

Qualitative Assessment of the University of Texas System Louis Stokes Alliance for Minority Participation Summer Research Academy Abroad: An International Experience in Research and Culture

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Abstract— Since 1993 nine universities in the University of Texas System and several affiliated community colleges have worked collaboratively to promote STEM undergraduate research through the Louis Stokes Alliance for Minority Participation. In 2012 the Alliance was recognized as a model Senior Alliance by the National Science Foundation and to expand on its work an international research component was added: the Summer Research Academy Abroad (SRA-A). Our first cohort of eight students travelled abroad during the summer of 2014. The students participated in an intensive undergraduate research experience for eight weeks and thus became part of the global STEM community. Prior to their departure these students enrolled in a spring 2014 online seminar to prepare them for both the scientific and cultural components of the SRA-A experience. They learned to operate with confidence in new, unfamiliar environments and gained a multicultural perspective. They also acquired early membership and credibility in the global science arena and began to understand the competitiveness that drives the international research community. This paper discusses program details, participant profiles, and assessment after the program's first year of operation.

Keywords— undergraduate research, international experience, underrepresented minorities

I. INTRODUCTION

The demographic landscape in the state of Texas is changing at an astonishing rate. According to the US Census Bureau, in 2010, African Americans and Latinos accounted for nearly 50% of the Texas population. However, enrollment of and degrees received by underrepresented minorities (URM) in postsecondary education have remained below targets set by

the Texas Higher Education Coordinating Board. Given these disparities in educational attainment, the University of Texas System is taking steps to close these gaps for low income and URM students. The University of Texas System Louis Stokes Alliance for Minority Participation (UT System LSAMP) was incepted to improve enrollment, retention, performance, and graduation of URM students in Science, Technology, Engineering and Mathematics (STEM).

As a senior alliance we have three main goals: (i) enhancing our Summer Research Academy (SRA) to include national laboratory and international experiences, (ii) matriculation to STEM programs at UT System universities for participating community college students, and (iii) creating synergy with other NSF research training projects. These goals will prepare our students to be more competent and competitive for graduate studies or in the STEM workforce. The SRA-A is our response to the need for true globalization of higher education. These goals will allow us to continue providing URM STEM students with valuable research opportunities at UT System universities, US Department of Energy National Laboratories, and international research sites.

II. PROGRAM DESCRIPTION

The following description of the program reflects lessons learned from the first cohort of participants. Planning for the SRA-A begins a year in advance of the participants' time abroad. Potential applicants are informed about the program details and application deadlines via email and through various presentations. In addition, interested students are encouraged to access weekly blog posts by previous SRA-A participants. Recruitment efforts also take place at the annual LSAMP conference held each September. Previous SRA-A participants are prominently featured at the conference and are available to speak individually with interested students. The

application deadline is set for mid to late October of each year, allowing time for students who attend the conference to submit the required application materials.

After the application deadline the individual campus directors evaluate applications submitted by students from their home institutions. With fourteen partner institutions and eight funded placements each summer, each campus can send one of their students abroad nearly every two years. Students are notified of the offer by email in mid-November and given two weeks to accept or decline.

Following acceptance in November, an individual video conference is held with the program coordinator and each participant. The goals of the meeting are to:

- Test-run/troubleshoot the video conferencing technology employed;
- Introductions and discussion of roles and expectations;
- Review the program timeline and confirm availability for the mandatory spring seminar;
- Discuss research interests, plan strategies, and assign the next steps for securing a research placement;
- Address potential barriers to participation such as obtaining a passport, family concerns, and time conflicts.

This initial meeting is critical as the search for the research placement abroad starts almost immediately. A discussion of roles and expectations at the outset clarifies that the student and the program coordinator are partners in planning for the time abroad. The student understands that s/he must take ownership of preparations and that the program coordinator will act as a coach, providing support, guidance, and expertise.

Searching for the research placement abroad is the first task students undertake as part of the pre-departure process. Each participant secures a placement in a research group or laboratory abroad that fits both the student's area of interest and his/her country or language preference. There is no list of prearranged placements or mentors; however, students are encouraged to take advantage of previously-formed connections made by prior SRA-A students. For the application, students select their top three destinations from a list of approved countries. If a student wants to secure a placement in a country not on the list, the student needs to demonstrate that costs are within budget, that the appropriate visa can be obtained, and that the country is not on the US State Department Travel Warning list.

