

THE COMMUNICATION FACTOR

NEWSLETTER OF THE CAIN PROJECT IN ENGINEERING AND PROFESSIONAL COMMUNICATION AT RICE UNIVERSITY - Spring 2004

Cain Project Involved in New STAT, CAAM, and MATH Program

In 2002 the Departments of Mathematics, Statistics, and Computational and Applied Mathematics proposed to the National Science Foundation (NSF) a new program to link faculty, graduate students, post-docs, and undergraduates in interdisciplinary research and learning teams that will involve all members in solving challenging, cutting-edge problems.

Mathematical sciences faculty realized that teams with such varied levels of knowledge would need excellent communication skills in order to learn from one another and solve complex problems collaboratively. In the proposal they included funds for Cain Project instructors to coach teams in oral presentations, writing, and design. It also called for special workshops on writing for publication, thesis writing, and other topics.

This new Rice VIGRE program (for Vertical Integration of Graduate Research and Education) was exciting for the Cain Project because of the challenge it offered for coaching students with different backgrounds simultaneously. It also provided a testbed for studying the communication processes of complex groups.

Furthermore, because of the interdisciplinary character of the teams' research, which ranges from computational finance and image processing to biomathematics and gene networks, students will have the opportunity learn about interdisciplinary communication as well as traditional types of presentations and reports. Communication is at the heart of interdisciplinary work, essential in negotiating problem definitions, research designs, interpretation of evidence, and presentation of results. Experience with these types of communication can provide students



The Developmental Biology Group

Clockwise from Bottom left: Julie Zeleznik, Ben Smiley, Brooke Lathram, TJ Theron, Charlie Bingham, Robin Forman, Klyen Ragan, Ryan Krech

with knowledge about dealing with complexity.

Two NSF Grants for Cain

To determine whether students participating in the VIGRE teams develop this kind of interdisciplinary knowledge, the Cain Project requested funding to capture communication and start-up data at the beginning of the VIGRE program. A grant of over \$41,000 was approved, and Julie Zeleznik and Linda Driskill began planning how to study the interdisciplinary communication in the six teams. Julia Amborski, Project Coordinator, planned the data collection.

Early in the research, Dr. Zeleznik noticed that conflicting schedules of graduate students, undergraduates, faculty, and post-docs in the vertically integrated groups made communication difficult. Finding ways to ask questions or to collaborate on problem solving caused delays and frustration. To address this problem, she and Dr. Driskill requested a supplemental grant to create a Web-based on-line community for each VIGRE group and for the VIGRE program as a whole.

This on-line community will not only store documents but will also allow members to communicate easily, invite others to try pieces of computer code or algorithms that groups are developing, and comment on one another's work. Each group has a "home" that brings together in a single space both the group's research projects and materials as well as access to all the course materials the team is using.

The site will have a public side as well, offering published papers, resource links, and information about the research teams are conducting. The NSF approved the supplemental grant of nearly \$57,000 to support the on-line community, which could become a model for other VIGRE programs across the country. Rice University's Web Services group, headed by Andrea Martin, is implementing the plan for the new on-line community.

When an innovation transforms traditional ways of learning and working, communication instruction needs to consider new student roles, new access to learning resources, and new types of communication suited to particular objectives. (See Zeleznik's account of her research on page 2.)

The Research and Teaching Connection

Communication Research Yields Insights on Student Learning

by Julie Zeleznik

At Iowa State University, I conducted research about communication instruction in an innovative curricular initiative. It paired two upper-level courses—a soil science course and a report and proposal writing class. As students accepted responsibility for their recommendations, their communication began to resemble the concise, purposeful communication of professional agronomists.

Given my interests, I was enthusiastic about being part of the new VIGRE program. I wanted to continue investigating how communication processes affect the development of expertise within groups.

