campuses in articulating goals for institutionalizing undergraduate research, as well as developing strategies to achieve these goals on each campus
- Help identify common challenges and opportunities among the campuses and help develop an integrated approach, supported by the central office, that will aid in expanding the undergraduate research capacity throughout the System

Goals Generated at Initial Workshop

- Connect UGR to essential campus goals
- Set up a research committee
- Deliver workshops to campus
- Capture indirect costs
- Promote best practices
- Create a more scholarly atmosphere
- Change promotion/tenure policies
- Collect baseline data
- Target student success/retention to UGR
- Define UGR on campus

Goals Generated at Initial Workshop

- Institute an UGR office
- Increase # of underrepresented students in research
- Reduce student barriers
- Reward faculty for participation
- Establish data base to connect students with faculty
- Include UGR in department documents
- Develop assessment plan
- Probe faculty workloads
- Connect UGR to capstones

Goals Generated at Initial Workshop

- Infuse curriculum with research
- Build system-wide programs
- Develop a system-wide Council
- Enhance infrastructure to support UGR
- Share best practices
- Increase faculty compensation
- Develop community based connections
- Promote interdisciplinary UGR
- Regularize mentoring quality
- Set desired outcomes for UGR

Follow-up Workshop

- Foster continuing interactions among Wisconsin campuses, focused on enhancing a culture that supports undergraduate research.
- Provide support during a critical point in the implementation of campus plans.
- Ensure the long-term and sustainable institutionalization of undergraduate research within and among the Wisconsin system.
- Workshop at Oshkosh included the most stimulating series of conversations in entire grant process

The key implementation goals cited as most effective

- Curriculum changes to incorporate/integrate UGR
- Finding new sources of funding
- Establishing an UGR campus office and/or UGR Committees
- Providing incentives for faculty involvement
- Marketing and communication with the campus community (advocacy)
- Engaging campus administrators and motivating them to include UGR in campus planning and budgeting
- Integrating UGR into faculty workload
- Faculty development (e.g., workshops on implementing UGR)

Strategies Considered Most Challenging to Implement

- Integrating UGR into the curriculum
- Changing faculty workload to accommodate UGR
- Establishing an UGR campus office
- Obtaining external funding
- Incorporating work with UGR into faculty incentives for promotion or tenure
- Find balance between top-down planning and on the ground execution

Additional Implementation Hurdles and Campus Needs

- Resource scarcity
- Need for more faculty buy-in
- Improvement of administrative infrastructure
- Faculty time constraints and incentives
- Interest in knowing about other campus models—best practices
- Funding needs
- UGR across the many disciplines
- Having CUR facilitate connections to other campuses/faculty
- How to deal with resource scarcity

Lessons Learned from Systems/Consortia

- Challenges for system/consortium level administrators include:
  - Getting accurate information about the status of UGR on different campuses.
  - Configuring prospective assistance to match widely varying campus needs.
  - Figuring out how to get widely different campuses to share a reasonably consistent vision for UGR.
  - Maintaining a shared vision when personnel change at both the campus and system levels.

Best Campus Practices in UGR

- Departments and campuses have a vision for why they do research
- They determine the purpose of including students (enhancing admissions, retention, diversity efforts, intellectual climate, increased external funding, increasing numbers of students going to graduate school, economic development, etc.)
- There is widespread input and acceptance of this vision
- They align their vision with goals and strategies
- They target resources to their goals
- There is faculty buy-in that includes incentives and a lowering of barriers to participation
- Leadership, leadership, leadership.

The University of Wisconsin System as a National Leader in Undergraduate Research

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Why can/should the UW System be the National Leader in UGR?

- UGR started at private, liberal arts campuses but its future is at public, comprehensive/research universities
- UW System is one of the most respected in the country
- Members of system already have provided substantial leadership in the world of UGR
- Talented faculty already in place who buy into UGR
- Focus on economic development and innovation plays to strength of UGR
- Ongoing conversations over the past two years have yielded common trust and understanding
- Only other system in position to lead effort is CSU

How can the UW System become the National Leader in UGR?

- Work on this effort as a System rather than as individual institutions
- Identify leaders on each campus who will lead this effort
- Share best practices through system-wide network
- Provide support for each individual campus through a System-wide grants program
- Think beyond the UW System—how do you share what you know/are learning with others? Conferences, workshops, CUR activities, leadership positions…..
- We are holding a summit in spring, 2014 of all systems to further share best practices