To reduce anxiety and uncertainty about the process, on-going communication is key. To ensure this communication takes place, participants are required to send a brief email update to the program coordinator each Friday until the placement is confirmed. This informal check-in creates an additional opportunity for trouble-shooting, devising next steps and strategies, and building the partnership between the student and the program coordinator.

To facilitate communication with potential supervisors abroad, students are given an LSAMP program information sheet which outlines the program and expectations and is written with the potential research mentor in mind. Sample introductory email messages are also provided as templates to use when contacting faculty abroad.

There are three possible strategies for securing a research placement:

- The student consults with their current research supervisor at their home institution to consider international placement with a research collaborator abroad.
- The student searches the web on his/her own for research groups and labs doing work in-line with interests, identifies appropriate faculty members to contact, and makes initial contact.
- The program coordinator asks LSAMP campus directors, faculty members at the home university, and faculty supervisors abroad who have hosted SRA-A students in prior summers for advice and leads.

The first approach has proven to be the most efficient means of securing a placement that is a good fit for the student, although students have been successful finding excellent placements by searching and contacting potential supervisors on their own. Placements will preferably be confirmed for all participants by January, before the start of the preparatory seminar.

From February to May students participate in a weekly, one-hour, non-credit seminar via video conference from their respective campuses. The seminar prepares participants for the time abroad, and also creates a virtual space for the students to create a community. Topics include:

- Course introduction: Introductions; review of the syllabus; research placement updates and next steps;
- Program expectations: Behavioral expectations; code of conduct; drug and alcohol policy;
- Travel planning and budgeting: Scholarship funds; how to create a budget; tools for estimating expenses; currency exchange; emergency funds; how to book the flight; how to find housing;
- Culture, language and country specific information: Learning about the host country (culture, language, history, geography, government; racism, sexual orientation, gender);
- Health and safety, emergency preparedness: Staying safe while abroad; immunizations, medications, International SOS, international health insurance, US and in-country emergency contacts, US State Department STEP program;
- Expectations at the home university: Informing the local university study abroad office of the LSAMP program and the trip abroad, purchasing of international health insurance; providing all required documentation;

- Research readiness: Final preparation for the research experience, communication with the faculty mentor abroad;
- Flight/day of arrival: Travel tips, transportation from airport, jet lag, notifying family of safe arrival;
- Communication and summer blog: Connecting with family, cellular telephone coverage, internet access, blogging expectations;
- Final check-in: Packing tips, troubleshooting last minute details.

Each participant receives \$7,150 in support: \$3,800 for travel, room/board, and a \$3,350 stipend. Funds are disbursed as two scholarship payments. The first, for \$3,800, is paid in late February so students can purchase flight tickets and pay housing deposits. The participants receive the second payment, for \$3,350, at the beginning of May, giving them sufficient time to deposit funds prior to departure.

Participants must meet the requirements for travel abroad set by their home institution's Study Abroad office. These requirements vary by campus, but usually involve providing emergency contact information, an itinerary, and arranging for international health insurance coverage. In addition, by April 30th participants must provide the SRA-A program coordinator a document with the following: research placement information, including name, email, phone and address for the faculty supervisor; flight itinerary; student's cellular phone number and physical address while abroad; name, address, phone of emergency contact person in the US (usually a parent, friend, or spouse); name, address, phone of emergency contact person in the host country (usually the research supervisor); and contact information for their home university study abroad office.

The primary focus during the summer is participation in the eight-week international research experience, dedicating approximately 40 hours per week to the effort. Additionally, students are required to blog about their time abroad, writing about their experiences both in and out of the lab.

Upon their return in September, participants present their research at the annual UT System LSAMP conference. They also participate in a panel discussion about their international experience. Finally, they are required to complete a post-program survey and participate in focus groups.

The 2014 SRA-A program included a total of eight student participants; seven male and one female student; five seniors, two juniors and one sophomore; three Latinos, one African American, two multi-racial, and two Caucasian students. The students came from a variety of academic disciplines: engineering and computer science, life/biological sciences and chemistry. The students traveled to four European countries: England, Germany, Italy, and Switzerland. With the exception of the student in England, none of the students were fluent in the language of their assigned locations.

