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Posters on the Hill: A Unique Way to Present Undergraduate Research

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A rather unique place to have undergraduate students present their research is on Capitol Hill. Every year, since 1998, the Council on Undergraduate Research (CUR) invites undergraduate students from around the country to submit abstracts for the annual “Posters on the Hill” (POH) session in Washington D.C. Qualified faculty judges review over 400 proposals each year. Through a competitive process, these judges select 60 to 80 undergraduate research posters for the event. Between 2003 and 2006 undergraduate scholars presented a total of 250 posters representing each of CUR’s divisions (Biology, Chemistry, Geosciences, Mathematics/Computer Science, Physics/Astronomy, Psychology, and Social Sciences). Traditionally, Biology and Chemistry are most represented with 30% and 20% of the posters respectively. Of the total number of projects presented during these years, 31 (12.4%) represented studies in Psychology. The number of psychology posters presented at the POH event has steadily increased from 9% of all posters in 2003, to 15% in 2006. This event is one way CUR encourages and supports building a culture of undergraduate research.

Founded in 1978, CUR is a national organization that promotes and supports high-quality undergraduate student-faculty collaborative research and scholarship. CUR’s main focus is undergraduate research in natural and social sciences, and in mathematics education, but it also provides for faculty development and assists administrators with assessing research in their institutions. CUR works with federal agencies, and local organizations to develop research-based educational opportunities in primarily undergraduate institutions (PUI).

The literature contains multiple references of the benefits to students who engage in research. McKeachie and Milholland (1961) suggested that through conducting research projects students may gain an appreciation of research and scientific method, they may improve their knowledge of methodology, they may develop important research skills, they may experience enhanced critical thinking, and they get first hand experience with the

process of knowledge generation or discovery. Elmes (2002) identified four important student outcomes associated with doing scientific research: (a) a higher level of student engagement, (b) enhanced intellectual achievement in psychology, (c) better research performance, and (d) highly desirable skills for doctoral programs and employers. Undergraduate research experiences also serve to help the student develop good writing, speaking, and reading skills (Wolfe, Reynolds, & Krantz, 2002). Students learn that not understanding something can be exciting. The Poster’s on the Hill event may inspire some students to do research projects who may not have taken advantage of this type of educational experience.

The annual POH event takes place in April when congress is in session. Selected students invite the Senators and Representatives of their respective states to attend the poster session. CUR in turn invites the Washington press corps, federal funding agency program officers, and scientific leaders. Before students arrive in Washington, they write letters to Congress asking their representatives to support initiatives that promote the importance of undergraduate research and programs that fund these activities. Students demonstrate the value of undergraduate research by talking about their own research experiences to policy makers. For government agencies to continue support undergraduate research, policy makers must understand how the funding promotes basic and applied knowledge and how science and science education informs policy making. Since only a handful of members of congress are scientists, it can be a challenge for students and their mentors to clearly articulate their research findings in the context of policy making. But this venue provides the opportunity.

Students apply for a spot in this prestigious conference by applying on-line at www.cur.org. Along with an abstract, students submit a short resume and a statement of their career aspirations along with information about grants or fellowships that supported their research. Faculty advisors also

submit a letter of recommendation supporting the student's work. The deadline for applications is in mid November and notification of acceptance or rejection is made via email in mid February.

One goal of the Posters on the Hill conference is to thank the senators and representatives for their support, particularly if the research project was funded by a federal grant. While visiting the senators and representatives, students have an opportunity to describe the relevance of their research to the scientific body of knowledge or to addressing a problem of interest to modern society. It also allows students to highlight the process of doing research and how it may have influenced their career choices. This dialogue allows students to demonstrate the effectiveness of a more hands-on approach to education. As the Committee on Undergraduate Science Education (1997) noted:

It is hard to imagine learning to do science, or learning about science, without doing laboratory of fieldwork. Experimentation underlies all scientific knowledge and understanding. Laboratories are wonderful setting for teaching and learning science. They provide students with opportunities to think about, discuss, and solve real problems (p. 16).

