

RESESS Evaluation Progress Report for Summer 2007

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As part of the ongoing formative evaluation of the RESESS program, this report is intended to provide feedback to the program administrators from an early point in the program. This report is based on interviews from the 2007 RESESS participants. As an interim report, a summative analysis is not included here.

Sixteen in-depth, minimally-structured interviews with a total of nineteen participants were conducted. This includes one focus group with 4 of the five writing/communication and community mentors. Attempts were made to contact and/or requests for interviews were made of six additional mentors, who were unavailable for an interview. The nineteen people interviewed were:

- All 6 protégés
- 5 science research mentors
- 3 writing/communication mentors
- 2 community mentors
- 2 administrators
- 1 staff person

RECRUITING MENTORS

All but one of the mentors were directly recruited by the RESESS administrator. The mentors appreciated the personal request. All but one indicated a willingness to come back and mentor again, even though a couple were unsure of their time flexibility next year and one said that s/he would prefer a break next year but would mentor if needed. All of them said that they would wait to be invited again, rather than volunteer without invitation. They offered suggestions for recruiting mentors, including:

- Appeal to scientists' sense of giving back some of the help they received as they, themselves, were at the beginning of their careers.
- Highlight the satisfaction of "seeing the light bulb go on" as students learn.
- Send e-mails with positive quotes from past mentors to the whole of UNAVCO. Put up a notice by the coffee machine to spark interest in being a mentor.
- Put up an advertisement on the bulletin board.
- Host an event at UNAVCO specifically to promote being a mentor.

- Make an announcement about mentoring at a luncheon (perhaps at the monthly UNAVCO lunches already held) to talk about being a mentor .
- Directly address what might be reasons for hesitation, including time concerns prospective mentors probably have.

Mentors who had participated in other mentoring programs noted that the time needed for mentoring in RESESS is comparable to time needed in other mentoring programs. And, as one mentor said, “At the beginning it was really only maybe an hour or two, at max. That's really not that much time to devote, and it changes someone's life. So I think it was worth it.”

One mentor pointed out that the primary purpose of mentoring is to benefit the protégé, not just to further one's research: “I kind of went into it with a mindset of, ‘Okay, it's not about the data we get, and the earth shattering conclusions, it's about the thought process, and the explanation, and the concepts, and the hardware, the nuts and bolts.’ And the data itself is secondary, because I could get that on my own.”

TRAINING FOR MENTORS

The value of the training was not apparent before attending the sessions—only those who did not attend questioned the necessity of the training, although some who did not attend thought it would have been helpful. No mentor said the orientation/training was inadequate, and all but one who attended found it valuable. Even those who had training in previous years reported benefited from the training. As a veteran writing/communication mentor pointed out, experiences as a writing mentor are significantly different from one project to the next. New and returning writing/communication mentors were encouraged to attend all the orientation and training meetings offered. Research mentors' research team members would also benefit from the training, particularly since some of them may find themselves mentoring the protégés, as well.

On the other hand, a research mentor from an underrepresented group found the training that was largely for and by white male mentors ironic—it was good training, but an odd experience for her to participate in. Her suggestion: consider having mentors, academics, graduate students or other students from under-represented groups come to speak to the group about their own experiences.

Mentors appreciated the participation of research mentors, writing/communication mentors, and community mentors in common training sessions. This provided mentors with a greater overview of the program, and also informed those who might consider being a different type of mentor in another year.

RECRUITING AND SELECTING PROTEGES

Mentors advocated admitting protégés with academic promise who are motivated to work independently, motivated to be a part of the program, and who can be matched with a suitable research project. Some concern was expressed that the pool of applicants was too small, making it difficult to select the optimal protégés. One research mentor suggested that there are surely many potential applicants locally. Another suggested that the University of Colorado minority programs might be a source of applicants. One mentor asked if research mentors could find their own protégés and bring them into the program.

Quality and Preparedness of Protégés

Positive Comments

All of the mentors had positive observations to make about their protégés. Most of them said that they would not hesitate to recommend their protégés for acceptance into RESESS in the future, although one qualified this endorsement by saying he would expect more from a second year protégé. One research mentor said that she felt particularly lucky to have the protégé she had—she considered her protégé to be exceptional.

Qualities that impressed the research mentors in particular were:

- Level of independence and initiative taken in solving problems
- Significance of contributions made to the projects: learning from protégés' work
- Adaptation to unfamiliar disciplines, projects, and data
- Quickness of learning; protégés' progress over the summer

One research mentor, who had experience with summer interns, but not protégés in such an ambitious, organized program as RESESS expressed surprise at the eagerness and competence of the protégés.

Qualities that impressed the Writing/Communications mentors in particular:

- Needing less time and writing instruction than expected
- Poise speaking in front of people, even at the beginning of the summer

Misgivings about Protégés

While research mentors were generally pleased with their protégés, some had important reservations to note. One did not recommend that his particular protégé be admitted for a subsequent year, but acknowledged that the protégé did benefit a lot from the program. One measure of success for this protégé, and so maybe for others, is how much they benefit from the program by developing confidence, independent of developing scientific expertise.

