

The First-Year Research Experience: Miami University's Scholastic Enhancement Program – Undergraduate Research Option

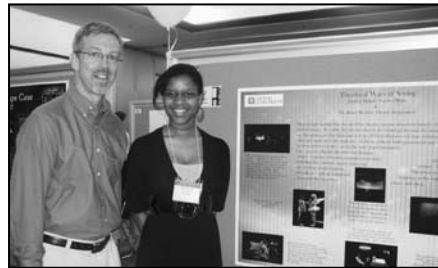
In fall 2005, as part of its existing Scholastic Enhancement Program (SEP), Miami University kicked off the Undergraduate Research Option (URO), loosely modeled after the Undergraduate Research Opportunity Programs (UROP) at the University of Michigan and the University of Wisconsin. The Scholastic Enhancement Program is an admissions program that conditionally admits students whose high-school records and backgrounds suggest that, with additional academic and personal support, they have the potential to do college-level work. The enhancement program is mandatory for all conditionally admitted students who accept admission to Miami University.

As part of the enhancement program, the Undergraduate Research Option is aimed at increasing retention and features a living-learning community for first-year SEP students who choose to live together and do research with a faculty sponsor. Miami University's URO program differs from the programs after which it is modeled due to its targeted population and the fact that it is residentially based. Miami is committed to increasing students' involvement in research, but it is still extremely rare for first-year students to participate in research. The SEP-URO contains many of the components of the *student as scholar* model (Hodge, Pasquesi, Hirsh, & LePore, 2007) and the concept of *self-authorship* (Baxter Magolda, 2001; Kegan, 1994).

Student Retention

Student retention is a topic that colleges and universities regularly address. Previous research has reported a 28.3-percent attrition rate for full-time students at four-year public institutions following the first year of college (ACT, 2006; Tinto, 1993). For colleges that are considered "highly selective" (SAT>1100; Tinto, 1993), the mean attrition rate after the first year of college is 9.6 percent (ACT, 2008). Miami University's first-year attrition rate is 10.6 percent overall for the campus and 10.7 percent for minority students (Miami University Web site, 2008).

Students leave colleges for a variety of reasons, including a change in academic intentions, academic difficulties, social isolation, a mismatch between the student and the campus, lack of student-faculty contact, feelings of marginaliza-



Faculty sponsor Roger Bechtel and student Joclene Harper at undergraduate research forum in July 2008.

tion, external obligations, and finances (Tinto, 1993). Previous research has shown that lack of social contact and problems with academic performance are common reasons that minority students cite for leaving the university environment (Tinto, 1993). The goals of the SEP-URO include improving student retention, especially of minority-group students, by creating a positive social environment and developing skills to increase academic performance.

Elements of Student as Scholar and Self-Authorship

The *student as scholar* (Hodge et al., 2007) model is built upon the discovery-learning model or inquiry-based learning. Hodge and his colleagues suggest developing curricula to push students beyond the desire to gain information from external authority (e.g. teachers, professors). The hope is for students to realize that they can create meaning or engage in *self-authorship* (Baxter Magolda, 2001; Kegan, 1994). *Self-authorship* is "the ability to collect, interpret, and analyze information and reflect on one's own beliefs in order to form judgments" (Baxter Magolda, 1998, p. 143). As students pursue the creation of knowledge, they integrate three developmental areas: epistemological, intrapersonal, and interpersonal (Kegan, 1994). Students explore different ways of knowing, assimilate knowledge into their identity, and engage in mutual relationships.

Without guidance, students choose to rely solely on external sources for information (Baxter Magolda, 2001). Developmentally appropriate tasks are necessary to increase students' reliance on their own ability to seek, create, and critique information. Table 1 contains some of the developmental tasks outlined by Kegan and others and the tasks incorporated in the SEP-URO to address these tasks.

Table 1. Developmental Learning Goals and Tasks for SEP-URO Participants

DEVELOPMENTAL TASK	FALL SEMESTER SEP-URO TASKS	SPRING SEMESTER SEP-URO TASKS
Epistemological developmental goals		
Information literacy	<ul style="list-style-type: none"> Utilize library online resources (online catalogue, databases, and journals) and Web search tools 	<ul style="list-style-type: none"> Evaluate resources and synthesize
Reading to learn	<ul style="list-style-type: none"> Learn about plagiarism and develop an annotated bibliography 	<ul style="list-style-type: none"> Write a literature review and abstract
Developing a research process	<ul style="list-style-type: none"> Get introduction to research process Learn about research ethics Discuss research project with faculty advisor 	<ul style="list-style-type: none"> Complete a quantitative or qualitative research paper/poster
Selecting research methods	<ul style="list-style-type: none"> Examine the link between methods and knowledge 	<ul style="list-style-type: none"> Learn statistical tools Develop a poster Present a poster
Intentional learning	<ul style="list-style-type: none"> Develop note-taking strategies 	<ul style="list-style-type: none"> Practice note taking
Interpersonal developmental goals		
Developing dialogue	<ul style="list-style-type: none"> Recognize the value of diverse perspectives 	<ul style="list-style-type: none"> Develop personal mission statement
Working in groups and teams	<ul style="list-style-type: none"> Practice working in groups (ropes course) 	<ul style="list-style-type: none"> Practice working in groups
Intrapersonal developmental goals		
Developing voice	<ul style="list-style-type: none"> Keep a written journal 	<ul style="list-style-type: none"> Develop personal mission statement Set goals
Developing agency	<ul style="list-style-type: none"> Initiate first contact with faculty sponsor Develop leadership and professional skills 	<ul style="list-style-type: none"> Continue regular contact with faculty sponsor Develop time-management skills

What is the Undergraduate Research Option?