III. PROGRAM EVALUATION

In order to assess the impact of the SRA-A program on the participants, the students were required to take a survey and participate in focus groups upon their return.

A 32-question survey queried the students about their level of satisfaction with the just-completed SRA-A experience and their perceived gains in six pre-determined categories. Of the eight participants in the 2014 SRA-A there were six valid surveys; one student did not take the survey and another registered for it but did not answer any of the questions. It is unknown why these two students did not complete the survey. All the students were participating in their first international student experience. Below are some interesting trends and data tables that explain the important facets of the survey.

An important consequence of participating in the SRA-A is the ability of the students to focus ahead more sharply and make better choices for further studies and career plans. In every instance, the majority of the students found that the experience had a positive and helpful impact on their graduate school plans. Other survey questions revealed that before participating in the 2014 SRA-A, three of the students definitely planned to go to graduate school and two had thought about going to graduate school. After the SRA-A, four of the students planned to definitely go to graduate school and one was considering doing more research abroad. Two planned to pursue a doctorate and one a masters in a STEM discipline; one planned to earn an MD/PhD; and another an MBA. Three of the students were not sure where they would pursue graduate school, but two were planning to attend their present institution and three had not yet decided.

The focus group, with *all* eight SRA-A participants in attendance, lasted approximately 1.45 hours. During the focus group meeting, the students were very open regarding their impressions, experiences, and recommendations for future SRA-A cohorts and placed particular importance on sharing these thoughts. The general agreement was that, albeit some glitches, each of them would go through the experience again. It is important to note that the time spent during the focus group on the discussion of the topics listed below was extensive and considered very important by the participants, thus overshadowing any extended discussion of other areas, which to them were less important. Following is a summary of the participants' most salient and emphatic comments:

- The Alliance must start the whole process of preparation and coordination earlier, possibly even before students leave for their winter break so that they can use that time to research and work on their preparations; students found the blog to be very useful;
- The program coordinator and students must pay special attention to the "comparative perceptions" of the same field in a different country: for example, is the definition of industrial engineering the same in Italy as it is here?

- The program coordinator must better explore the housing issue, especially the possibility of university housing at area institutions;
- Students need better training regarding money exchanges and finances; especially about the cost of living in the host country and the different rates of exchange, which dictate how far the stipend can stretch;
- Although students found that language issues were not relevant in the lab setting, they would benefit from some type of language training for emergencies and basic needs, and some additional language training suggestions should be provided;
- All students agreed that they should develop “what if” strategies to address possible problems, and that there needs to be a “back-up” plan in case the assignment does not work out to enable the participant to switch to a more meaningful experience mid-stream, if necessary.

SRA-A					
I would recommend the experience	5				

Level of agreement with the following statements regarding the SRA-A experience					
	Strongly Agree	Agree	Disagree	Strongly Disagree	n/a
My SRA-A exceeded my expectations	3	1	1		
Instructions I received were very helpful	3	2			
I was happy with living arrangements	3	2			
I was happy with my research assignment	2	2		1	
My staff supervisor was excellent teacher & mentor	3	1		1	
My faculty mentor provided excellent guidance & direction	3	1		1	
Working with the other students was best part of summer	3	1		1	
I will definitely seek to participate in another	4				1

My SRA-A experience has allowed me to . . .						
	Strongly Agree	Agree	Disagree	Strongly Disagree	Neither	n/a
Improve my overall research skills over the summer	2	2		1		
Be more ready to cope with the demands of a project	2	2	1			
Enhance my familiarity with research tools	4				1	
Improve my ability to analyze data	3	1	1			
Improve my skills in analysis results interpretation	3	1	1			
Improve my laboratory techniques	1	3				1
Better manage information	2	2			1	
Improve understanding & interpretation of literature	2	2	1			
Be more open to the discovery of new ideas	2	2				1

IV. CONCLUSION

The data demonstrates that SRA-A is providing a valuable research experience and a global perspective. It is also allowing participating students to identify professional options to solidify their future career plans. A new group of seven students is doing research abroad during the summer of 2015, and data will be collected and analyzed by mid-September. Recruitment for SRA-A 2016 began in June and the application will be available until October. The UT System LSAMP SRA-A team will begin publishing and disseminating the results of this work to identify partners and opportunities for funding beyond the current phase and future institutionalization.

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