As the VIGRE program was launched, I interviewed faculty and post-docs, distributed a survey to students, and attended many of the VIGRE classes and meetings. In VIGRE, undergraduate and graduate students study issues central to complex

research problems in the mathematical sciences. These cutting-edge research topics include mathematically modeling the early stages of fruit fly development and studying the statistical aspects of bioinformatics and genomics. Working in small teams, faculty, post-docs, and graduate students and undergraduates from across the disciplines investigate these issues.

I have observed participants adopting new kinds of academic roles through their communication in these small teams. For example, after undergraduates described and wrote about preliminary research they had conducted, faculty often altered the direction of the team's research design. Because students' reports had real impact, they changed their perceptions of themselves—and their appreciation of mathematics research.

Undergrads and graduate students also had many opportunities to engage in one-on-one conversations about their research with post-docs and faculty. In other words, rather than relying on faculty lectures, these students were able to ask questions, explain their perspectives, and learn from stimulating

intellectual discussions with faculty and post-docs. Such changes may transform how mathematical sciences are taught.

For example, in the Biomathematics (Regulatory Networks) Theme, small subgroups working on related problems reported to one another. One subgroup explored the role of the CREB gene circuit in the regulation of long-term memory while another began detailed mathematical studies of the precise workings of bacteriophage Lambda. Other members' learning depended heavily on how well students could present and explain details of their work in group meetings.

In Computational Algebraic Geometry, Dr. Brendan Hassett paired a traditional seminar and an exploratory course that required students to experiment and comment on one another's work. This exploration accelerated students' mastery.

I have found communication is affecting the problem-solving processes of groups' research as well as changing roles participants play in learning. Analyzing these innovations is not only exciting, but may eventually provide insights for other universities seeking to transform research programs through vertical integration.

Talking "Outside the Box" at Lunch

On October 30th, the Cain Project's Faculty Advisory Committee members and other faculty from Natural Sciences and Engineering who have worked with the Cain Project met with faculty who have attended the summer Humanities Writing Institute workshops that Professor of English Terry Doody has led for the past five years. Over box lunches in the Farnsworth Pavilion, faculty shared "outside the box" ideas for teaching writing and other types of communication in their classes.

Advisory Committee Chair Ken Whitmire welcomed the group and the new Dean of Humanities, Gary Wihl. The pre-Halloween festivities, baskets of apples, and fall sunshine created a mellow and convivial mood for talking about classroom successes.

Humanities faculty are beginning to add presentations to several classes. Forming a community that shares ideas can help faculty who decide to enhance their courses with communication activities.

This lunch meeting should launch many future sessions that can ensure successful practices across the campus.



Do you know a web-editor interested in mathematical sciences who would like a half-time job? The Cain Project is looking for this person. Call Rice Employment Office at 713-348-4074.



Cain Project

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

Linda Driskill, PhD
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Tracy Volz, PhD
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Staff Highlights

Who's New at the Cain Project?



Jessie Dubreuil

Jessie Dubreuil began working with the Cain Project this summer teaching writing, rhetoric, and argument. She has spent the fall semester leading a series of seminars on ethics and the elements of argument with students in BIOE 441, consulting with individual students, and developing resources for writing across the curriculum. These materials will meet a range of departmental and individual needs.

Jessie comes to Rice from the English Department at the University of Virginia, where she is a doctoral candidate, and brings to the Cain Project a background in teaching The Little Red Schoolhouse, a University of Chicago based writing and communication curriculum. Jessie received her BA and MA in English Literature from Stanford University. She taught sixth grade English at a charter school in East Palo Alto, California before pursuing a PhD. She is currently writing her dissertation, which examines the task of poetry and the role of imaginative theory, creative criticism and philosophical prose from the Romantic to the postmodern tradition.

New Course: Leadership Communication ENGI/NSCI 309

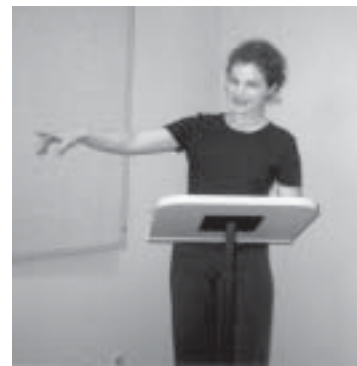
Leadership Communication is a one-credit course taught in two parts. Each part lasts five weeks and involves 7 hours of classroom instruction. Part 1 focuses on leadership writing; part 2 on leadership speaking. Each part must be taken in a separate semester. Both parts must be completed to earn the credit hour.