The living-learning research community at the heart of the URO is a small one, with no more than 20 first-year students living together in a common first-year residence hall. Each student is paired with a faculty sponsor who engages the student in some aspect of the faculty member's research. Students also participate in weekly or bi-weekly workshops that cover both research topics and soft skills. Social activities are also included throughout the year.

The Goals of the SEP-URO

As mentioned previously, the goals of the SEP-URO are to increase retention of at-risk students and increase their persistence rates by building a social component and enhancing their academic abilities. In addition, there are several subcomponents:

- To provide early contact with faculty members, staff, and successful upper-class students to build academic and social-mentoring relationships, which will serve as personal and academic support for first-year students as they transition into Miami University.
- To provide for efficient and effective coordination of workshops that will increase students' knowledge of research.
- To engage first-year students in faculty members' research early in their academic careers within a postsecondary setting.
- To initiate and facilitate successful research partnerships mutually beneficial to students and faculty.
- To enable students to become involved in research opportunities early, in order to increase their participation in other research activities at the university in the future.

- To foster development of a community of student researchers within the SEP by providing educational-enrichment opportunities and ways for students to interact, network, socialize, and collaborate.
- To provide leadership opportunities for first-year students.

Essential Components of the SEP-URO

As already noted, the SEP-URO was inspired by the Undergraduate Research Opportunity Programs (URO) at the University of Michigan and the University of Wisconsin. After viewing a presentation on the programs, we sought a consultation with the URO staff at the University of Michigan. After phone consultations, a site visit to the university provided some of the basic materials and ideas that we chose to apply to our program, even though ours evolved somewhat differently. For example, their program is open to both first- and second-year students (involving more than 900 students and 600 faculty members) and is open to all students. Our program is only for first-year, conditionally admitted students. With the support of Miami's dean of students, a proposal for funding was submitted to the Parent's Council in the Division of Student Affairs, describing the unique aspects of our program and our desire to concentrate on at-risk students. In addition, it described our approach of integrating the URO experience with research programs and activities already in place throughout the campus. The initial proposal provided funding to support the research-related expenses of our faculty sponsors and additional professional-development activities for faculty members and students. What follows outlines several aspects of the URO.

Students. Minority students make up about 10 percent of Miami's student population. Overall, minority students make up 55 percent of the Scholastic Enhancement Program. During the three years of the URO program's existence, 90 percent of the participants have been students of color. Students can select the program when they are making their housing choice. The URO is one of many living-learning communities offered to Miami students. The only requirements are that the student must be an SEP student and willing to participate for the entire academic year.

After the student has entered the program, there are a number of incentives. Besides receiving academic credit, students are provided regular opportunities to socialize with each other

through organized activities (e.g., rock climbing, end-of-semester celebrations) and casual events.

Student training. The SEP-URO students attend a weekly seminar for academic credit, spend four to six hours a week with their faculty sponsor, complete training for human-subjects' research, and present posters on their research project at the university's undergraduate-research forum each year. Students are trained in how to communicate with faculty members and helped to develop time-management and basic research skills (see Table 1). Training occurs in a variety of settings. For example, the students have large group meetings in which all of the students, faculty members, and staff gather to discuss the program over a meal. Throughout the course of the academic year, there also are bi-weekly workshops coordinated to enhance students' knowledge of the research process, as well as to promote learning, high achievement, and social adjustment to Miami. Students are encouraged to meet regularly with their faculty sponsor to discuss their research project and receive additional training. Students are also required to give regular evaluative feedback on their experience through answering questionnaires and to keep research journals that are guided by "prompt" questions provided by the staff.

Faculty sponsors. Faculty sponsors are solicited on an annual basis. They complete an application for the URO program, outlining the research project and tasks that they propose that the first-year student complete. The sponsors are encouraged to pursue a challenging project or some aspect of their own research that would be appropriate for a first-year student with little research experience. The project is to be a learning experience with a tangible outcome (e.g., a poster presentation at the annual undergraduate-research forum). Training materials are provided to the faculty sponsors covering student-development theory, working with diverse students, and building mentoring relationships with students. Some sort of compensation/incentive is essential for faculty and staff involvement in the process. Professional-development money, resources for research supplies and materials, or university-bookstore gift cards have been highly successful for our program.