Language barriers for English as a Second Language(ESL) students were considered too high for the program. Ability to learn quickly was valued and was considered impeded too much by language challenges. One mentor said that s/he would be more selective in accepting a protégé in the future.¹

PROTÉGÉS' ASSESSMENTS ABOUT THEIR PREPARATION FOR THE SUMMER

Several of the protégés said that they wish they had been more informed about particular aspects of their projects. However, none believed that reading ahead would have been practical, given their time constraints at school. Others noted that they would not have known how to prepare ahead of

¹ By writing a RESESS protégé into his project budget, this particular mentor may have been under significant pressure to have a higher-performing protégé than were other mentors in other projects.

time, as it is not possible to anticipate what they need to learn ahead of time. First year protégés indicated they learned over the course of the summer how to better prepare for the following summer's research. Some adjusted their course selections for their fall semesters accordingly. One observed that she always wishes she was better prepared and knew more, in any situation.

Protégés' Feedback about Mentors

Protégés were generally happy with their mentors.

Research Mentors

Research mentors who were attentive to protégés' needs and optimized their opportunities were especially appreciated. One protégé was particularly pleased with her research mentor, who she saw as "a genius." She said that she was not intimidated by world-renowned scientists, but felt honored by her research mentor's interest in her work. Aspects protégés appreciated about their research mentors included:

- Good communication with research mentor
- Feels comfortable asking research mentor for help with writing.
- Appreciates helpfulness.
- Mentor is very encouraging. Mentor seems genuinely interested in the protégé's progress.
- Had two research mentors, but no problems, as they were well-coordinated.
- Mentor made good arrangements for protégé when traveling; things were managed well.

One protégé expressed distress about his relationship with his research mentor, who seemed impatient when the protégé repeated a mistake. The protégé understood how this would be frustrating for the mentor, and said that he was trying to learn faster.

Another protégé lodged a more serious complaint about his research mentor, who was unavailable and who the protégé believed had abandoned him. This was very worrisome and frustrating for the protégé, who was already disappointed at not being able to work on-site with the mentor. This disappointment was compounded by a sense of others' unkept promises to rectify the situation. However, he did credit another scientist for stepping into the breach and helping him salvage his project, even though this did not compensate for his disappointment and anger with his original research mentor. This experience was in sharp contrast to the consistent availability of the research mentor this protégé had in a previous summer.

Writing/Communication Mentors

By and large, protégés were not concerned if the writing support they received came from their writing/communication mentors or their research mentors, and the protégés apparently routinely sought feedback from both. In fact, the protégé whose research mentor was unavailable to him credited his writing/communication mentor with compensating for the research mentor's absence in some important ways. On the other hand, one writing/communication mentor gave advice contrary

to that given by the research mentor. In this case the protégé regarded the research mentor as the expert and followed his advice. All but one protégé indicated that their writing mentors were very helpful and easy to contact. Specific things protégés appreciated about their writing/communication mentors were:

- Knowledgeable feedback that reflected scientific insight into the research itself
- Learning to write from outlines
- Learning to write in a succinct fashion
- Learning to write more clearly
- Friendly support
- Prompt response

The protégés were generally appreciative of the editing of their work and readily accepted constructive criticism.

Peer Mentors

Most of the first year protégés expressed appreciation for their peer mentors and indicated they would like to be peer mentors, themselves, in future years. Peer mentors were especially helpful in helping new protégés become oriented and comfortable in Boulder and in the program. They were also particularly helpful with providing feedback on first year protégés' presentations and practice presentations. One first year protégé was grateful for her peers in general, because they were sometimes preferred over staff persons or administrators when faced with particular problems:

It was kind of good to just be able to talk about things and work things out from a perspective of another protégé. Because sometimes it's just easier to talk to one of your peers, than it is to go to somebody who is part of the staff or whatever. Because if you take a problem or a concern to a staff member, they feel like they have to act on it, and fix it. And maybe all you need is to just kind of talk it out. And so the peer mentor is really important for that, because they're just like you, and they've dealt with things like that before. “

Community Mentors

None of the first year protégés offered negative feedback about their community mentors, although one indicated that s/he did not feel a need for a community mentor.

WRITING WORKSHOP

The writing workshop was the most criticized aspect of the program in an earlier evaluation of the SOARS program. The generally positive feedback from the RESESS protégés in this evaluation is in sharp contrast to these past reviews. Moreover, all of the protégés who offered critiques and suggestions also contributed positive feedback—no one had only suggestions/critiques.

Overall positive feedback:

- Science writing is a separate class at one's home university, which the protégé has not yet taken. The writing workshop provided him with an advantage when he takes this university class.
- Appreciated how each part of the paper was addressed in turn.
- Appreciated attention to what to avoid in writing.
- Writing workshop was interesting.
- Interaction in the writing workshop was good.
- Facilitated timeliness with the writing assignments.
- Improved organization this year: Specific things students critiqued last year were improved.
- Learned what to convey to audiences unfamiliar with one's topic, as well as how to optimize what one is trying to deliver to the audience.
- Liked the emphasis on critiquing each others' papers instead of on reading assignments.
- Learned a lot.
- Saw nothing to improve.

Criticisms/Suggestions offered:

- The instructor oftentimes repeated what was written in the book.
- The workload in the writing workshop was too heavy: too many materials to read from the writing workshop. It would be better to summarize than to have students read entire articles.
- Discuss the hand-outs instead of just distributing them.
- To conserve paper, send hand-outs electronically.
- The workshop sometimes ran late. This further contributed to any perceptions of excessive time devoted to it, particularly for protégés who had considerable distances to travel or for whom travel logistics were already considered burdensome.
- Some questions not answered completely enough.
- The pace was too slow.

