DISTANCE-MENTORED UNDERGRADUATE RESEARCH

By Analia Albuja and Steven A. Greenlaw

One strength of liberal arts and sciences colleges is their emphasis on so-called "high-impact practices" (HIPs), which are known to be associated with student success. These practices include first-year seminars, learning communities, and study abroad, among others. What all of these HIPs share is a deeper level of engagement and active learning than traditional lecture courses offer.

Liberal arts schools tend to be small to medium sized-institutions, which means they cannot offer the range and depth of academic disciplines and faculty expertise that one might find at a larger research university. This can pose a problem for students who wish to pursue undergraduate research, (another of the HIPs).

Imagine a student majoring in French at Truman State University in Missouri who has a strong interest in 19th-century French architecture and wants to do a senior thesis on that subject. The French department has faculty with prowess in French language and literature but not architecture. What are the student's options? Pursue the desired thesis topic with a faculty member who is willing but without the desired expertise? Choose a different thesis topic? Forego a senior thesis entirely? None of these options is ideal for the student.

Over the last two years, the Council of Public Liberal Arts Colleges (COPLAC), a consortium of some two dozen institutions of liberal arts and sciences in the United States and Canada, has been exploring one possible solution to this problem. While no one member has all the resources of a research university, collectively they do. With the generous support of the Teagle Foundation, COPLAC has probed the viability of distance-mentored undergraduate research, in which students from one institution conduct research under the supervision of expert faculty at another.

The French major described above, for example, could work with the member of the Department of Historic Preservation at the University of Mary Washington who

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In Short

- A Council of Public Liberal Arts Colleges project demonstrates that these colleges can compensate for their inability to offer the full range and depth of academic disciplines and faculty expertise available at large research universities by distance mentoring undergraduates engaged in research.
- Challenges include matching students with the right faculty members, communication between mentors and mentees (best done using digital communication such as Skype or Google Hangout), and adjusting the mentors' expectations about the background and preparation of their mentees.
- Students in the project produced credible work and felt that the distance mentoring had improved their time-management skills and ability to work independently (and thus prepared them for graduate school) even more than an on-campus undergraduate research experience would have done.

has a background in French architecture. The result is that the student obtains the direction she needs on the research topic she prefers, while the faculty member gets to supervise research on a question of personal interest—an opportunity that otherwise might not present itself. The result is a distance-mentored undergraduate research project.

In this essay, we summarize the findings of this experiment from three perspectives: those of the program administrators, a student undergraduate researcher, and a faculty distance mentor.

The Initiative

The distance-mentoring initiative was guided by a steering committee representing 14 members of the consortium, including faculty, deans, and provosts. This diverse group provided invaluable assistance and oversight.

Over the two-year span of the pilot, 19 research projects were completed, each lasting approximately one semester. Table 1 lists the projects and participants. Thirty-two undergraduate researchers (including two who dropped out) and 19 faculty mentors (one served twice) participated.

Table 1: Distance-Mentored Undergraduate Research Projects

Spring 2013

"Impact of Structural Inequalities on Hispanics/Latinos"
Analia Albuja, Truman State University; supervised by Sumi Colligan, Massachusetts College of Liberal Arts

"Parliamentary Enclosures of the 19th Century"
Chelsea Beresford, University of North Carolina at Asheville; supervised by Gail Savage, St. Mary's College of Maryland

"Artist Henri de Toulouse Lautrec"
Mamie Cox, Truman State University; supervised by Elizabeth Gand, Fort Lewis College

"Facebook and Peer Pressure"
Amanda DeCarlo, University of North Carolina at Asheville; supervised by Karol Maybury, University of Maine at Farmington

"Gender in Medieval Literature"
Hilliary O'Brien, Keene State College; supervised by Teresa Kennedy, University of Mary Washington

"Income Gap and Crime Rates"
Chris Rieve, University of Mary Washington; supervised by Bill Lofquist, SUNY Geneseo

"Topics in Japanese Literature"
Kaylynn Smith, Midwestern State University; supervised by Nozomi Irai, Southern Utah University