Research symposium. All URO students are expected to present their research project in either a poster or oral presentation at the annual university-wide forum on undergraduate research, sponsored by the graduate school and the Office for the Advancement of Research and Scholarship. This event is

well-attended by faculty, staff, and students. Participation in this event allows the URO staff to provide an inclusive and viable experience for its students that mirrors the experiences of other Miami students engaged in research.

Contract. The students and faculty sponsors together sign a “contract of commitment” at the beginning of the academic year. The contract outlines the project and tasks, including the number of hours per week that students are expected to work. The signing process symbolizes the commitment of all parties to the goals of the program.

Interviews. As part of the assessment process, faculty sponsors are interviewed by SEP-URO staff at the end of each semester, outside the presence of the URO student. The purpose of the interview is to check on the progress of the research project and the student from the faculty member’s perspective. In addition, URO staff visit the faculty and student workplace to observe the research environment.

Journals. Students keep a journal of their research experience. Some of the entries in this journal are aimed at increasing the students’ development as writers. Research indicates that writing can improve adjustment to college (Risquez, Moore, Morley, 2007-2008). An example of a journal assignment is “What were your initial expectations of the living learning community? How does the learning community arrangement promote academic success?”

Staff. The SEP-URO team includes the associate dean, two program coordinators, and a graduate student, as well as the participating faculty members and first-year students. Additional staff members (i.e., those who teach the workshops) are recruited through various entities on campus (e.g., the library, institutional-research office, honors program) and donate their time to assist with the program.

Evaluation and Outcomes of the Program

Faculty sponsors and SEP-URO staff evaluate the students on their research performance (how well did the student perform research tasks, attendance at research meetings, completion of assignments, amount of credit earned); their presentation of their research (quality of work, understanding of project); and participation in workshops (attendance, level of participation, completion of program, journal entries). In addition, the faculty members and students evaluate the program each semester via interviews and paper surveys.

Our goals of student retention and persistence are advancing. Thirty-one students have participated over three years, and only one student withdrew from the program (he is still enrolled at the university) for 3.2-percent attrition from the program. Each group of students increased their GPAs from the first to second semesters. Our first class of SEP-URO participants is entering their senior year this fall. Only one student transferred from Miami University, making the persistence rate in the program 92.3 percent. This persistence rate is higher than the university’s rate for minority students (81.5 percent) and non-minority students (85.8 percent) during the same time period.

Research indicates that social interaction and connection to the university environment are key to the retention of minority students beyond the first year (Beil, Reisen, Zea, 1999; Tinto, 1993). During the three years of the program, students consistently reported that they liked the social interaction outside the classroom. According to the 2006-2007 students’ assessment of the SEP-URO, for most of them it played a major role in their satisfaction with their first-year experience and in their academic success. Six out of the seven students (86 percent) stated that participating in URO enhanced their analytical, problem-solving, and critical-thinking skills. Six out of seven students (86 percent) said that the experience facilitated a successful research partnership and connection with their faculty sponsor. And six out of the seven students (86 percent) felt that their faculty sponsor provided personal and academic support. Four of the seven students (57 percent) responded positively regarding how the experience helped advance their interpersonal skills, and 71 percent said that participation in the URO enhanced their ability to interact, network, socialize, and collaborate with other students. The students consistently reported that they enjoyed the interactions with the faculty. In addition, 57 percent pointed out that URO provided leadership opportunities for them. Some of the students have continued to do research with their faculty sponsors. In addition, students reported being excited about completing research and stated a desire to have research as part of their future careers. Data are collected on the students every year, and the first cohort of students will graduate this spring.

In the first year of the SEP/URO program, 11 out of 13 students participated in the university’s undergraduate-research forum. In the second and third years of the program, all of the students participated. Five of the SEP-URO students wrote

featured articles (in the research forum's program) on what research meant to them and on how being involved in SEP/URO changed their perspective on research and on working with faculty members. As a result of their participation in SEP-URO, one student from the first year of the program presented a poster and has continued to do research in his field of dietetics. Students regularly report on the annual assessment that they will continue to seek research opportunities while at Miami University.

Summary

The Miami University SEP-URO builds on the concepts of the *student as scholar* and *self-authorship* to retain conditionally admitted students. Over the course of the last three academic years, the program has been successful in increasing the academic and social skills of the students by involving them in research experiences very early in their academic careers. These skills have translated into persistence rates higher than those at Miami University generally and stable GPAs. With the support and resources available at many universities and colleges, similar programs could be implemented to assist students, especially those considered to be at-risk academically, with the transition into college.

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Linda Dixon is associate dean of students for retention and learning center services at Miami University. She created, developed, and implemented the Scholastic Enhancement Program for the university in 1993. She also initiated the development and design of its Undergraduate Research Option. Presently she oversees the Rinella Learning Center, the umbrella for a number of programs and services designed to encourage the holistic development of Miami's students by enhancing student engagement in the learning process, encouraging higher levels of academic performance, heightening critical-thinking skills, and promoting student self-authorship in the classroom. She has worked in higher education for more than 37 years in both faculty and administrative-staff positions.