Once students receive a notification of acceptance from CUR, they begin preparing for the event immediately. During the lead up to the event, students also have a chance to learn many additional lessons in professional conduct. The successful undergraduates contact the senators and representatives from their home states and the states where their academic institutions are located. They schedule brief individual appointments in these representatives' Washington, D.C. offices. Many of these officials have schedulers who can set up meetings or students may get to negotiate an automated response system. The students also send and/or fax letters to each representative and senator (sample letters are available on-line (<http://www.cur.org/postersession.html>) thanking her/him for their support, calling for more funding and support be devoted to undergraduate research, and inviting her/him to the event. Students make hotel accommodations, registration information, flight schedules, and take care of other transportation needs. If the institution provides funding for student travel, students solicit those funds. Students also need to check the CUR web-site for logistical details and changes in presentation rules that change from time to time (i.e., poster size). Students' preparation for the event can be a great learning experience; the event itself is a rewarding experience as well.

An Overview of the Posters on the Hill Day

The day starts with a breakfast in the Rayburn Building early in the morning. At the breakfast, students typically meet a member of congress or a congressional aide who talks about the importance of integrating undergraduate research and policy making. After breakfast, students and their faculty mentors visit the congressional offices. Besides meeting with state representatives, the visit may also involve a photo-op with some of the members of congress. Students and faculty advisors often receive a portrait with their representative free of charge. It is during these visits that students get a chance to communicate and discuss their research findings and what undergraduate research means to them. Because there are relatively few traditional scientists on Capitol Hill, students gain experience communicating their studies and findings in terms that individuals with a non-science background can understand.

Students often find this interaction time with their elected representatives a highly rewarding part of the event. Jordan Winter (medical student), a POH presenter in 2005 notes "Talking to our congressmen and senators on an individual basis about our research and the future of research assistance at both a state and national level, was an eye opening, unforgettable experience." Brandi McCulloch (psychology graduate student), presenter in 2002 noted that "the memory that stands out the most was being able to meet the senator of South Dakota at the time, Tom Daschle, who was also at the time of my visit, the Senate Majority Leader." Leah Skovran (psychology graduate student), presenter in 2006 believes that "POH has the opportunity to open doors and spur intellectual, one-on-one discussion with our nation's leaders, while at the same time making them aware of the impressive undergraduate research being produced by students nationwide." Similarly, Judith Flichtbeil (psychology graduate student) who presented in 2005 remembers "running around to various senators' offices to meet with either them or a representative and being taken seriously regarding what I had to say. It was one of the first times where I really felt as though I was being taken seriously in a professional setting by individuals who could put into practice what I had to say." Student presenter in 2006, Ryan McDonough (medical student) notes that "meeting with elected officials demanded that the real-world application for the results of my experiment be considered and applied." Mallory Henninger presented in April 2007 (current undergraduate student) and comments that "meeting with my state senators and congressmen was

particularly enlightening. Discussing psychological issues with politicians really teaches you how psychological research can be applied to the broader spectrum of health policy.”

Around 4 p.m. students return to the Rayburn Building to set up their posters. It is during this poster presentation that students may glean some initial awareness of the incredible diversity and high level research that is being conducted by fellow students at American universities. It is also during this poster session that they become aware of the unique opportunity that they have been afforded. The majority of the audience is composed of representatives from funding agencies, the press corps, professional institutions, and members of congressional offices. Leah Skovran (psychology graduate student) presented her research in 2006 and noted:

The aspect about POH that stood out for me the most was the outstanding array of sophisticated research that goes on in our nation’s universities every day! I am certainly not fluent in biological concepts, but to speak with others who felt so strongly about their subject perked my interest in their passion.

