Technical Internship Program – Final Report

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SUMMARY:

EOL’s Technical Internship Program (TIP), funded by an NCAR diversity proposal, is a follow-on project to the similarly-funded Careers in Science (CiS) program. TIP created internship opportunities for 2-year college students from underrepresented groups targeted by CiS and not covered by the existing internship programs such as SOARS, EOL’s summer Undergraduate Program for Engineering Research (SUPER), UCAR Spark Pre-College Internship, etc. To better accommodate the unique skillsets and work/study patterns of 2-year college students, TIP decided to explore semester-long/half-time internships. The primary job categories for TIP include Electronics Technician, Instrument Maker, and Computer Help Desk Staff.

The PIs solicited potential internal EOL projects and mentors for the three intern positions allocated to the TIP.

To recruit interns, the PIs contacted career offices of 2-year colleges in the Denver area (including the 4 schools listed in the table below) and arranged face-to-face meetings with career advisors to establish connections with those target schools. TIP also joined CiS’ 2011 outreach events at two-year-colleges in the Front Range region (see table below), with the goal of attracting non-science major students to explore possible career opportunities in atmospheric sciences. Under the motto “science needs more than just scientists,” events consisted of a mix of videos, presentations, hands-on demonstrations, Q&A activities and small group interactions with the CiS team, which all emphasized the need for a wide range of skill sets, backgrounds and job categories to enable scientific research. ..

<table>
<thead>
<tr>
<th>College Visited</th>
<th>Visit Date</th>
<th>Location</th>
<th>Student Numbers</th>
<th>CIS/TIP Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Range Community College</td>
<td>27 Oct 2011</td>
<td>Boulder, CO</td>
<td>17 College Students 2 Teachers</td>
<td>Baeuerle, Daniels, Lim, Ranson, Schwenz, Wurman, Walker</td>
</tr>
<tr>
<td>Western Wyoming Community College</td>
<td>8 Nov 2011</td>
<td>Rock Springs, WY</td>
<td>125 High School Students 5 College Students 10 Teachers</td>
<td>Rockwell, Daniels, Barnes, Brown, Gobulieski, Wurman, Kosiba, Arnold</td>
</tr>
<tr>
<td>Arapahoe Community College</td>
<td>18 Nov 2011</td>
<td>Littleton, CO</td>
<td>20 College Students 1 High School Student 7 Teachers</td>
<td>Rockwell, Baeuerle, Barnes, Brown, Tudor, Wurman, Kosiba, Arnold</td>
</tr>
</tbody>
</table>

A flyer, web page (see http://www.eol.ucar.edu/tip) and job announcement were created for the program prior to the events and this information was referenced in the presentations. A detailed description of these outreach activities is summarized in the CiS report. The combined CiS/TIP group spoke to over 250 students through the outreach events.

In the first round, we received 25 applications for three internship positions and several interviews were scheduled. During the course of the interviews, the team discovered that several of the applicants’ school schedules would not permit working during normal business hours, which would in turn create difficulties for adequate supervision and interaction. Therefore, only one of the three internships was filled. Chris Chacon from Front Range Community College became the first TIP intern at NCAR and was housed in EOL/CDS.

The PIs then decided that a second round of job announcements would be offered for the summer of 2012 in order to accommodate the program’s target audience’s schedules and allow them to work during normal business hours to ensure adequate interactions and supervision.
With no prior presentations, the response to the second announcement of TIP internships was limited to 8 applicants. From this round, an electronics technician intern from ITT Tech, Jesse Stillwell, was hired and housed in EOL/ISF.

As a computing help desk assistant, Chris Chacon learned how to support a variety of systems, from Macs to PCs to Linux workstations, in a scientific research environment. He was also given the opportunity to experience what field support is like when he traveled to the Deep Convection, Clouds and Chemistry (DC3) experiment in Salina, Kansas. Chris summarized his TIP experiences as follows:

“For me, the TIP was a very convenient opportunity to be able to learn from some highly experienced people in my field. It was the first exposure I have had working in an enterprise environment. I believe it adds value to my resume and I’m grateful for the people it was able to connect me to. In my experience, asking questions was invited and the position allowed for me to discover new things I had not learned before.”

