

Explorations

An Undergraduate Research Journal

Volume 4, 2001

University of California, Davis

“Makin’ It in School”:

**How At Risk Kids Stay in High School and Maintain
Optimistic Aspirations**

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Maggots, Murder and Mayhem:

A Search for a Biochemical Clock

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Accountability for Sustainability

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Explorations: A Journal of Undergraduate Research accepts contributions from undergraduate students at the University of California, Davis. Contributors should submit two copies of the double-spaced manuscript, as well as a computer disk copy (either Macintosh or PC) in an appropriate word-processing format. Legible figures and photographs may be included. Names of contributors should appear on the title page only. For essays in the humanities, citations and bibliographies should conform to Modern Language Association style. Essays in the social and natural science should follow the accepted style of the discipline.

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Editor's Preface

When surveying the “infinite variety” and the impressive quantity and quality of thesis research and writing over the years, one can only be amazed. How much inspiration, how many hours of mentoring and personal dedication, even sacrifice, must lie behind this outpouring of knowledge? How have so many of our faculty members, with their obligatory classroom and laboratory preparations, their multiple teaching assignments, their own research and publication concerns, continued to show such enthusiasm and personal involvement as they have for so long a time? The fact that they have speaks to why and how the university is an unfathomable source of riches. We see why and how it can produce scientists, musicians, businesspersons, social scientists, doctors, writers—and perhaps most of all, teachers. Through this lens, we witness the university quietly producing unsung lovers of learning—those who pursue what to some may seem obscure but which has become personally meaningful, students who hook onto a floating idea, bring it down before their faces, and turn it over and over again, with ever-growing insight and interest.

Research always invokes the basic question, *What is knowledge?* To say that one of the primary functions of a research university is the creation and production of knowledge is to state a truism. Yet knowledge comes in a variety of forms and shapes, some of which are more evident and visible than others. Research that brings forth new knowledge commonly addresses a variety of issues. Some kinds of knowledge are linked to practical ends, and help solve current problems, whether they be scientific or humanistic. Other kinds of knowledge might be labeled “pure knowledge”: knowledge created for the sake of understanding. In the infinite variety of scholarly writing, whether in the medical, physical and natural sciences, or in the social sciences and the humanities, knowledge created in one context that might at one time appear to be “pure” might at another time or in a different context come to have critical bearing on “applied” research.

In the university environment we must always bridge and go beyond debates and apparent dichotomies such as those involving pure and applied research. In the pursuit of knowledge and in the ability to

transmit it, the university must be committed to a sense of excellence, since teaching is one of the primary vehicles through which knowledge is conveyed and opened to question and debate.

Within this context, the undergraduate experience is truly unique. Students take courses in their majors, they take general education courses, they take courses which are listed as “diversity,” and so on. In some cases, over time, the yearning to create one’s own research, where the facts and ideas are held in one’s mind and eventually as pages in one’s hand, produces an excitement that is truly exceptional.

If teaching is the formal side of conveying knowledge and the fruits of one’s research, the role of mentoring between faculty and students is more intangible and even more elusive. Mentoring occurs in offices, in laboratories over scientific apparatus, in library stacks and in coffee shops. Teachers are rarely recognized officially or given awards for mentoring *per se*, and a gifted teacher may be limited in his or her ability to mentor, but a good mentor is *always* a good teacher, at least in the one-on-one situations in which mentoring usually occurs. The close contact over a mutual piece of research between teacher/mentor and student requires the ability to tack back and forth across a broad spectrum of issues ranging from subject matter to empirical evidence, from theoretical implications to methodology, while attending to all of the details that any kind of original research involves. The depth and variety of a university faculty’s intellectual interests are expressed not only in teaching but also in the ability to hone in on research projects both small and large that require close collaboration between teachers and students.

The vitality of the faculty thus reaches undergraduate students in an infinite variety of ways. Research at the undergraduate level is not a one-way or a one-shot matter. Among the published articles in this volume, Chamberlain’s analysis of continuation high school students’ participation and their educational and vocational aspirations required hours of in-depth qualitative interviews in a California high school. Melton’s analysis of maggots and biochemical changes required the ability to use highly technical scientific apparatus from which findings are re-confirmed. In her cost-benefit analysis of the United States military presence in Korea, Roundy did most of her work as a student while

at the UC Davis Center in Washington DC, where she was able to work with primary sources and also privately to interview individuals regarding the interconnections between American foreign policy and social, economic, and military conditions in Korea. The piece by Donev on vortices and superfluid helium is the result of three years of undergraduate research in the Department of Physics at the UC Davis campus. In the Amos piece, we find a critical rethinking of the nuanced interconnections between and among multinational investment, third world nations and their indigenous populations, an analysis that provides the foundation for a set of recommendations regarding local societies and native peoples in the context of international colonialism.

These essays demonstrate that the quality of undergraduate education is not simply a result of classroom work and seminars, that it can also be measured by the production of original research. At this level research as an ongoing process engages with a variety of different contexts: some near, some far; some personal, some interpersonal; some conclusive, some elusive. As a group, these essays attest to the fact that the complex and creative collaboration involved in undergraduate mentoring between faculty and students can yield impressive results that impact not only the students and their faculty mentors, but the larger university and research communities as well.

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