The course teaches writers and speakers how to explain ideas in the context of values for audiences with a variety of vested interests. The topics of the course include organizational and persuasive strategies as well as stylistic and delivery techniques.

Students will draw on projects in their course work or extracurricular activities in selecting topics for major assignments in writing or presentations. Students will also develop a statement of career and life goals and practice explaining these as qualifications for a leadership role during the course.

A final presentation and written report involving a campus leadership project or activity will be required to complete the course and obtain a notation about leadership communication qualifications on the transcript.

ENGI/NSCI 309 will be taught by Cain Project instructors Linda Driskill and Tracy Volz. It will be offered for the first time in spring 2004.



Conference Presentations

Dr. Tracy Volz attended the Biomedical Engineering Society Conference in Nashville Tennessee this fall. She presented a paper on "Using Technical Posters to Communicate Experimental Results in Undergraduate BIOE Labs" co-authored with Ann Saterbak.

Volz also presented Linda Driskill's paper, "The Challenge of Interdisciplinary Communication Practices for Bioengineering: A Case Study."

June Ferrill presented a paper at the European Association of Business Communications in Lugano, Switzerland in June. Her paper was entitled "Teaching Entrepreneurial Communications Across the Curriculum."

Linda Driskill and Julie Zeleznik gave a presentation on "Developing a Technical Communication Curriculum for an Interdisciplinary, Vertically Integrated Research/Teaching Initiative" to the Council for Programs in Technical and Scientific Communication at Clarkson University in Potsdam, New York.

Cain Project Launches New Web Site

The Cain Project's web site has a fresh new look, thanks to Sharon Gibson-Mainka's collaboration with Rice's Web Services department. This new version incorporates the "Windows on the Cain Project" theme used in the Project's brochure.

In addition to the new look and feel of the site, visitors will notice the updated content. Users can browse the site to view materials that the Cain Project developed to support various courses as well as to receive information about upcoming events and workshops. The site also includes instructions and self-help materials on subjects such as how to design, prepare and print posters.

This redesign is the first stage of the Cain Project's plan to support students and faculty with on-line resources.

Visit the Cain Project at <http://www.owl.net.rice.edu/~cainproj> to view the new web site design. Be sure to check back on a regular basis to see the new and updated materials on the site.

CS and ECE Host Annual Corporate Affiliates Days

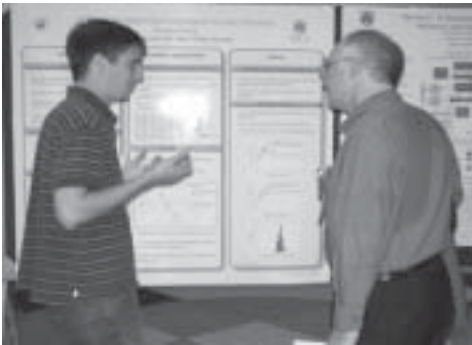
The Departments of Computer Science and Electrical and Computer Engineering hosted their annual Corporate Affiliates Meetings on October 8th and 9th. These meetings present an opportunity for faculty and graduate students to share their latest research projects with representatives from corporations such as ExxonMobil, Sun Microsystems, Schlumberger, Texas Instruments, and Hewlett Packard.

In addition to attending presentations given by faculty, affiliates were encouraged to interact with graduate students, who showcased their research in poster sessions. Prior to the sessions, poster presenters delivered one-minute advertisements aimed at attracting visitors to their posters. Joe Cavallaro, the Chair of the ECE Affiliates Meeting, included this activity to help students learn to sell their ideas, a skill they'll need in industry. The Cain Project supported these activities by offering workshops on poster design and giving poster presentations.