MENTORS' VIEWS OF PROTEGES' NEEDS

Mentors noted that there was considerable variation in protégés' needs; some worked much more independently than did others. Foreign protégés needed more time and attention, especially at first as they need more of an orientation to the area. Those with the greatest needs were those for whom English was a second language.

Mentors were of two minds about whether it is more important for protégés to learn to write for the audience of scientists in their particular specialty or if it is more important to learn to write and present to a relatively more science-savvy audience. As one mentor explained,

One of the issues that they're always coming up against, is the fact that, to get funded they have to be good writers from a scientific standpoint. They've got to be able to look intelligent, and get their information out there to the scientific community for their papers. But at the same time, the difficulty they're having is getting the science to the general public, to where the public can understand what they're saying... The whole credibility of the scientific community, in some ways rides upon their ability to be able to talk to anybody about their science, and have it understandable. And so there's a bit of a dichotomy in how well I think a lot of scientists have to approach their writing: that having somebody who is not a scientist as a writing mentor, and having somebody who is a scientist, having those two perspectives at the same time, I think is really valuable, because they've got to be able to communicate with a really broad audience anymore.

As another research mentor said, in the case of disagreement between research and writing mentors over writing style, the research mentor should be considered the authority.

Most Rewarding Aspects of Mentoring

Mentors reported that the best part about being a mentor was seeing their protégés succeed:

It was a lot of fun actually, to see their final presentation, and watch the protégés succeed and actually come up with something tangible, out of the projects that they've taken on. And I think that was probably the highlight for me was just watching my protégé do a really good job with it—kind of overcoming the fears, and understanding how important it was at the same time. Taking it seriously, and it seemed that there's a lot of really great potential with that individual.

Dramatic progress with protégés is very rewarding for the mentors.

I feel good about doing something that I have the sense makes an impact. And absolutely, hearing a lot of them say, "This has changed my life," and that kind of thing, makes me think it's that, I play a very small part, but it's nice...It does impact the lives of these kids.

A graduate student who contributed to the mentoring of a protégé said that he benefited from the experience of mentoring. He, too, found satisfaction in seeing the protégé make a significant contribution to the lab work. Research Mentors who had graduate students on their research teams also noted the benefits to their graduate students as they also mentored the protégés.

Even though the work accomplished is oftentimes work that the research mentor could have done faster him/herself, it was rewarding to see work done that there was not otherwise time to do, and that could now be built upon. In addition, the value of having the student do it was seen as "the greater good." One mentor summed it up by saying, "Mentoring is what it's all about. It inspires and encourages. This kind of feeds my soul."

Another mentor described the rewards of being a Community Mentor this way:

Taking my protégé up into the mountains and watching him go, "Wow!"

TIME

Time is necessary to mentor well. Concerns about the amount of time needed appear to give some prospective mentors pause. The value of spending time and the successful management of time, then, are important to document. As one research mentor said, “If you’re going to do it well, it’s going to take a lot of time.” He worked out a plan to accommodate the deadlines of the program by planning things on a week-by-week basis. He now has a “template” for the pacing of the work to be done in future summers. At the same time, another research mentor said that it required too much time for him, so he will not mentor again. He said that he is too busy in the summers, even as a stand-in.

In a focus group with both writing/communication mentors and community mentors, there was agreement that it can take more time to be an active community mentor than a writing/communication mentor. The writing/community mentors said that they spent an average of about an hour a week, whereas the community mentors spent a little more than that, as social meetings typically take more than an hour. Writing/communication and community mentors also agreed that time spent can either be more intense in the beginning or at the end of the summer. Their experience was that mentoring tends not to be evenly paced, and is instead busier at the beginning or at the end of the summer.

None of the research mentors felt pressure from colleagues about time spent on mentoring. Those at UNAVCO regarded theirs as a very supportive atmosphere, as mentoring is considered consistent with the organization’s mission statement. Off-site mentors appeared to have more of an issue—where the program is not known and supported, the time commitment may be seen as less appropriate. However, as mentors who had experience with other mentoring programs pointed out, the time involved was in keeping with other mentoring program. It was suggested that this point be made to prospective mentors who express a concern about the time needed.

Other Challenges and their Solutions

One research mentor who was unable to attend the student presentations organized a presentation for his protégés at another time, at the work site with lead scientists in attendance. He believed this worked well and that his protégés gave good presentations.

When one of the research mentors needed to go out in the field for a time he made careful arrangements for others in the group to pick up the mentoring. It was an organized hand-off that worked well.

Challenge of time to meet with protégé: maybe having more events at the UNAVCO offices for the protégés and then scheduling time for the mentors and protégés to meet after the event. Even with the added convenience of on-site meetings, some mentors said that they would still be unable to attend all the events because of busy work schedules. This is less of an issue for community mentors, as most of their mentoring time takes place after work.

One non-UNAVCO research mentor minimized the time challenges, saying that he is a professional and will get done whatever needs to be done. He would not allow other aspects of his work to suffer.

COMMUNICATION

As noted above, time and communication are intertwined. Given time demands of one's own work, well-timed, effective communication is all the more important. To this end, mentors most often cited the need for specific types of information early on in the program. In addition, most said they wished that they had more time both with their protégés and with their colleagues in general.