Hilary Moores-Harper (farmer) who presented in 2005 noted that “not only was the quality of work done by fellow students impressive, but the level of interest we were shown by our colleagues was also. My involvement in POH granted me the unique opportunity to feel as though for one day at least, that I had made a difference as I represented my fellow undergraduate researchers.” “In light of worries about a science gap between the U.S. and the rest of the world, I was impressed by the quality of research performed by America’s next generation of scientific researchers” notes Jariel Rendell (AmeriCorp Volunteer), presenter in 2006. Mallory Henninger (current undergraduate student) who presented in 2007 noted that “presenting psychological research in an arena with many students from the more traditional hard sciences was also a good learning experience. Not only did I gain much scientific knowledge from the posters of others, but I got a chance to defend the empirical nature of psychological research.” The poster presentation is the culmination of the hard work that students and their faculty mentors have put into their research, often times, for many years. After the two hour presentation and hors-d’oeuvres sponsored by CUR, students and mentors typically have dinner out in the town and return to their home institutions the following day.

Students’ Testimonials

Over the past six years, I have sponsored 14 students (7 posters) at the POH. I asked the alumni to reflect on their experiences and here is a summary of what some of them had to say. Judith Flichtbeil (psychology graduate student) who presented her research in 2004 remembers:

POH gave me even more confidence to speak in front of people and gave me the feeling I can make a difference through research. Now, going into a field where I will most likely have to interact with politicians and other government officials, POH gave me some great experience to get started, not only in what to present, but in how to present to this specific population.

Hilary Moores-Harper (farmer) who presented a poster in 2005 has this message to prospective presenters:

Of all of the undergraduate research symposiums and conferences I had the pleasure of attending, the POH conference was certainly the best. I believe that the most important lesson I learned was that there will be moments, and literally moments in life where you may have the opportunity to make monumental differences in people’s lives, whether it be with undergraduate researchers, public policy, etc.

Another message that several graduates echo is: My experience at POH both broadened my understanding of the American political system and strengthened my beliefs in the importance of undergraduate research. Based on my experience at POH, I believe that expanding research opportunities for undergraduate and even high school students is one way to keep America at the cutting edge of science and technology (Jariel Rendell, AmeriCorps Volunteer, 2006).

Ryan McDonough (medical student), who presented research with Jariel Rendell in 2006, notes that:

There are not many students who are given an opportunity to not only present their research on a national level, but to also advocate for the importance of undergraduate research funding. This is an aspect of research that can be frequently overlooked when the results are developed for the sole purpose of a grade. The entire process of developing an experiment from conception to completion was a learning experience in itself.

Now an attorney, Kate Rudersdorf was one of the first three students who came to Washington D.C. with me in 2002. Here are her words of reflection:

POH helped transition me, the undergraduate student into a professional environment of research and presentations. Our psychology research was just as important as the cellular biology research and it seemed that more people were interested in our psychology research than other scientific fields!

Brandi McCulloch who traveled with Kate Rudersdorf stated that:

Above and beyond all else, the experience I received from doing and assisting with research as an undergraduate student is what has benefited me the most during my time as a graduate student in an experimental program. Posters on the Hill is unique in that it gives experience in presenting research and it also gives an opportunity to present important findings to state officials, who have a very important relationship with the public.

This unique forum has contributed to building a culture of undergraduate research throughout the institution and has provided Creighton University with a national reputation for excellence in undergraduate research. The university was ranked by *US News and World Reports* (2005) as one of the top 65 institutions nationwide for its involvement of undergraduates in research. The fact that CUR sends press releases to each institution and local newspaper to highlight the importance of undergraduate research may have contributed to the rankings. In addition, the institution's alumni magazine (*Creighton Magazine*, Summer 2006) featured a picture and story of the event. This acknowledgment has led alumni to donate funds to set up summer research fellowships for

undergraduate students and faculty mentors. Funding opportunities play an important role in motivating faculty and students to apply for these grants. At an administrative level, the dean of the college of arts and sciences has put aside travel funds specifically earmarked for POH, fully sponsoring faculty and students who are selected. The sponsored students are often asked to present their work as a featured talk to faculty, staff, students, and administrators of the university, providing an additional opportunity for them to practice their speaking skills and showcase their project. Based on my experience with POH, I instituted a research requirement in the major for each honor student, and created an annual "honors day" where students of the honors program present their research to the Creighton University community. This event has been so successful in the three years of its existence, that the administration is contemplating instituting an "undergraduate research day" where all undergraduate students can highlight their projects.

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