

Politics and Higher Education: Potential Barriers to Undergraduate Research at Public Comprehensive Institutions

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Numerous institutions of higher education have implemented successful undergraduate research programs. In developing these initiatives, it is likely that a variety of obstacles had to be surmounted, including: a mission statement or campus culture that did not previously prioritize research; budgetary issues; competing demands on faculty time; and facility deficiencies. Despite the success stories, many campuses have yet to institutionalize undergraduate research, suggesting that additional hindering factors may exist. Given that state and local politics can significantly impact higher education, it seems plausible that political factors may influence the development and sustainability of campus research initiatives. This may be especially true for public comprehensive institutions that are accountable not only to parents, students, and alumni, but also to a wide range of political constituencies including a governor, state legislators, state boards of education, a state and local board of governors or trustees, and taxpayers.

Background: Public comprehensive institutions are controlled by a state governance system, have historically been funded primarily from state taxes, and have a tradition of low or moderate tuition charges (1). Many were founded as teachers colleges (normal schools), and the strong emphasis on teaching and teacher education continues. In 1989, the American Association of State Colleges and Universities (AASCU) reported that its 370 member institutions produced 1/3 of the nation's baccalaureate degrees, but received only about 1% of the national research funding, and claimed that this funding distribution “*underutilizes the nation's scientific talent and does not assist effectively in the crucial need to integrate research with science instruction*” (1).

Nationally, the percentage of state-appropriated funding for public institutions has decreased over the past two decades, leading to dramatic increases in tuition, significant cost-saving measures, and a move to state-assisted, rather than state-supported, institutions (2 - 4). The net price (tuition minus grant aid) of the cost of a college education over the past decade has increased more for students attending public institutions than private institutions (4). Despite the decreased state financial support, there has been increased centralized control of public institutions through state governments and/or system-level administration and greater scrutiny of performance at a time of declining confidence in higher education (5).

Political Influences on the Institutional Mission: An institution's history, mission, and goals largely determine the appropriate balance between teaching and scholarship. Although most public comprehensive institutions officially became *universities* over two decades ago, many are still trying to define what this label means operationally and are grappling with determining the role of research within a culture that continues to strongly value teaching. In some cases, the mission is defined by state legislation, leaving little room for a campus to define its own culture and priorities. In the communities surrounding these campuses, the traditional reputation of the school as a teachers college persists.

Legislators clearly differentiate between the roles of comprehensive vs. research (R1) institutions, both in their public comments and their legislative actions. They, along with the general public, expect tax dollars to support accessible, low-cost, quality education at the comprehensives. Headlines proclaiming that “Research Grants Actually Add to Tuition Cost, Study Claims” (6) or reports entitled “Do Academic Research Costs Drive Up Undergraduate Tuition” (7) do little to garnish external support for research initiatives at these institutions. In some cases, external constituents, unaware of its educational value, view research simply as a pursuit of a faculty

member's personal interests that instead detracts from the quality of teaching students receive. In this climate, some schools market themselves as "different" from the large research institutions – touting their strengths in teaching and stopping short of implying that research and teaching are mutually exclusive.

Such (mis)perceptions coupled with the current unfavorable economic climate have the potential to both endanger existing undergraduate research programs and thwart efforts to develop new initiatives. The period between 2001 to 2003 brought the worst fiscal news for public higher education in at least a decade; tuition and fees increased in every state, in some cases by as much as 24% (8). Existing undergraduate research programs may be viewed by some as expendable luxuries if they are considered to be central to the main teaching mission.

Sometimes, the message that research has a minimal role at public comprehensives is inadvertently projected by what is not said. For instance, in AASCU's Public Policy Agenda 2003 (9), research is mentioned only in the contexts of agricultural research at land grant institutions and applied pedagogical research in education departments (note the ties to the historical mission of these institutions). Interestingly, the report states "AASCU institutions will play an essential role in providing the requisite science and technology education and training for a competitive workforce in the global economy of the 21st Century" (9). Without a corresponding goal of ensuring support for vibrant research programs on campuses, it is difficult to envision how this educational objective will be met.

Given the strong value attributed to teaching at public comprehensive institutions, undergraduate research must be promoted in terms of how it improves teaching and learning:

- "The most important challenge for undergraduate education" ... "is to integrate a culture of research into the curriculum. As the pace of discovery continues to accelerate, teaching approaches that present a static pool of information are increasingly limited. In contrast, students who learn the logic of experimental design and data analysis are better prepared to assimilate new information and are more likely to be active participants." ... "Students develop an authentic passion for scientific discovery and realize that scientific thought truly does not require loads of memorization, but an understanding of major themes." ... "the engagement of students in the process is vital to satisfying inquiring minds and must become integral to a student's education." –PKAL F21 Statements, 2002 (10)

- "The non-researcher is too often limited to transmitting knowledge generated by others, but the scholar-teacher moves from a base of original inquiry." ... "students should be taught by those who discover, create, and apply, as well as transmit, insights about subjects in which the teacher is expert." (11)

Undergraduate research should also be incorporated into accreditation standards. Strong statements about the need for undergraduate research from national organizations like the American Chemical Society, however, are insufficient. Regional agencies that accredit institutions of higher education typically link accreditation reaffirmation to an institution's mission and its ability to assess student-learning outcomes. If an institutional mission statement doesn't mention research, or if clear assessment measures of the educational outcomes of undergraduate research are lacking, it is unreasonable to expect that research will be emphasized in an accreditation review process.