Interestingly, mentors usually reported knowing relatively little about the RESESS program, and did not feel they needed much more information. With the exceptions concerning the overall summer schedule (discussed below), they were confident that they could get most of the information they needed either directly from the RESESS administrator and/or from mentor orientations. Likewise, mentors did not know much about what was expected of them before signing on. They had confidence that their questions would be answered, and were more concerned about their own ability to be good mentors. Mentors suspected that similar concerns were an important deterrent to other prospective mentors. In all cases, mentors reported that these concerns were unfounded.

Communication with RESESS Administrators

The RESESS director was credited with consistently being available to the mentors and was good at, "filling in the blanks." However, a couple of the mentors said they wished for more timely announcements of events they ought to attend at UNAVCO.

On another note, one research mentor suggested that a questionnaire be sent to current mentors asking them if they would recommend that their protégé be accepted into the program for a subsequent year.

Communication between Mentors

Opportunities for mentors to meet and talk with one another were rare. None of the mentors reported regular communication with the other mentors for their particular protégés. While they indicated that it would have been nice to check in with one another, especially after the first couple of weeks of the summer, only one writing/communications mentor said that in retrospect she wishes that she would have contacted her protégé's research mentor to discuss a particular issue. On the whole, the mentors did not find it necessary to communicate directly with the other mentors on their protégé's team. There was implicit trust that the other mentors were doing a good job and that it was part of the protégés' responsibilities to alert their mentors about any problems that might require consultation between mentors.

Communication with SOARS

E-Mails: Most of the discussion about communication addressed contact with SOARS. The e-mail from SOARS was at first overwhelming to some of the mentors until they learned how to effectively scan them. In particular, they were initially considered by some of the research mentors as an indicator of the amount of the communication expected of them as mentors. As the mentors learned to scan the e-mails, these early concerns abated. They appreciated the weekly reminders that came at the end of the summer from SOARS, addressing activities and deadlines in the subsequent week. One even considered these weekly e-mails as a kind of "pep talk."

Mentors preferred that the E-mails be as brief as possible, as they are inundated with E-mail from numerous sources. They also said that a clear subject line or other indication of the gist of the E-

mail to facilitate their scanning of them would be appreciated. Similarly, they encouraged brevity and clarity with web pages and all other communications.

Despite the number of and in-depth nature of the E-mails received, several mentors said that they needed something more. They needed a comprehensive calendar of protégé assignments and obligations for the whole summer so that they could plan the pace of the research work around this.

Meetings: A couple of mentors suggested that it would be good to host a few of the joint RESESS and SOARS mentor meetings at UNAVCO. Having the SOARS mentors come to UNAVCO would emphasize the partnership with RESESS and promote communication between the two groups of mentors. It would also provide RESESS with an opportunity to “show case” their program. Alternatively, some of the protégés’ practice presentations could be held at UNAVCO. In addition, it would serve to equalize the inconvenience of travel for RESESS and SOARS mentors. This is currently a greater challenge for RESESS mentors (and protégés).

Another of the mentors suggested that the organizational meetings with SOARS could be run more efficiently by preventing people from tediously repeating what others have said. The suggestion was to have the moderator say something like: “We’ll talk about this for 10 minutes.” Then, after the ideas are presented and initial feedback is given, the moderator would then ask if anyone one has something *different* to add.

It was also suggested that it would be good for the RESESS and SOARS programs to get together with some of the other programs that are held on the University of Colorado campus for minority students. A presentation about academic careers, for example, would be of mutual interest to all of the groups. This would illustrate that there are other, similar people and programs.

Mentors in the focus group agreed that it would be helpful to have a map with the relevant UCAR locations clearly labeled. They found it difficult to find meeting places with persons from SOARS when the location was described only by a building name. Such a map was seen as an easy hand-out and/or addition to the web page available to all participants.

Communication about Expectations of Protégés: One of the writing mentors had a question about expectations from different protégés: were there increasingly high expectations as protégés return for subsequent years, by both the mentors and the protégés? There was also some confusion early on about who the audience was for whom the protégés’ papers were to be written. The confusion may have been related to the newness of the writing coordinator at SOARS, for whom this is his first year. In general, though, the new writing coordinator at SOARS was well-received by both mentors and protégés.

With Protégés

Communications between mentors and protégés were seen as good overall, but could be improved with more in-person meetings. E-mail was the usual method of communication, followed by phone conversations, and lastly face-to-face meetings. E-mail was seen as a tremendous help in staying in touch with protégés. Still, mentors said that they were not able to have as many face-to-face meetings with their protégés as they wished to have, citing the challenges of time and location addressed elsewhere in this report.

At the time of the interviews, none of the mentors had communicated with their protégés since the end of the summer, but several expressed their intentions of staying in contact.

RESEARCH PROJECTS

Research mentors reported no problems finding projects for their protégés. They all had projects in mind prior to meeting their protégés and most reported flexibility in adapting the work to the skills and interests of their protégés. Some adaptations were made in all the projects, some more successfully than others. Among these adjustments was the division of a single data set into two separate projects for two protégés after original plans to have them work on a single project as a team did not work out. In hindsight, a few mentors noted that it is better to have individual projects for each protégé from the beginning. In the case of a replacement research mentor for a protégé whose off-site mentor was too difficult to contact, the new mentor tried to adapt the project to meet the protégé's needs, but felt this was only partially successful. This mentor credited the disappointed protégé with persisting through his frustration and successfully completing the project. This protégé expressed satisfaction with the project, itself.