"Presidential Rhetoric in Public Speeches"
John Tienken, University of Illinois Springfield; supervised by Jay Self, Truman State University

Summer 2013

"COPLAC Brand Refresh"
Joannie Drake, SUNY Geneseo; Michael Haynes, Shepherd University; Pei Miller, Shepherd University—all supervised by Kristin Kaineg, Shepherd University

Fall 2013

"Food and Art"
Chelsea Butkowski, SUNY Geneseo; supervised by Gregg Siewert, Truman State University

"Chronotopes in Chivalric Romances"
Sean Fischer, SUNY Geneseo; supervised by Ken Tiller, University of Virginia's College at Wise

"User Interface Design for Surveys"
Yang Li, Truman State University; supervised by Mark Cohen, Massachusetts College of Liberal Arts

Table 1: Distance-Mentored Undergraduate Research Projects (Cont'd.)

Fall 2013 (cont'd.)

"Asset-Price Bubbles and Student Loans"
Marty Rogechefsky, SUNY Geneseo; supervised by Steven Greenlaw, University of Mary Washington

"Egyptian Policies and Capitalism"
Nikita Rumsey, SUNY Geneseo; supervised by Sumi Colligan, Massachusetts College of Liberal Arts

"Immigration and Family Separation"
Gina Villazhinay, SUNY Geneseo; supervised by Dale Fink, Massachusetts College of Liberal Arts

Spring 2014

"A Feminist Analysis of College Hook-up Culture"
Kelly Avant, Fort Lewis College; supervised by Gina Velasco, Keene State College

"Experiences of Gendered Poverty"
Samantha Haeussner, Fort Lewis College; supervised by Sheila Katz, Sonoma State University

"Century America Digital Liberal Arts Project"
Christopher Hightower, University of Montevallo; Leah Tams, University of Mary Washington; Candice Rolland, University of Mary Washington; Christos Stravoravdis, Eastern Connecticut State University; Ryan Sucy, University of Maine at Farmington; Jennifer Marks, Truman State University; Jack Hylan, University of Mary Washington; Dara Fillmore, University of Wisconsin-Superior; Alicia True, Massachusetts College of Liberal Arts; Julia Wood, University of Mary Washington; Colin Nimer, Southern Utah University; James Horn, Shepherd University—all supervised by Jeff McClurken, University of Mary Washington, and Ellen Pearson, University of North Carolina at Asheville

"Homelessness and Gender"
Brittany Sullivan, Fort Lewis College; supervised by Jenifer Rogalsky, SUNY-Geneseo

The projects took on a range of configurations: one-on-one; groups, with one faculty mentor supervising a small team of undergraduate researchers; and (most recently) the Century America project, in which two faculty members supervised a larger team of students from nearly a dozen different institutions. The projects are described at http://coplac.org/teagle/projects/; the distances involved in the mentoring are shown in Figures 1 and 2.

The Experience of the Project Administrators

At the beginning, the initiative faced three challenges: appropriately matching distance mentors with each undergraduate researcher, identifying effective means of communication for the research teams, and negotiating differences in institutional cultures.

Matching

The first challenge was to match students with appropriate faculty experts. How could we enable students to locate faculty experts at other institutions? How could we facilitate an agreement between a student and a faculty member to partner on a research project?

In planning for approximately two dozen undergraduate research projects, we knew we would need a large pool of faculty experts to provide good matches. So we recruited a cohort of some 200 faculty volunteers across the consortium. Next we solicited student interest by spreading the word through the consortium, either through the student's institution's steering-committee member or (when a school had no representative on the steering committee) its undergraduate research director. Word was then passed on to department chairs, and we waited to see how many students would apply.

We underestimated the difficulties of starting up the program and sent out the initial call just prior to the fall 2012 semester. This turned out to be less than ideal, since we recruited fewer students than we'd anticipated for the first semester—although there were enough for a pilot.

Our initial plan was to facilitate the matches using an online registry of participating faculty that interested students could search by research field, but the software proved problematic. Given the late start, we opted for a more labor-intensive approach whereby schools forwarded the names of interested students to COPLAC, which then found appropriate faculty from the pool who might be willing to work with those students.

