



IBB Post-docs Ready for High Stakes Communication

Post-docs and graduate students hone their analytical and research skills, but to win a tenure-track faculty position, they must communicate their experience and expertise to hiring committees. Rice graduate students and post-docs who attended the “Interviewing for Faculty Positions” workshop in February will be ready.

The Cain Project’s Tracy Volz and Mary Purugganan presented this workshop on academic interviews and job talks as part of a career development series co-sponsored by the Institute for Biosciences and Bioengineering.

Workshop participants learned to

- Analyze situation and audience
- Organize their knowledge and experience
- Convey confidence and professionalism
- Give great job talks
- Handle questions

According to Volz and Purugganan, candidates for faculty positions should learn as much as possible about their prospective employer, reflect on their own strengths, and analyze their past work experiences.

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Dr. Volz discusses interviewing and job talks with graduate students in an IBB graduate student workshop.

To make a good first impression, candidates should assemble a job portfolio that includes evidence of their research productivity and professional development. This portfolio should contain

- Curriculum Vita
- Research statement
- Teaching philosophy
- Papers and grants, especially if primary author
- Lab or technical skills
- Mentoring or supervising junior people in lab
- Service (to department, institution, community)

In science and engineering, the job talk is most often used to assess a candidate’s ability to teach, so it’s important to deliver a high quality talk. However, candidates may also include sample syllabi, assignments, or teaching evaluations. The final test comes “on your feet,” handling questions. Workshop participants practiced strategies for organizing answers during an interview.

Why *Professional* Communication?

From time to time people ask why **professional** is in our name. As the president has explained in the new vision statement, Rice educates the whole person in its degree programs, linking experience inside the classroom to events and contexts outside it. A student’s future plans are part of the long-term context.

On campus, term papers, lab reports, lectures, discussions, and so on characterize academic life. Off campus, communication practices vary much more. A doctor-patient conference will be quite different from a biochemist’s study or a bioengineer’s design proposal.

A team presentation or written report inside the classroom can never be exactly the same as one delivered in industry, but situated practice helps students reason analogously once they encounter audiences on the job. Communication assignments in first- and second-year courses help students use language processes they already know to learn new subjects. Later assignments can help students understand the voice and role they will need in industry and not-for-profit organizations. Workshops for graduate students help them choose the enhancements they need individually.

Preparing students to lead through excellence in communication is our mission. Helping graduate students and undergraduates develop the versatility demanded by these different situations and audiences is why “professional” is part of the Cain Project’s name.

Writing a Paper for Publication

Because all graduate students are expected to publish papers, The Cain Project offers a Leadership and Professional Development (LPD) workshop on “Writing a Paper for Publication.” Competition in fast-breaking fields means that publication is frequently rushed. Yet it is also true that rapid acceptance by a journal is based both on content and clarity. Since many graduate students read published papers without evaluating them for either content or style, they need help in noticing what goes on in a superior paper. International students may need even more help in learning professional expectations for papers in their field.

Although differences in style and even in argument structure occur from field to field, the workshop offers the following basic advice to help graduate students as they write a paper to submit for publication:

1. Read several articles in the journal to which you intend to submit your paper. Notice the format and style. Note the relative length of each section. (Too often students spend too many words on background and too few on evidence and discussion.)
2. Read the journal’s requirements for paper submission. Then follow them precisely or you will be rejected for something you could easily have avoided.
3. Make certain your abstract summarizes the content of the paper rather than simply saying what the paper is about. Use precise verbs such as *analyze*, *propose*, *simulate*, and *extend* rather than vague verbs such as *study* and *examine*. Make minimal use of *is* and *are*, which show equivalence but not action.
4. Write the Introduction to lure the reader into actually reading it. Consider starting with your finding or recommendation: “We propose...” or “This paper extends...” Then move to background. Power positions for staking your claim are the first sentence, second sentence, or the first sentence of the second paragraph. Avoid putting in details of method and results. End the Introduction with a brief overview of the paper to provide context for what follows.
5. As you write the body of the paper, you must move beyond a summary of what you did. Keep answering the questions *What*, *Why*, *How*, and *With what result*. Keep thinking, “I need to explain what we did.” Answering those questions will help you determine the level of detail to include. Your goal is to come across as an enthusiastic researcher explaining your work to an interested reader.
6. In the Discussion section, summarize your key findings and comment on their significance. Choose active verbs and concrete nouns.
7. If the journal typically includes a Conclusions section, summarize your findings and briefly indicate the evidence that backs them. You may be able to include possible applications and future work in this section, depending on the journal’s practice.
8. Evaluate your visuals to see if they are necessary to illustrate and substantiate key points in your argument. Someone looking just at the visuals should be able to understand your complete argument. Then check to make certain you haven’t tried to communicate too much information in a single visual. For example, readers can’t differentiate six different symbols in a small line graph.
9. Ask other graduate students and a post-doc to evaluate your draft for completeness and clarity. It is easy to leave out assumptions or steps that you are familiar with. Since it is always easier to edit someone else’s work than it is your own, take full advantage of the helpful criticism from others.
10. Finally, don’t try to edit for everything at once. Edit first for content, looking both for completeness and clarity. Then edit for wordiness, eliminating unnecessary passive voice, for example, and reducing such phrases as “In order to extend” to “To extend.” Check for transitions between and within paragraphs. Then do a sweep for grammatical errors such as subject/verb agreement. Finally, go beyond Spellcheck to verify spelling.

Faculty help most by pointing students to papers that are models not only for content, but also for clear writing. A few minutes spent showing why a particular paper is a good model will benefit students many times in the future. Some faculty, out of frustration or lack of time, do a lot of the editing themselves. The short-term benefit of that approach is increased possibility of acceptance by a journal. However, in many cases those publications form the basis for chapters in a thesis. The clear danger is that, while those students may be technically well trained, they are sent to the job market still woefully inadequate as professional writers. Faculty can help by doing less of the editing and by pointing students to techniques for self-editing.

Using Technical Spanish as an Intern in Mexico

Coming from a Mexican/British background, I have always had interest in experiencing the Mexican culture in a professional manner. In the summer of 2005, I experienced its culture first-hand through an internship program hosted by Mayan Resorts. I applied my architectural training from Rice University in Acapulco, Mexico where the firm, which owns the largest chain of resorts in Mexico, is expanding its beautiful beach front property.

As a fluent conversational Spanish speaker, I focused on learning the technical terms and practices utilized on the construction site. I tested materials, took measurements, and produced construction drawings. I also faced the obstacle of gaining the respect of others since architecture is a male dominated profession in Mexico. This inspired me to ask questions to understand as much as possible about the construction process, and as a result, I gained more confidence. I will carry this confidence with me into the future.

Not only was this experience great academically, but it was also wonderful meeting many people from different cultures. Other interns were from Canada, Latin America, and Mexico, as well as the US. I established many friendships that made my experience more enjoyable and met professionals that could be contacts for the future. We also spent time learning about Mexico's history and culture, which has left an unforgettable impression.

This experience will help me in my pursuit of becoming a successful architect. I will be more versatile in understanding practices and styles outside the United States. I strongly recommend practicing abroad to all students; they not only can have a wonderful summer, but they can benefit from the real-world application of their studies.



Stephanie Quibb on the job site in Acapulco



Photos of the EWB projects and the people they assist are on view at <http://ewb.rice.edu>

Engineers Without Borders' Leaders Use Communication, Engineering Savvy

Rice University's Engineers without Borders (EWB) is one of a hundred fast-growing university chapters. It has four international projects: two in Nicaragua, one in El Salvador, and one in Mexico. These projects must benefit the entire community, be ecologically sustainable, reflect the desires and commitment of the entire community, and apply sound engineering principles.