The other protégés were pleased with their projects, and considered them to be unique opportunities to do interesting, meaningful work that they could not have done as part of their college coursework. They especially appreciated the independence they enjoyed in developing their projects, providing them with a sense of ownership of their work. The real world application of their work was also key to their commitment to their projects.

All but one of the protégés were happy with the focus of their projects. This individual who was unhappy with the assigned project is discussed elsewhere in this report. Aside from a lack of interest in the specific research, this protégé did not believe that work on this particular research project would make the kind of significant contribution to his/her future career than would a project more closely related to his/her interests. It is important to keep in mind that this protégé was successful in completing the project, reported learning gains from doing the work, and was praised by the Research and Writing/Communication Mentors for adapting to the situation rapidly and gracefully, and for the quality of work done.

Posters

Both mentors and protégés had mixed feelings about the posters. The utility of the posters was not questioned—both mentors and protégés recognized the value of doing them. People in both groups had concerns about fitting the posters into the already ambitious research agendas. Protégés were mostly concerned about the limited time they had to work on them. However, one protégé accepted the time limitation, but suggested that it would be better to work on the posters over a period of two or three days, for a few hours each day, as that would allow time to think about the posters and ultimately do a better job on them. His was not a request for more time, but rather for different time management. Protégés generally did ask for more time for the posters, as they did not want to display first drafts.

Mentors' concerns about the posters addressed the fit of the assignment into the overall research agenda. One of the writing/communication mentors suggested that first year students be given an abbreviated version of the paper assignment if they are also going to produce a poster. It was also

suggested that adapting the poster assignment for first year protégés could be supported, given recent modifications to the writing workshop:

I know they have two segments of the writing workshop, one of which is for everybody, and the other of which is for first year students. And I think that's a good idea. But I think they should take it even a step further, and say, like this year they did posters for the first time. And I almost think—I mean maybe they don't want to do this, because not everybody is going to come back for additional years—but I almost think too, they should reduce the pressure a little bit on the first years, and just say, "Okay, you're not going to write a full blown paper, you're going to produce a poster. You'll still need to write an abstract, you'll still need to do the talks, but as to writing a multi page, ten page paper, we'll leave that for your second year, or your third year. I don't know... Because I do think what they did was they added another requirement of doing the poster to a program that already is very, very full.

Other mentors' concerns about the addition of the posters were not specific to the first year protégés.

WORKLOAD and PACE

While protégés and mentors alike acknowledged the heavy workload, most concerns were directed to accommodating, rather than modifying, the program. Protégés appeared to accept the workload as part of the program. One exception to this was a protégé who said s/he was dependent on another person's work to finish his/her own report. While seen as unnecessarily stressful, the work was successfully completed.

New research mentors expressed some surprise at the workload, but felt they could manage it so long as they had adequate information early enough to plan for it. The fact that the workload ramps up at the end of the summer was generally accepted, with the reservations about the addition of the poster assignment, as discussed above.

Despite acknowledging the heavy workload and fast pace, protégés reported that they had adequate free time. They appreciated opportunities to explore the region, and especially enjoyed the geologically-related field trips. Their sense of balance between work and recreation was a result of having "scheduled free time," including interesting activities planned with consideration of their needs for social interaction, acclimation to an environment new to them, and individualized attention from community and peer mentors.

BENEFITS TO PROTÉGÉS

Mentors' Views of Benefits to Protégés

Mentors were asked to identify what aspect of RESESS was most beneficial to the protégés. Three things were identified:

- Hands-on field experience

- Opportunities for protégés to determine their level of interest in earth sciences and particular jobs within it—and having the rare opportunity of time to think about it
- Learning about the scientific method: especially that “failures” are normal, valuable aspects of research

Protégés’ Identification of Best Aspects of this Year’s Experience

Since protégés had many positive comments about RESESS, we also asked them to identify the best part of this year’s RESESS experience. They identified the following high points:

- Learning how to make presentations, and getting helpful feedback on them
- Meeting people from different cultures
- Appreciation of Research Mentors
- Ideal research experience
- Counseling about and encouragement for graduate school plans
- Financial support, including the summer research experience and the tuition support

Other Benefits to Protégés

It is important to the evaluation of the program to see what the protégés’ valued. The list of aspects of the RESESS program that protégés appreciated is a long one. Among the aspects identified by *first year protégés* are:

- Having everything one needs in the apartments
- Enjoying Colorado
- Having a mentor who speaks one’s native language
- Identifying one’s career interests, as well as what is not interesting
- Working with world-class scientists encourages one to raise expectations of oneself
- Discovering career options
- The extent of support, as even scientists other than one’s mentors provide research advice, and information about scholarship and grant opportunities
- Learning how to conduct and write up scientific research
- Networking opportunities
- Encouragement to apply to RESESS in subsequent years

- Opportunity to learn things not possible to learn anywhere else (not even in graduate programs)
- Experience using rare, state-of-the-art equipment
- Working in an environment in which one is treated with respect
- Development of research skills that make one more “marketable”

The highest praise given to RESESS came from a first year protégé:

I had a lot of sort of build up before I came: people were telling me, “It’s a great program,” and that kind of thing. I believe it really, I can say it totally with honesty, it has far exceeded my expectations...I think the surprises were that everything just seems to be really well put together, the whole program is well thought out... I usually expect things to be a little bit of a disappointment in one way or the other. I mean because, you tend to see the advertising, and hear people talk, and it really gets built up in your mind, and then you find out things aren't always the way you thought. But no, the surprise was that things were better!