Through the encouragement of his colleagues at EOL/CDS, combined with his enthusiasm, prompt assistance and eagerness to learn, Chris decided to apply for a data processing student assistant position in the CDS and RAF groups in EOL. This decision prompted Chris to enroll in Metropolitan State University for a Bachelor of Science degree program, since enrollment in a 4-year program is a requirement for the student assistant position. He is currently pursuing his degree in Computer Information Systems while continuing work in EOL as a student assistant.

Jesse Stillwell’s work consisted of building a large number of measurement systems and sampling modules for a field project in northeastern Colorado called the Shallow Cold Pool (SCP) experiment. Through excellent mentoring by EOL’s Chris Golubieski (Technician) and Steve Semmer (Engineer), Jesse meticulously assembled, soldered and built dozens of these modules in preparation for the deployment. This project required him to learn new skills in wiring, surface mount technology, plastics and testing procedures. As a side benefit, Jesse was able to work closely with Andrew Nelson, an EOL Summer Undergraduate Program for Engineering Research (SUPER) intern. Jesse stated his TIP experience as follows:

“The experience that I got from the TIP program was amazing. All I knew was a view through a "hole" until I got an opportunity with NCAR. They have taught me surface mount soldering plus many other things. It really helped me figure out what I want in my career. I greatly appreciate everything that they have done for me.”

Jesse truly valued his experience as a TIP intern and is currently pursuing employment in an electronics technician position.

The TIP interns proved to be extremely helpful during their tenure. They eagerly took on their assigned work and showed enthusiasm for the opportunity provided to them through TIP. The interns enjoyed the work and were eager to find longer-term employment at NCAR. We determined that the timing for hiring a third intern was poor due to the start of the school year. Therefore, to give the TIP interns opportunities to
participate in field programs and maximize benefits to EOL, we decided to extend Jesse’s and Chris’s internships to the end of September, 2012 rather than hire a third intern. TIP (Phase I) ended on 30 September 2012.

**ASSESSMENT, LESSONS LEARNED, AND NEXT STEPS:**

The Success of the students and their contributions to ELO suggest the TIP concept works and the pilot program was a success. Nonetheless, we learned several valuable lessons along the way and will implement some changes in the TIP II program, which was funded from NCAR Diversity funds at the beginning of FY 2013.

1. There is a group of underrepresented community college students interested in work related to atmospheric sciences, and they can be successful in certain job categories at NCAR.
2. During the course of interviews, we learned that most of the candidates could not work 10-20 hours per week during normal business hours due to school schedules. We therefore decided to modify the TIP II to a summer program.
3. We found that it is more effective to recruit potential candidates via an organized outreach program with local community colleges than through normal advertising channels. The joint Careers in Science and TIP (Phase I) outreach efforts attracted many more applicants to the TIP compared to traditional advertising. The PIs will therefore organize outreach programs to local schools in 2013 to recruit TIP II interns and will ask the prior interns to directly describe their experiences in the program to the students.
4. The two TIP interns were extremely helpful and appreciative of the opportunities provided to them through the program. As mentioned above, one of the TIP interns has been hired as a data processing student assistant and has enrolled in a four-year degree program as a result of his exposure to other NCAR opportunities through TIP.

**CONCLUSION:**

TIP (Phase I) was clearly an overall success. The program filled a gap in the existing education and outreach program at NCAR by focusing primarily on the 2-year community college students. The TIP interns and the EOL hosts were all extremely satisfied with their mutual experiences with the program. In order to provide the best experience for the two hired interns, the PIs decided to use the funds for the third intern to extend them into the summer of 2012 instead of advertising a third. The lessons learned in TIP have been folded into the TIP II proposal to improve the TIP II program in 2013.