Communicating

The second challenge we faced was to identify tools and processes by which the undergraduate researchers and distance mentors could communicate and work together

Figure 1. Distance Mentors (in blue) and Undergraduate Researchers (in red)

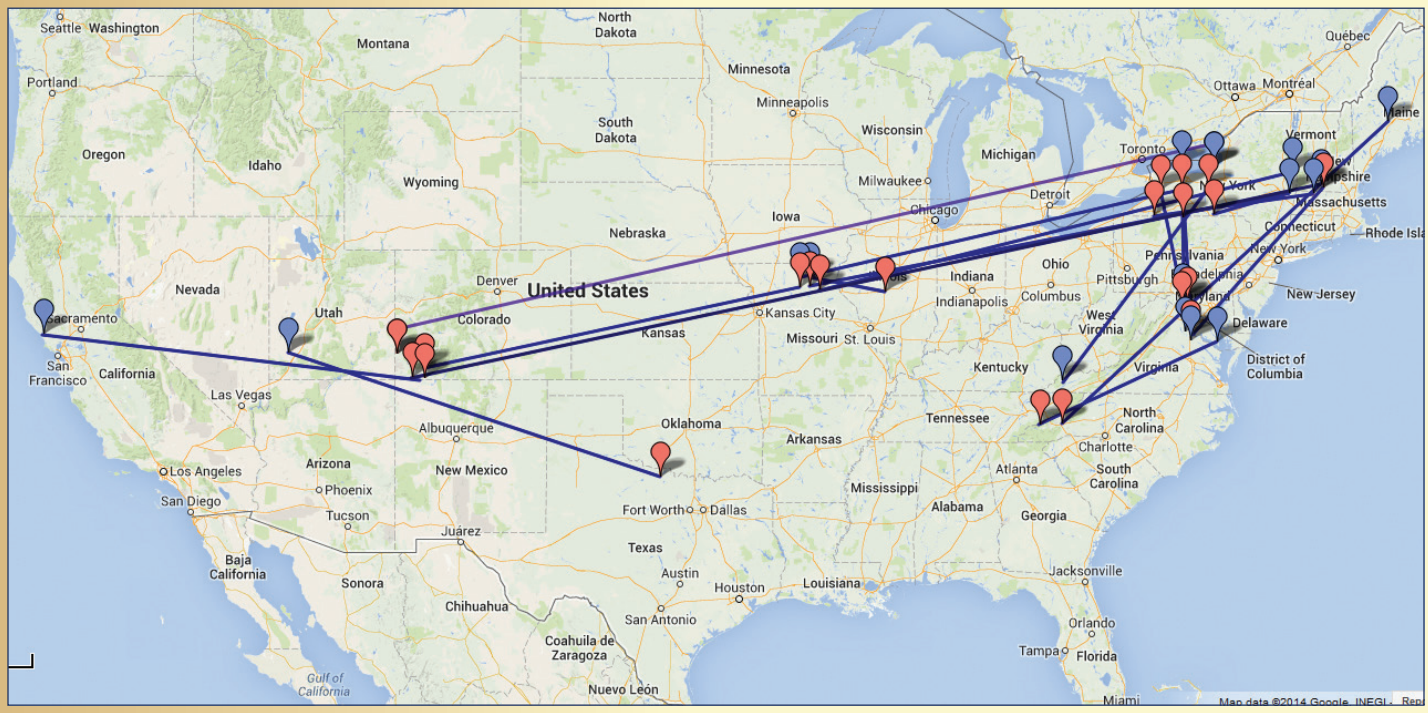
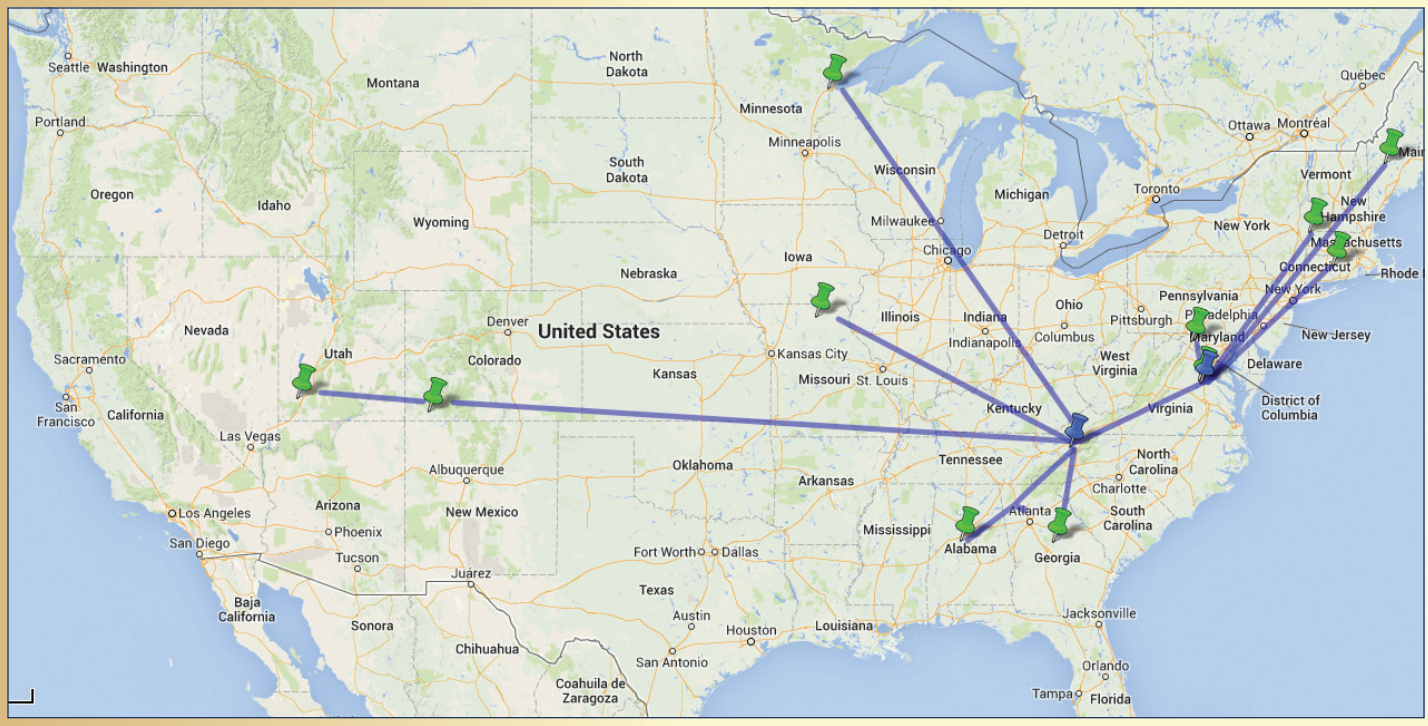