One unanticipated benefit to a protégé was the opportunity to observe and explore the possibilities of having a research career and a family at the same time. Previous interviews with both RESESS and SOARS protégés (as well as with other students in other projects) indicate that this is a common question, particularly for young women as they finish college and begin graduate work. The protégé and her research mentor discussed the benefits of seeing a woman succeed in maintaining both a career and a family. Both the protégé and her research mentor discussed the challenges and strategies involved, and the protégé appeared to be reassured that managing both is possible. The research mentor expressed a willingness to talk with, or even make a formal presentation to, other RESESS protégés with similar questions.

EFFECT ON SUBSEQUENT SCHOOLWORK

Most of the protégés expected their RESESS experience to enhance their subsequent coursework in college. Specific ways they expected to benefit included:

- Will be more enthusiastic and focused on schoolwork with a new context in which to cast studies
- Has more confidence; feels empowered
- Feels re-energized for school
- Influenced choice of courses, particularly adding geology courses
- Improved writing and presentation skills will improve academic performance generally
- Writing assignments will be easier in graduate school
- Appreciates learning to make presentations, as this is not taught in school

- Appreciates learning the step-by-step scientific method

Only one protégé said that s/he does not expect the program to have any effect on subsequent coursework (because of lack of interest in the project).

CAREER ASPIRATIONS

One of the central goals of the RESESS program is to encourage promising college students to raise their academic and career ambitions. All of the protégés have reported increased academic and career ambitions as a direct result of their RESESS experiences. Influences reported include:

- Did not have plans for graduate school before RESESS, but now plans to pursue a Ph.D.
- Had planned on a Master's Degree earlier, now plans on a Ph.D.
- Will apply for a Ph.D. program directly instead of first getting a Master's Degree
- Appreciates RESESS as a good way to transition into graduate school
- Learned about career options in earth sciences
- Is now considering careers in both "industry" and academia
- Experience will facilitate success in graduate school
- Experience will help with admission to graduate school, feels encouraged to apply
- Has changed career aspirations from teaching to research

Feedback about RESESS' Relationship with SOARS

While administrators of both RESESS and SOARS recognize the mutual benefits of their association, it may become appropriate for RESESS to operate independently as RESESS grows. Even as separate programs there may be mutual advantages to retaining common activities. We asked the mentors and the protégés what they thought of RESESS either remaining with SOARS or becoming a completely separate program. Responses were mixed. On one end of the continuum, mentors thought that separation would be ideal and on the other end of the continuum they thought it would be ill-advised to have any more separation than currently exists. One mentor felt strongly that the RESESS program, and its protégés appeared to be a kind of "little sibling program," that administration and logistical arrangements were made to maximize convenience for the SOARS participants, at the expense of the RESESS participants. Transportation challenges, for example, were hardest for RESESS students, as common activities were located on the SOARS campuses. If in tandem with one another, it was important to this mentor that protégés not receive different treatment of any kind:

Make it seamless, keep the funding separate, but make the program the same for everyone—all have the same benefits and identity. Or really separate the RESESS group and have only a limited number of common events. This would help the RESESS students have a sense of self and place and not feel inferior.

The question came as a surprise to several of the mentors, as they had little awareness of the arrangements between the two programs.

Protégés were in agreement that RESESS should retain its relationship with SOARS. They valued their friendships with the SOARS protégés and found the size and subsequent dynamics of the combined groups comfortable. Some indicated that they felt like a member of both programs, and felt supported by both programs. They also liked the interdisciplinary features of protégés' exposure to one another's disciplines (earth science and atmospheric science). In particular, they cited benefits of explaining earth science and their projects to their SOARS friends. In addition, their proximity to and collegiality with the SOARS mentors and scientists at UCAR expanded their opportunities for both instruction and networking in ways they had not anticipated.

At the same time, protégés encouraged the growth of RESESS, in part to facilitate more earth science-specific presentations and other activities. Training sessions, presentations, seminars and meeting logistics were all oriented more toward the SOARS program. Some protégés also predicted that as the size of the organizations became more similar, there would be more awareness among SOARS participants of earth science, resulting in increased emphasis on interdisciplinary work. Protégés were more attuned to the potential for interdisciplinary experiences than were their mentors. Mentors, who had fewer occasions to meet with their SOARS contemporaries, did not address potential interdisciplinary aspects of the programs.

First year RESESS protégés reported some initial confusion about which of the combined RESESS and SOARS staff were the appropriate ones to ask for help with specific questions. As mentioned elsewhere in this report, they suggested that a listing provided to protégés of the staff persons' names, with their phone numbers and indications about who should be contacted for particular kinds of help. Happily, protégés reported a sense of feeling doubly supported rather than lost in an administrative bureaucracy. No protégés indicated that they felt a sense of "getting the run-around" when asking for help. They only had praise for the staff persons at both RESESS and SOARS.