The success of their engineering projects in developing countries depends in part on their ability to explain engineering concepts and to interact with individuals and communities that have little experience with modern engineering. To ensure that their projects benefit the entire community, the students must find ways to involve everyone in discussions and decision-making. In some developing countries, the culture calls for prominent men to make all the decisions. Students must insist on effective communication processes to ensure that everyone's needs are expressed and addressed.

Entering these cultures, Rice women engineers must communicate strategically in these projects to gain acceptance as professionals. In the El Salvador culture, men felt obligated to take over physical tasks. "It was hard for the women engineers to keep a shovel in their hands," said one of the team leaders on the project headed by Alex Gordon, Ross Gordon, David Kelvin, and Stewart Walther. This communication issue is significant because the Rice chapter consists of approximately fifty percent women, and the president for 2006-2007 is a woman Civil and Environmental Engineering major concentrating on environmental science and economics, Deepa Panchang.

Similarly, to ensure that projects are sustainable and well maintained after the student teams leave, the principles on which they are based must be understood by the community. Students must find accessible and straightforward analogies to explain processes. Explaining EWB itself was critical to raising over \$100,000 in support EWB's projects. We applaud the many instances of exemplary communication by the EWB students and their demonstration that engineering communication is a crucial part of effective engineering.

New CEVE Capstone Teams Present Designs

This semester, Civil and Environmental Engineering students in the senior design capstone class (CEVE 480) enjoyed a completely new capstone experience. The Department of Civil and Environmental Engineering has redesigned the class to provide students with an even better opportunity to showcase their engineering knowledge and communication skills through a capstone design project.

In order to simulate as much of a real world project experience as possible, the department brought in local practitioners to discuss the aspects of the students' design project. Charles Penland, Principal Executive Director of Civil Engineering Services at Walter P. Moore and Associates, Inc. served as the lead course instructor.

Several other professionals, such as an architect, a developer, a project manager, a code expert, and a real estate expert visited the class throughout the semester to share their expertise with the students.

Seniors enrolled in the class worked in teams of four to complete one of three interrelated design projects. Projects, all located in a floodplain, range from the design of a 300,000 square foot Medical Office Building, its adjacent parking garage and a new bridge and public street. To make the project even more realistic, students visited the project site to observe and study the site conditions.

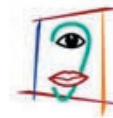
Besides preparing students for advanced degrees and professional practice, the redesigned course also aims at providing students with a stronger foundation in oral and small group communication. With the help of the Cain Project, communication instruction was integrated into the course. The Cain Project helped the student groups become effective work teams by teaching them about teaming processes and providing web resources on conflict management and team problem-solving and decision-making.

Engineering faculty who observed the request for qualifications presentations in February reacted enthusiastically. The final presentations gave the student teams a chance to reveal their completed design projects and show what they had learned in their four years at Rice.

Communication in the New CEVE Curriculum

<i>Courses</i>	<i>Team Leadership</i>	<i>Inter-cultural</i>	<i>Oral</i>	<i>Visual</i>	<i>Writing & Genres</i>
Fundamentals Intro			√	√	
CEVE Principles	√		√	√	√
Environmental Law					√
Sustainable Technologies	√	√			
Environmental Systems & Analysis					√
Engineering Ethics	√				√
Engineering Economics			√	√	√
Senior Design	√		√		√
Internship					√
Principles of Project Management	√	√			
Hydrology and Watersheds Analysis	√	√	√	√	√

The Cain Project
Congratulates
the Advanced
Degree Recipients in
Science and
Engineering Who
Participated in
Thesis Writing
Groups!
**Live Long
and Write Well.**



The Cain Project in Engineering and Professional Communication helps Rice students become expert speakers and writers. Because of the Gordon and Mary Cain Foundation's generous gift, undergraduate and graduate students in science and engineering are developing the communication skills necessary for successful professional leadership.

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