According to Keith Cooper, Chair of CS, "The student poster competition is always one of the highlights of the meeting. We are especially proud of the quality of the posters our students presented this year."

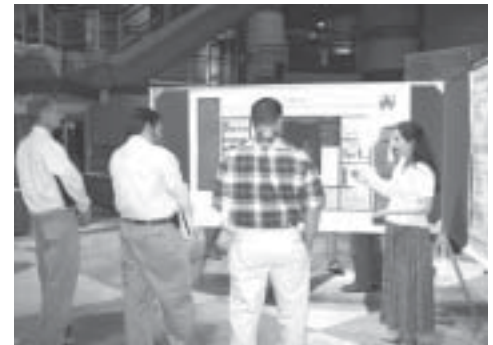
Amarda Shehu, a graduate student in Lydia Kavraki's Physical and Biological Computing group, won first place in the Computer Science Department's poster competition. Her poster presents her work on "Principal Component Analysis of the Energy Landscape of the PYP Protein."

Second place was awarded to Cheryl McCosh, a member of Ken Kennedy's Scalar Compilers Group, for her poster, "LibGen: Telescoping-Language Technology for library Generation from Matlab." Supratik Majumder, a member of Vijay Pai's Computer Engineering Group, claimed third place for his poster on "High Performance MPI Libraries with TCP/IP." Congratulations to all the presenters!



"The Affiliates meeting is a great opportunity for our students to present their research to a large group of industrial visitors. This often leads to summer internships in research labs and also provides valuable feedback on research directions."

Joe Cavallaro, Professor of ECE



Student Commentary: Gina Upperman



Gina Upperman

I am a sophomore at Jones College currently studying Electrical Engineering.

I got involved with the Cain Project this summer while I was at Rice doing a research fellowship sponsored by Micron Technology Corporation and the Computer and

Information Technology Institute at Rice. At the end of the summer, I went to Micron's headquarters in Boise to present my research. This was the first time I had ever given a technical presentation at a conference. I worked with the coaches from the Cain Project several times throughout the summer. They guided me through my poster, PowerPoint slides, oral presentation, and question-and-answer session. Because of their help, I felt very prepared and confident in giving my presentation.

It wasn't until I was in Boise that I truly realized the impact that the Cain Project had on me. My poster won first place. Listening to the presentations by students from other

universities, I realized how important good presentation skills are and how easy it is to give a bad presentation. You could do earth-shattering research, but if you aren't able to communicate it well, then it's lost.

I decided then to accept Dr. Tracy Volz's offer to work for the Cain Project as a presentations coach, hoping to improve my own presentation skills while helping my fellow students with this difficult task. I'm going through training right now, and I'm looking forward to coaching soon.

There are so many students at Rice, both undergrads and grad students, who, like me, have not had much previous experience in giving presentations. They're faced with the task of presenting their research and ideas to professors, potential employers, and their peers, and have no idea where to start.

By guiding these students, the Cain Project helps them to give a clearer, more organized, and more powerful presentation. More importantly, however, the project helps these students in the long-run, giving them experience and confidence with presentations that will stay with them forever. Rice prides itself on sending its graduates into the world ready to become leaders, and the skills that the Cain Project teaches are an integral part of this preparation.

Carolyn Jackson Celebrates Birthday, Cain Project with Friends



Carolyn Jackson

On September 25th Carolyn Jackson, class of '49, and friends from her years at Rice joined Cain Project faculty and advisory committee members at a luncheon in the Farnsworth Pavilion to celebrate her 75th birthday. The chocolate mousse and fresh raspberry birthday cake was loaded with the traditional candles, but the honoree directed her gifts toward the Cain Project. Carolyn presented

director Linda Driskill with a check for \$10,000; classmate Ellis Rudy contributed an additional thousand dollars, and several friends who could not attend sent checks, too. Several have volunteered to participate as mentors for students in the spring.