Protégés' Identification of Biggest Problems

In addition to asking protégés to identify the best aspects of the program we also asked them to identify the "lowest point" of their experiences. Some of the problems reported were outside the purview of RESESS, occurring in the Boulder community. However, because the goals of RESESS include the creation of an encouraging environment for protégés, experiences outside the program are important to consider, as protégés are likely to gloss them as part of the overall summer experience. The problems protégés identified were:

- Unhappiness with research project assignment
- Disappointment that on-site field work did not occur
- Lack of communication from an off-site Research Mentor
- Delay in receiving public bus pass
- Delay in receiving library access
- Delay in receiving a laptop computer

- Feeling threatened by a SOARS protégé
- A misunderstanding about cultural customs regarding interpersonal communication
- More problems than expected with adjustments to higher altitude
- Race-related incident in town
- Race-related incident on the UCAR shuttle
- Lack of familiarity with local bike paths and conventions for securing bicycles when in town
- Problems with a mix-up in conducting personal banking business
- Discomfort with high level of socializing expected among protégés
- Apartment manager mistakenly started to evict one of the protégés

Unhappiness with the research project assignment, disappointment about on-site field work, and lack of communication with an off-site Research Mentor are discussed elsewhere in this report (for instance, another, on-site Research Mentor was provided to replace the hard-to-contact off-site mentor). It is not known if problems with adjustments to a higher altitude were noted and resolved. All of the other RESESS-specific problems were resolved and support extended to protégés experiencing problems outside of the RESESS program.

Protégés' Intentions to Apply for Subsequent Year with RESESS

All but two of the protégés said that they were planning to apply again. At the time of the interviews both of the two who were not certain about applying again were still considering their options for next year. Three of the protégés said that they had already started to plan what they will request for their research projects for next year. One aspect of this is that RESESS protégés have come to expect a field experience after their first year is spent on site.

MENTORS' CONCLUSIONS

Mentors were asked what they would do if they had it all to do again, knowing what they know now. Most answers reflected satisfaction with this summer's experience. Changes most often reflected the ability to plan ahead, knowing what to expect next time:

- Would choose same type of research project again.
- Would have made a point of attending all of the mentor orientations/trainings.
- Would have the research project organized by tasks, time, and subjects and have resources prepared.
- Schedule, pace the research project better
- Would go into it with more confidence.

- Would be a better Writing/Communication Mentor knowing more about the writing assignments
- Would have made a point to be more supportive of the protégés by attending more of their student presentations
- Would have different, individual, projects for each protégé
- No changes, no regrets

One example of a research mentor's satisfaction with his experience is:

I kind of went into it with a mindset of, "Okay, it's not about the data we get, and the earth shattering conclusions, it's about the thought process, and the, and the explanation. And the concepts, and the, you know, the hardware, the nuts and bolts." And the data itself is secondary, because I could get that on my own, you know.

Challenges Mentors Reported

When asked about their most difficult challenges, writing/communication and community mentors said that it was finding time. However, a couple of mentors said that they were happily surprised at not spending as much time as they had anticipated—theirs was a particularly independent protégé (they had the same protégé).

A related challenge was geographic distance and the subsequent exacerbation of too little time. A few mentors asked if there is a way for RESESS to facilitate transportation challenges. Bus schedules limited meeting possibilities, especially for the protégés with the greatest distance to travel.

A different sort of challenge was reported by one writing/communication mentor who did not receive timely responses from her protégé after offering editing suggestions. By the time the paper was returned, sufficient new material had been added that the original suggestions could not be traced. As a result, the mentor did not know if her suggestions were helpful. (The protégé said that the suggestions were indeed helpful.)

A couple of research mentors cited the need for a larger pool of protégé candidates. Neither understood what constituted challenges in finding more applicants. Related to this was the challenge of determining how prepared the protégés would and how to accommodate for their particular needs. This problem seemed to these mentors as more difficult to resolve.

Other Advice

A writing/communication mentor noted that it is better for the protégés to have different writing/communication mentors from one year to the next, but did not see a problem with assigning the same mentors to the same protégés if there is a good working relationship.

A research mentor offered returning protégés advice to be ambitious and to challenge their research mentors to match this ambition with their projects.

Suggestions for the Evaluator

The mentors were asked for their advice about how best to evaluate the RESESS program. As primary participants, they may have unanticipated insights into aspects to be explored. Suggestions and observations they offered included advice to interview respondents individually, rather than in focus groups. This is because some of the mentors would not feel comfortable offering criticisms when in the company of the RESESS administrator, for fear of offending her. They also would have said less, allowing the administrator opportunity to respond first. At least one mentor said that it was uncomfortable providing feedback with others present and that s/he would wait for others to speak first and would generally be embarrassed and inhibited.

Another suggestion was to send an email to all of the mentors and staff, asking about specific parts of the program, then copying the responses to everyone so that all could benefit from the feedback. In fact, several of the respondents asked to see the annual report.

One mentor emphasized the importance of being honest and candid with feedback, including feedback to protégés. Tact was recommended, but s/he emphasized that it is not helpful to artificially “build anyone up.”

Interviewees were all assured that reporting of the evaluation findings would be done in the aggregate to protect their anonymity. At the same time, however, it was noted that the small number of interviewees and the diversity of their roles and experiences makes it difficult to assure both in-depth reporting and anonymity. At the close of the interviews, interviewees were all asked if there was anything they had said in the interview that was of a sensitive nature or that they would prefer not be included in the evaluation report. All interviewees acknowledged that they could be identified in their interviews, given some of their feedback, but none expressed concern about this. In the end, no requests were made to edit out anything of substance from the report. Some respondents requested that any criticisms be communicated with the tact and courtesy with which they had given them in the interviews.

