

WHAT WORKS - A COMMUNITY DECLARATION

A JOINT STATEMENT IN SUPPORT OF UNDERGRADUATE RESEARCH

We believe that undergraduate research is the pedagogy for the 21st century. As an increasing body of evidence makes clear, inquiry-based learning, scholarship and creative accomplishments can and do foster effective, high levels of student learning at a variety of public and private postsecondary locations, including doctoral and research institutions, comprehensive universities and liberal arts colleges.

In order to make clear what we mean by this curricular approach, this statement of principles attempts to define briefly but clearly why we advocate a pedagogy and academic outlook that:

- ◆ combines teaching and research, two historic poles of a professional dichotomy, into one integrated pedagogy and system of performance. In undergraduate research, scholarship and teaching may not be as separable as conventionally thought or practiced. In undergraduate research, teaching and scholarship become parts of one simultaneous, overlapping, shared process
- ◆ replaces traditional archetypes of teacher and student with a collaborative investigative model, one using research done with a mentor or done jointly by students and teachers – a new vision portending a major shift in how scholarship in the academy is practiced in a broad range of disciplines
- ◆ replaces competitive modes of inquiry with ones more focused on collective and collaborative work, offering an enlivening and exciting new heuristic
- ◆ motivates students to learn by doing. With faculty mentors, students engage directly in practicing the work of their discipline while they avoid passively acquiring knowledge that that discipline has produced
- ◆ promotes both new research and a student’s analytical and communicative skills from the student’s first days within the college experience
- ◆ creates internal networks to support these collaborative learning efforts. Any campus that motivates its students to learn through individual and collaborative research – and can find ways to support these intellectual journeys with the necessary human and material resources – provides its students with a first-rate education.

A LEARNING PROCESS. Undergraduate research is a comprehensive curricular innovation and major reform in contemporary American undergraduate education and scholarship. Its central premise is the formation of a collaborative enterprise between student and faculty member - most often one mentor and one burgeoning scholar but sometimes (particularly in the social and natural sciences) a team of either or both.

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STATEMENT INTRODUCTION

Under the leadership of NCUR (National Conferences on Undergraduate Research), together with CUR (Council on Undergraduate Research) and a wide number of other professional societies including PKAL, a joint statement was crafted that identifies key principles that define undergraduate research in its contemporary context.

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This collaboration triggers a four-step learning process critical to the inquiry-based model and, congruently, several of its prime benefits:

- ◆ identification of and acquisition of a disciplinary or interdisciplinary methodology
- ◆ setting out of a concrete investigative problem
- ◆ carrying out of the actual project
- ◆ dispersing/sharing a new scholar's discoveries with his or her peers – a specific step traditionally missing in most undergraduate educational programs.

The workplace, like the academy, is increasing interdisciplinary; research often occurs at the boundaries of disciplines. Guided discovery, solution-directed study, and problem-based learning are all advancing rapidly.

Undergraduate research occurs in different forms in different disciplines and is at differing stages at different institutions.

Undergraduate education, however, is an essential mission of virtually all institutions, as both the Boyer Commission and the Carnegie Commission reports have made clear, calling for the vertical integration of research faculty and teams those who teach undergraduates. Separation of research and professional faculties represent an increasing clear obstacle to either effective learning or quality research.

We who endorse undergraduate research, scholarship and creative accomplishments have experienced directly its efficacy in advancing student learning, including the knowledge, skills and dispositions critical to academic success.

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Not only do we believe undergraduate research is a critical component of undergraduate education, but a series of recent studies has demonstrated the critical role undergraduate research plays in student learning (Bauer and Bennett, 2003; Kardash, 2004; Lopatto, 2003; Seymour, Hunter, Laursen, and DeAntoni, 2004), in the retention of diverse students in fields in which they are underrepresented (Nagda, Gregerman, Jonides, von Hippel, and Lerner, 1998), and in students' pursuit of graduate education (Hathaway, Nagda, and Gergerman, 2002; Kremer and Bringle, 1990).

KEY FINDINGS. Key findings of these studies include:

- ◆ undergraduate researchers experience gains in specific skills such as making use of primary literature, formulating research hypotheses, interpreting data, and communicating the results of research (Kardash, 2000, 2004)

- ◆ they show measurable gains in sophistication of epistemological reflection (Rauckhorst, Czaja, and Baxter Magolda, 2001)
- ◆ they experience personal gains in independence and self-confidence (Seymour, et al., 2004)
- ◆ they show gains in career clarification and career preparation (Lopatto, 2003; Seymour, et al.)
- ◆ they persist in their pursuit of an undergraduate degree at a higher rate than comparison groups (Nagda, et al., 1998)
- ◆ they pursue graduate education at a higher rate than comparison groups (Hathaway, et al., 2002)
- ◆ and as alumni they retrospectively report higher gains than comparison groups in skills such as carrying out research, acquiring information and speaking effectively (Bauer and Bennett, 2003).

CONVICTIONS AND COMMITMENTS OF THE COMMUNITY. We are proud to associate our names and those of organizations we represent to the advancement of undergraduate research as a significant pedagogical and academic innovation and a prime element in contemporary educational reform.

We advocate the use of undergraduate research, scholarship and creative activities within all academic disciplines and at all varieties of educational institutions.



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We believe that students can become active scholars throughout their undergraduate education, not only in the last states of their undergraduate careers.

We support faculty development efforts that assist faculty in mentoring student scholarship.

We advocate curricular reform within the fine arts, humanities, social sciences, science, and in applied professional programs that incorporates these principles within the best practices for each discipline.

We support state and national funding for undergraduate research in all disciplines, and urge inclusion of such programs of support within public and private governmental and non-governmental programs that serve to advance the arts, sciences and professional programs. ■

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