Figure 2. Century America Mentors (in blue) and Researchers (in green)



effectively while physically separated by hundreds (or in one case, thousands) of miles. Since the student researchers and faculty mentors were at different institutions, the traditional model in which the student visits the office of the faculty mentor to discuss the research wouldn't work. There needed to be some way of creating comparable interaction.

The technical solution to this problem proved to be a simple matter, since a number of technological tools for conferencing and collaboration exist. The researchers could choose from among them to build the right environment for their work, depending on the nature of the research being conducted and the preferences of the faculty member and student researcher(s).

For example, Skype or Google Hangout can be used for audio or video conferencing. Google Docs is an excellent platform for sharing and collaborating on text documents, spreadsheets, and presentations. Creately can be used for brainstorming as a group. And Google Maps can be used for

collectively tagging and annotating maps. As an added bonus, most of these tools are available free or at modest cost.

Negotiating

The third challenge was to negotiate cultural differences between the two institutions in each research match. We needed to develop procedures and protocols to enable and protect both the student researchers and faculty mentors, while respecting differences in institutional cultures. This may have been the most challenging aspect of the project.

How can a student get credit for a study supervised by someone who is not on the faculty of the student's institution? How can a faculty member be persuaded to do work for another institution's student? Why would faculty members participate when they may not even receive credit for supervising one of their own students? How would a grade be assigned? How could quality control be exercised over what is essentially a transfer-course experience?

The approach we choose was straightforward: The distance mentor would essentially play the role of an external reviewer on a thesis committee, although a more prominent role than usual. Each undergraduate researcher would have a local faculty member to serve as the instructor of record and who would assign a grade. The local faculty member, who might or might not be heavily engaged in the project, would consult with the distance mentor prior to giving that grade. The local institution's steering-committee member would handle any disputes.

As an additional incentive, participating student researchers were given the title "Teagle Research Scholars" and a stipend of $500 to use for research expenses. Similarly, participating faculty mentors were given the title "Teagle Research Fellows" and a stipend of $800 for research expenses.

The Experience of a Student Researcher (Analia Albuja)

My first glimpse into COPLAC's distance-mentoring project began when it felt like most of my life was being conducted at long distance. During my fall 2012 semester in Ghana, West Africa, I received an email about the opportunity to do research with a professor from a different institution. My home university, Truman State, has certainly provided me with many resources and opportunities, but at that point I had been unable to find a faculty member with research interests that were similar to mine. So I was immediately interested in participating in COPLAC's project. I contacted several faculty members, and Dr. Sumi Colligan, a professor of anthropology from Massachusetts College of the Liberal Arts, agreed to be my distance mentor.

The work truly began in spring 2013, when I returned from my semester abroad. Throughout the semester, Dr. Colligan and I communicated via email and phone calls. We developed and completed a research study exploring the impact of interwoven structural factors, such as housing discrimination and perceived racism, on Latino health. The paper demonstrates the role prejudice plays in producing structural inequity and ethnic health disparities, thereby combining my background as a psychology major with Dr. Colligan's medical anthropology expertise.

For several reasons, participating in a long-distance mentorship experience was different from the traditional mentorship model—which enhanced the experience. One of the main and most obvious differences was that my mentor and I did not know each other. In a traditional mentorship, typically a mentee-mentor relationship is already established—or at the very least, initiated. Here, I had no idea of what to expect with regard to mentoring style or how the research project would progress.

Not knowing what to expect made the relationship more formal in the beginning, but it developed over time. There was an initial lack of rapport, since we had never seen each other in person. However, our commitment to the project and to the model quickly helped us develop a relationship to our liking.

The formality in the beginning made expectations higher than they would have been in a more comfortable relationship. Because I had never worked with Dr. Colligan before, I was more motivated to not only meet every imposed deadline but to go beyond the requirements. As a student, I wanted to establish myself as a good collaborator, and I knew I had limited time to make a good first impression. This set the pace, and the project made steady progress throughout the term.

The distance-mentor model was also different in that meetings with my mentor needed to be more intentional and focused than on-campus ones typically are. Had I been working with a Truman State faculty member, I would have been able to drop in on my mentor with vague questions or concerns. By contrast, all of my phone conferences with Dr. Corrigan were scheduled, so I was required to have my questions and concerns thought out beforehand. Similarly, communicating largely via email helped me develop the ability to voice my needs clearly and to be precise in my questions.

Since I was not working with peers or in a classroom setting, I did not have others to compare my work to, in order to check if I was making adequate progress, or to learn from. In a traditional research class, mentors are able to use one student's mistake or question as a teachable moment for the whole class. Since I was the only student, this was not possible.

Nonetheless, the independence that the project induced was one of my favorite parts of the distance-mentoring model. It allowed me to set my own schedule, which refined my self-discipline and my ability to meet both self-imposed

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and set deadlines. The project also helped me cultivate an ability to review, synthesize, and analyze existing literature. Both of these things helped prepare me for graduate school.

Because I was the only student, I also got very individualized attention. Certainly, Dr. Colligan had other responsibilities on campus, but as a good mentor, she set time aside for me that I knew would not have to be shared with other students.