Observations

Overall, both protégés and mentors were complimentary of RESESS. With the exception of one protégé, whose project did not fit with her interests, and another who had too little contact with a research mentor located elsewhere, the protégés reported satisfaction with the program overall and their particular projects. In both of these cases, the protégés compared administrative response to their problems with those of SOARS students who had similar problems in the past. They both interpreted the resolution of the other students’ problems as better-resolved than their own, which seemed to contribute to their unhappiness. Even with these problems, both had overall positive feedback for RESESS.

Mentors also had positive comments overall. Criticisms they offered were mostly about the need for more, or a different sort of, communication with the program administrators. Most of the mentors were new to the program this year, which highlighted their needs for general information about RESESS and more specific information about scheduled activities and assignment deadlines. Those who had experience with other mentoring programs were particularly complimentary of RESESS, especially with regard to its detailed, holistic attention to protégés’ research and cultural experiences. The rigor of the research experience was clearly contrasted with that of a summer intern experience.

The mentors were impressed with, but sometimes caught off-guard by, the attention they needed to give to protégés' schedules and assignment due dates. Once they had incorporated the program schedule into their research plans, they found that the time they were required to put into the project was comparable to that of other mentoring programs.

The administrators of the RESESS and SOARS programs were in agreement that the benefits of their collaborative efforts outweigh the challenges it poses. They were both sensitive to the importance of developing and maintaining an equal partnership, and of remaining alert to tendencies to subsume RESESS into the larger, more established, SOARS program. There was a noticeable change from the previous year in the respective roles of the two programs. Because RESESS was modeled after SOARS, and because SOARS personnel assisted RESESS in the initial establishment and administration of the program the two groups' relationship was originally one of "institutional mentoring." This year there was a noticeable shift in emphasis toward their partnership as equals in important ways. The greater numbers of protégés, mentors, administrative staff, and the higher corporate profile that SOARS has in its home institution, when compared to RESESS, contributes to the inertia of the original mentorship relationship between the two organizations. Ongoing challenges in establishing the equal partnership of the two programs will demand the attention of administrators of each organization.

RESESS mentors' perceptions of the different status of the two organizations are greater than that of the protégés, and they differ in context as well. A few of the mentors expressed concern that the RESESS protégés not feel that their program is less than, or in some way an adjunct to SOARS, and that any differences not affect the research experience or personal relationships the protégés have. Protégés, on the other hand, reported feeling a part of the broader, joint community and indicated that the protégé culture was virtually seamless. The differences that protégés noted were the ease with which SOARS personnel responded to problems (facilitated both by their years of experience and their larger support staff) and the relative benefits of SOARS' larger number of scientists to contribute to specialized presentations and with whom to network. In addition, the establishment of activities on UCAR campuses served to facilitate ease of SOARS protégés' access to mentors, administrators, and sites for meetings. It is likely that the logistics of traveling from one site to another for meetings would be taken in stride more readily if not for the comparative practical advantages of their SOARS counterparts. However, several of the RESESS mentors also cited the disadvantage of meetings that were virtually all off-site for them as compromising their level of participation in program meetings and presentations. These transportation challenges cast the differences between the two programs into higher relief.

New Information on Old Problems

Certain problems that came to light in previous evaluations of the SOARS program appear to have been resolved, as indicated in these RESESS interviews. Chief among these was the resistance protégés expressed to the writing workshops, and indeed, sometimes to the writing assignments generally. In this current set of interviews, there were no complaints about the writing aspects of the program, and while some protégés offered constructive criticism of the writing workshop, all of them recognized the value of learning to write well.

Another apparently resolved problem is that of an under-defined community mentor role. In a previous evaluation, the most important problem with the Community Mentor role was that it was not clear to the community mentors what was and was not expected of them. This resulted in a

range of attempts to fulfill the role based on individuals' guesses. Discomfort with an ill-defined role was sufficient to discourage many community mentors from feeling successful enough to volunteer to mentor again. In this evaluation we found that Community Mentors expressed no confusion about their roles, and even that they expressed appreciation for the good training they received.

A new issue that may have arisen in these interviews is that formally writing mentoring of a protégé into one's funded work may influence expectations placed on the protégé, as well as those that funders may place on the mentors, including specific expectations about what constitutes mentoring and expectations of specific approaches to mentoring and its outcomes. At this point there is not ample evidence that this is a problem. However, this is the first time that this arrangement has been made, and merits special attention in future research.

Another, perhaps unanticipated, challenge faced by students who are the first in their families to attend college and/or graduate school face is the mixed nature of messages families send protégés in their attempts to be supportive. This issue came up in the RESESS interviews, and may be a particularly common problem faced by students from under-represented groups. The problem is, for example, that as families wish to be supportive, they may offer blanket endorsement of their students' decisions to persist, change, or abandon any or some particular academic goals. Such diffuse "support" can have the opposite effect, as students may be more likely to consider difficult challenges as insurmountable and appropriately abandoned. This appears to be the case for one of the protégés in this group of interviewees, and so would be an appropriate issue to look for in subsequent interviews.