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Our Universities: Undergraduate Research

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Our Universities: Undergraduate Research

Fifth in a Series on Research

Good students, those academically inclined and motivated to learn, value opportunities for research as undergraduates.

If you are an undergraduate who thinks that research is only for faculty and graduate students, you have no idea what you are missing!

Bekah Zaiser, Undergraduate Researcher, Dr. Christine Miller's Lab, University of Florida

Research and scholarly work at universities is usually thought of in the context of graduate studies. Certainly graduate students engage in the preponderance of research teamed with professors: such action develops and replicates scholarly minds to positively impact the student experience for all, at every level.

There is a trend among national research universities and liberal arts colleges to increasingly engage undergraduate students in the research and creative enterprise. The importance of this commitment is demonstrated in many ways.

US News and World Reports best colleges' analysis includes institutions such as Caltech, Carleton, Carnegie Mellon, the College of Wooster, and Dartmouth College as national leaders in creating and sustaining emphasis on research, scholarly and creative work for undergraduate students. While the top five institutions are prestigious, smaller seats of study, the top 25 institutions include Ohio State, Berkeley, UCLA, Michigan, Nebraska, and Virginia Tech among others -- big publics.

The tendency is undeniable. Good students, at good universities, desire this mentor driven interaction and the challenges it creates. In 2002, Southern Illinois University Carbondale developed an undergraduate research assistantship program, funded at \$800,000 a year, to support undergraduates in work related to their area of study. At a pay rate exceeding minimum wage, deserving undergraduates worked with faculty or staff in a research/internship role intended to engage students in intellectual work, research and scholarly activity associated with their study interests. And, pay some bills.

In a January 3, 2010, *Chronicle of Higher Education* piece, *Needed: a National Strategy to Preserve Public Research Universities*, Paul N. Courant, James J. Duderstadt, and Edie N. Goldenberg missed the boat in citing important issues for research universities and public policy. They did not address research for undergraduates. The influx of international students to U.S. institutions comes in significant measure from secondary schools that treat students as the best U.S. universities treat undergraduates. And, we are, at great national expense, losing our edge. Creating intellectual challenges for undergraduates with diligent, individually directed, faculty-mentored discovery learning will improve international competitiveness for U.S. ideas.

James M. Gentile, President of the Research Corporation for Science Advancement, suggested in *Science Education: The Value of Undergraduate Research*, that the benefits of undergraduate research are high and getting higher, especially as the U.S. continues to lose ground in the international knowledge generation arena.

It would surprise no one that the *Council on Undergraduate Research*, a national organization of people and institutions numbering nearly 4000 members, concurs: Undergraduates engaging in research are both better students and better campus citizens. The *Journal of Undergraduate Research*, published by the College of Arts and Letters at the University of Notre Dame and edited by students from around the nation, evidences a quality of work that is remarkable.

The research, scholarly, and creative intensity of our universities will be more successful if institutions foster a better educational environment that reinforces the discovery and creative experience throughout the undergraduate curriculum. Students receive the benefit of seeing a project from inception to completion rather than the typical experiences in lecture halls and laboratory of a "snippet-based" approach to knowledge generation and learning.

And this is not a one way street. Faculty members get research ideas from students, according to S.F. Chopin's reflection in *The Anatomical Record*. Too frequently research and scholarly work is portrayed as a benefit to the university because it generates cash flow, or a means for achieving tenure and promotion. Too bad.

And it is not a new idea. In 1899, 250 doctoral degrees were awarded in the U.S. In 1999, 400 institutions produced 40,000 PhD's according to the National Science Foundation. In the 19th century there were few graduate students to carry out research with faculty. Undergraduates helped. In the U.S. post WW II era, almost all research at universities had shifted towards graduate students. A lost opportunity for the best students to begin research in the early years of university life has been consigned to the collegiate cultural norm. Too bad.

In our forward-looking universities, good undergraduate students contribute to faculty insight every day. The best faculty members crave the chance to work with engaged undergraduates. They know the secret: In enlivened teaching, you always get more than you give. And that is good for everyone.