The Politics of Accountability: In times when states are faced with competing priorities and limited financial resources and families are struggling to meet escalating tuition costs, institutional accountability is increasingly being scrutinized. Performance indicators based on productivity and

efficiency have become the current definition of accountability, and success in satisfying these measures is often the basis for funding allocations -- hence, the term performance-based funding (5,12). Easily quantifiable factors such as faculty workload (i.e. hours in the teaching classroom and number of students taught), retention, and graduation rates are used to measure an institution's "success". Independent research projects, characterized by a low student to faculty ratio, don't bode well under these formulas, regardless of their educational benefits.

When accountability is equated with productivity, numbers of majors and graduates become measures of a department's productivity. The report of the Boyer Commission (11) notes "*the principal barrier to interdisciplinary research and study has been the pattern of university organization that creates vested interests in traditionally defined departments*". Furthermore, "*University budgets are now based on the principle of departmental hegemony; as a result, important innovations such as new approaches through interdisciplinarity are often doomed for lack of departmental sponsorship. Departments necessarily think in terms of protecting and advancing their own interests, defined in terms of numbers of faculty, courses, and majors.*" (11). This is disturbing, given the significant proportion of scientific research now conducted at the disciplinary interfaces or through multidisciplinary collaborations. The interdisciplinary emphasis in research is, unfortunately, not sufficiently modeled in academe given the artificial departmental "silos" that are all too common.

Ironically, many current institutional priorities (developed in response to state directives) including recruitment, engagement of students in the learning process, learning outcomes, enhanced retention and graduation rates, advisement, and fund-raising could be addressed, in part, through undergraduate research opportunities. "*From administration on down, institutions of higher education must recognize the roles that scholarship and research play in attracting high quality enthusiastic students*" (10). The National Survey of Student Engagement 2000 Report describes five national benchmarks of effective educational practice developed from extensive survey data and research literature on factors that impact student persistence or retention (13). Undergraduate research contributes positively to four of these benchmarks by providing "Academic Challenge" and "Enriching Educational Experiences", and leading to opportunities for "Active and Collaborative Learning" and "Student Interactions with Faculty Mentors". In addition to supervising research, faculty mentors teach, advise, do career counseling, and serve to develop professionally young adults who will soon enter the workforce. Science faculty are keenly aware of the value that research experience has in enabling students to get into graduate programs and top entry-level industry positions. Successful graduates do much to advance an institution's reputation (and in turn, its ability to raise funds).

Campus administrators may recognize the educational benefits of undergraduate research, and students and parents can easily appreciate future career benefits resulting from undergraduate research opportunities. The real challenge, however, lies in conveying the value of undergraduate research to system administrators and state politicians by finding a way to quantify these benefits in tangible terms that are in line with the business accounting models currently in use. Anecdotal data will not suffice.

New Politically-based Agendas: State legislators have begun to redefine the mission of the public comprehensives to include economic development. Campuses are being urged to not only partner with regional industries, but to also serve as catalysts for the development of new companies -- especially in "high-tech" fields. Institutions are rewarded with economic development funds and capital for buildings and equipment that would not otherwise be available. The Reinvention Center at Stony Brook has identified this trend toward community and business partnerships with academia as a "reinventions" in higher education (14). Public comprehensives have lagged behind the R1

institutions in this movement, but see this as a path to enhanced revenue streams. Despite often lacking the entrepreneurial expertise, technology transfer offices, or intellectual property policies on campus that are the norm at R1 institutions, administrators at the comprehensives are nevertheless establishing industrial research partnerships and business accelerators, and are initiating conversations about research parks. There are new expectations for faculty to interface with local industries, even if a faculty member's expertise and research interests have little to do with the projects being discussed.

While such initiatives may lead to many benefits for an institution, they can also lead to a shift in institutional mission away from educational priorities. Caution must be exercised here. Projects should provide opportunities for students (research, internships, jobs, etc). Given the teaching loads typical at public comprehensives, faculty time-demands must be carefully considered. Institutions should take care to preserve an appreciation for the importance of basic scientific research and avoid a situation where only *applied* research (i.e. that which has immediate financial benefits for the institution) is valued.