My experience with the COPLAC distance-mentoring project was very successful. When I completed my study, the Council's director invited me to attend the 25th COPLAC annual meeting at Shepherd University in June 2013. There I finally met Dr. Colligan in person, and we have since continued to develop our relationship. She agreed to serve as a reference and was very supportive during the process of graduate-school applications. Even a year later, we keep in touch, and I can count on her support to help me reach my goals.

The Experience of a Faculty Mentor (Steven A. Greenlaw)

In addition to co-directing the distance-mentored undergraduate research initiative, I also had the privilege to serve as a distance mentor. In the summer of 2013, Marty Rogachefsky—a student from SUNY-Geneseo—reached out to me and asked if I would serve as a distance mentor on his undergraduate research project. He wanted to explore the extent to which student loans, and undergraduate education generally, might be considered a financial bubble. Given my background exploring the recent global financial crisis, I found Mr. Rogachefsky's research question interesting.

After the initial email, we spoke by phone to confirm that we each thought it was a good match. During that call, I got a sense of the student, how serious he was about the project, and how effectively I thought we could work together. I was looking for an individual who was motivated and could work independently under my supervision. I decided that Mr. Rogachefsky fit the bill. On that basis, we set out to conduct the project during the fall 2013 semester.

In retrospect, the project was similar to supervising any undergraduate research experience. My student and I met virtually for about 30 minutes once a week using Google Hangout. This free service allows for two-way videoconferencing, as well as the sharing of computer screens.

During each meeting, Mr. Rogachefsky would explain what he had been working on—he had usually shared in advance a document summarizing his work. We would discuss the work, as well as any questions he had; then we would determine what he should to do over the following week. This proved to be an effective way to organize the project.

Mr. Rogachefsky was highly motivated, and he worked hard. That said, we ran into the normal sorts of snags. While we had a regularly scheduled meeting time, occasionally we had to move the meeting forward or backward. One week, he hadn't had enough time to complete the assignment, so we extended it until the next week. Several times, my schedule became too busy and we had to reschedule our weekly meeting. In spite of these hurdles, the project was completed a bit ahead of time.

In his study, Mr. Rogachefsky concluded that while college costs and student loan balances have increased dramatically, the financial benefits to college have risen comparably, so there is no bubble in the financial sense. While the conclusion was what I expected, the reasons for it were not entirely what I anticipated.

As a postscript, I invited Mr. Rogachefsky to present his research at a regional conference to which I take several students each year. At the conference, we finally met, and I found that he was essentially the same individual that I had meet and worked with online. Next year, he will be working for Teach for America teaching mathematics in an urban secondary school, and I plan to keep in touch with him.

What Have We Learned?

We are now in the process of analyzing our assessment results and writing our final report to the Teagle Foundation. So what have we learned about the promise of distance-mentored undergraduate research?

The project participants fit into the category of "early adopters"—those who are willing to take risks and try new things. The researchers—a mix of third and fourth year students—were a very strong group: bright and highly motivated, with strong research and writing skills. The faculty mentors were very experienced, in terms of both teaching and supervising undergraduate research.

The research experiences were quite diverse, as were the disciplines represented. In addition to a number of one-on-one projects, several undergraduate participants were brought into research teams with other (local) students. One project was essentially a one-on-one course (with a syllabus), while another was explicitly designed to be preparation for a senior thesis. The Century America project involved two faculty members supervising students at 11 different universities, all of whom were studying their institutions and surrounding communities as they existed a century ago, in the era leading up to the First World War. (The final products are available on the COPLAC website at http://coplac.org/teagle/projects/.)

One faculty mentor was on sabbatical in Japan during the project she supervised. This suggests another application of the model: to enable faculty and students at the same university to work together when one or the other is not in residence.

Two projects involved students in one discipline choosing topics with mentors in another (although both students and mentors were from the social sciences). This it led to complications, which were remarked upon by both distance mentors and one of the students. As one mentor put it,

> The student was working outside of his major/area of core competency, resulting in limited familiarity with key concepts, theories, scholars. This proved to be pretty problematic, as I don't think he ever developed

the comfort level necessary to most effectively advance his argument.