Tied to this academia/economic development movement is a new emphasis on workforce training. Legislators view this as a critical role of public institutions in order to provide training for displaced workers and in new high-tech areas (14,15). Thus, there is pressure on public universities by both legislators and state system governing boards to design accelerated degree completion programs, credit-for-work experience, distance education links to industry sites, and other options for non-traditional "adult learner". A rapidly growing percentage of the student body at these institutions is now "non-traditional"; this cohort comes to campus with substantial workplace experience and a strong desire to gain the necessary new *training* in as short a time as possible (15). What role does undergraduate research play for these students? New initiatives designed to address this student population place further strains on an institution's financial resources and faculty time demands.

Conclusions: Despite the many political barriers faced by public comprehensive institutions, change in mission can occur. Evidence of this is seen in new initiatives related to economic development and workforce training, and the fact that many campuses have established successful undergraduate research programs. Faculty members at such schools cite the following as critical components to enable a change of culture: a core of faculty committed to undergraduate research; a strong advocate within administration; and collaborations with colleagues at other institutions and/or partnerships with industry. However, more needs to be done to help institutions still facing barriers in their attempts to develop (or maintain) undergraduate research programs, especially in the current economic climate. Individuals and organizations that clearly understand the value of undergraduate research in the educational enterprise must become politically active. Opportunities to educate the various stakeholders must be sought out. The Council on Undergraduate Research "Posters on the Hill" model (16) could be used to organize research days at state capitals. Letters and calls to legislators as well as more formal lobbying efforts aimed at state system administrators and elected politicians are musts. Faculty and students should make non-technical presentations to the public to illustrate the value of research in the curriculum and in society. Finally, good assessment tools for determining the true educational rewards of undergraduate research (expressed in quantifiable terms) would go a long way in convincing administrators and others of the benefits of institutional and state investments aimed at supporting research opportunities.

References:

1. Formula for Reform. The Role of the Comprehensive University in Science and Engineering Education (1989) The American Association of State Colleges and Universities and the National Science Foundation.
2. AASCU State Issues Digest 2002 (accessed on 7/10/03) www.aascu.org/policy/sid_02/facts.htm
3. Grapevine Center for the Study of Educational Policy: A National Database of State Tax Support for Higher Education (accessed on 7/10/03) <http://coe.ilstu.edu/grapevine/Welcome.htm>
4. National Education Association Higher Education website (accessed on 7/10/03) <http://www.nea.org/he/fiscalcrisis/>
5. Gibbs, A, "Changing Government Roles Relative to Higher Education" in Higher Education Trends for the Next Century: A Research Agenda for Student Success (ACPA website accessed on 7/10/03) <http://www.acpa.nche.edu/seniorscholars/trends/trends9.htm>
6. "Research Grants Actually Add to Tuition Cost, Study Claims;" *Chicago Tribune*, January 1996, front page article by Ron Grossman.
7. Lehming, Rolf, F. (1997) "Do Academic Research Costs Drive Up Undergraduate Tuition?", National Science Foundation Directorate for Social, Behavioral and Economic Sciences, NSF 97-313.
8. Trombley, William (2003) "The Rising Price of Higher Education" in College Affordability in Jeopardy (accessed on 7/10/03) http://www.highereducation.org/reports/affordability_supplement/affordability_1.shtml
9. AASCU Public Policy Agenda 2003 (accessed on 6/20/03) www.aascu.org/profiles/programs/china/ppa03/science.htm
10. Recommendations for Action in Support of Undergraduate Science, Technology, Engineering and Math: PKAL Report on Reports 2002 (accessed 6/20/03) <http://www.pkal.org/documents/ReportonReports.pdf>
11. Reinventing Undergraduate Education: A Blueprint for America's Research Universities (1998) The Boyer Commission on Educating Undergraduates in the Research University. State University of New York at Stony Brook (accessed 7/10/03) <http://naples.cc.sunysb.edu/Pres/boyer.nsf/>
12. Stephens, Linda (2000) "Performance Based Funding" (accessed on 6/20/03) <http://www.coe.ufl.edu/Leadership/Distance/6195/group2/group2notes/PerformanceBasedFunding10A.html>
13. The National Survey of Student Engagement 2000 Report (accessed on 7/10/03) <http://www.iub.edu/~nsse/acrobat/report-2000.pdf>
14. Reinvention Center (accessed 7/11/03) <http://www.sunysb.edu/Reinventioncenter/then-now.html>
15. Wlodkowski, Raymond J., Mauldin, Jennifer E., and Gahn, Sandra W. (2001) Learning in the Fast Lane: Adult Learners' Persistence and Success in Accelerated College Programs, the Lumina Foundation for Education (accessed 7/11/03) <http://www.luminafoundation.org/Publications/New%20Agenda%20Series/FastLane.pdf>
16. Council on Undergraduate Research Posters on the Hill (accessed on 7/11/03) <http://www.cur.org/postersession.html>