Communication is a major challenge in distance-mentored undergraduate research. This was especially true at the beginning of the project, before students and mentors got to know each other. One mentor described the challenge this way: "There seems to be a certain 'friction in the system' built into the distance communication. By that I mean communication is more complicated in that it tends to more easily run into obstacles, glitches, and failures to close the loop."

Part of the problem may have been that participants didn't always employ the best tools available for interacting, primarily due to some distance mentors' reluctance to use new technology. The most commonly used tool was email, although there was some use of the telephone, as well as Skype and Google Hangout.

Students who used either of the latter video-based tools seemed to experience quicker and closer connections to their distance mentors. One student told us, "My mentor did not want to use Skype and wanted to use only email. This proved to be a problem in that she was difficult to hear back from via email." By contrast, another student pointed out that

> Skype played a very crucial role in my relationship with my adviser; if we had communicated solely through email, then we would have had a very unconventional relationship. It may not seem terribly important, but knowing what another looks like, how his/her voice sounds, etc. is all necessary information to feel comfortable and familiar with another.

It may be useful in the future to provide participants with some guidelines for communications, as well as to emphasize the importance of video interaction for establishing a good working relationship. The learning curve for both Skype and Google Hangout is not steep. Video-based tools make the distance mentoring much more like the traditional supervision of undergraduate research.

Perhaps the biggest challenge in this project was something we didn't fully anticipate: the expectations that the distance mentors had about the background and preparation of their mentees. When you supervise a student from your own program, you know what their experience has been, at least in general terms. In my program, for instance, we have a three-semester research methodology and statistical-methods sequence, which students doing senior research projects are almost certain to have completed. They will also have written at least one full-scale research paper before starting their senior research.

With distance mentoring, there are many things that the faculty mentor may wrongly assume the student knows. I was sensitive to this going into the project, yet I was still occasionally surprised to discover that my student and I were not completely on the same page.

It is often unclear what skills and knowledge distance-mentored students bring to the project. This is not simply a question of whether they have had the appropriate coursework, but also the extent to which those prerequisites are comparable to what students at one's own institution will have learned.

What is the student's research background and experience? Do they have the same understanding of what original research is as you do? Do they know how to organize a research paper in the discipline? We worked around these differences, but it might be worth thinking more deeply about how to prepare for them in advance and to build what is learned into the screening process. Ultimately, it was these differences in expectations that led two students to drop out from their projects. Fortunately, each was participating in a group project that could be completed without them.

While a range of disciplines was represented in this initiative, there were no projects in the natural sciences. We don't underestimate the additional challenges of supervising laboratory research at a distance, but we can imagine ways in which distance mentoring in the sciences could be carried out.

One example might be field research where the student is located at the research site and communicates with the distance mentor either in real time or after returning to campus. Another example might be laboratory work conducted at the student's university, overseen by the local faculty member but still supervised by the distance mentor.

Despite the challenges, the quality of both the process and the product (with one exception) were rated by both students and distance mentors as good to very good. Most students indicated that a necessary condition of such high-quality work was that the researcher be self-motivated. As one put it, the "key is for students to have the desire to do [this]." The distance-mentoring project was perceived by both students and mentors as enjoyable and a worthwhile use of their time. Most participants indicated that they would be willing to participate in another such project.

The consensus of the mentors was that this project provided excellent professional experience for the students. The consensus of the student researchers was that this project provided good preparation for graduate school. The latter also indicated that it improved their time-management skills and ability to work independently. While this is probably true of any undergraduate research experience, it seems even truer for distance-mentored projects.

We have found distance-mentored undergraduate research to be a viable way of leveraging resources across institutions. We plan on recommending to the COPLAC board that it be continued after the grant funding runs out, especially since the start-up problems have been largely solved. Distance-mentored undergraduate research may not be for every student, but neither is undergraduate research generally. It should be attractive to any faculty member who wishes to work with highly motivated students to explore questions of mutual interest. C