As the photos on the insert tell, everyone had a glorious time. Carolyn's favorite flower, the daylily, was featured in the table arrangements and in a floral spray presented to her for her birthday.

Among the guests were students who have received Golden Scholarships, which are made possible when classes present the University with special large gifts at their 50th anniversary homecoming. Many of the guests were on Carolyn Jackson's



Carolyn with Herb and Beverly Stone

committee that raised the funds for the Class of '49's gift. Herb and Beverly Stone, Woods and Patsy Martin, Lee Kobayashi, Don Williams, Don Kehn, and many others enjoyed meeting Daniel Huffaker and Xiaoming Lin, two of the Class of '49's scholarship students.

Aubrey Farb, class of '42, who taught accounting at Rice for several years, his wife Sylvia, and friend Coralie Kelly were seated at the table with Rassul Zarinfar, a class of 1942 scholarship recipient. Rassul also talked with Camille and Ray Simpson, Bob and Donna Wilkins, and Ellis Rudy about his experiences at Rice. Abigail Watrous, who holds a class of 1951 scholarship, expressed her appreciation to Betty Wood, Edgar Sharp, and John and Virginia Durrett.

During dessert, student presentation coaches Sam Jones and Gina Upperman described their experiences with the Cain Project and their views of how their work fits into the curriculum in sciences and engineering. Both find coaching other students to be one of the highlights of their week.

Carolyn, whose devotion to Rice students is remarkable, backs the Cain Project partly because her husband John and other engineering and science



Bob Cunningham and Woods Martin

classmates so often picked out communication as the most valuable addition Rice could make to its fine engineering and sciences curriculum. Classmate Bob Cunningham, '49, who now leads several student design teams as a faculty member in Mechanical Engineering 407/408, helps achieve that goal working with the Cain Project and requiring practices in oral presentations and design reports.

Rice University alumni are outstanding in their support of students through the major donations made each year as classes reach their 50th anniversary of graduation. Now the Cain Project is involving alums in another form of support for students: as alumni communication mentors. This spring Assistant Director Tracy Volz will hold sessions to train alumni to coach student presenters before conference talks, poster presentations, and design reviews.

Many alums have experience from community organizations and business that will enable them to ask the kinds of questions students will encounter on the job or at these special events. The alumni mentors will help students make the crucial transition from academic presentations to industry and public settings.



Carolyn Jackson and Golden Anniversary Scholarship winner Abigail Watrous

The Cain Project is grateful to Carolyn Jackson for her active support of Rice students and its activities.

Celebrating A Friend's Birthday



Don Williams, Evelyn Sterling & Raleigh Johnson



Ahmad Durrani, Gina Upperman & Linda Driskill



Carolyn, Ahmad Durrani & Mary Purugganan



McGinnis Clark, Donald Kehn
& Daniel Huffaker



Julie Zeleznik, Edgar
Sharp & Ray Simpson



Tracy Volz & Carolyn Jackson
(Left)



Betty Wood



Bob & Donna Wilkins



Ellis Rudy & Bill & Jo Ann Hazlett



Camille Simpson & Jetta Westerholm



Aubrey & Sylvia Farb
& Coralie Kelly



John & Virginia Durrett



Bunny McClendon & Carolyn
(Left)



Lee Mary Kobayashi & Mary Purugganan



Patsy Martin & Janie Hammons

Mayan Resorts Academic Conference

Provost Heads Contingent to First Mayan Resorts Academic Conference

Provost Eugene Levy, University Professor Neal Lane, Vice President Eric Johnson, and Professor Linda Driskill represented Rice at the first Mayan Resorts Academic Conference June 26-28 at the Nuevo Vallarta Mayan Palace. The conference successfully coordinated a review of international communication programs at Instituto Tecnologico y de Estudios Superiores de Monterrey and Rice University and led to the discussion of new cooperative arrangements between Instituto Tecnologico y de Estudios Superiores de Monterrey, Iowa State University, and Rice University. University Professor Rebecca Burnett of Iowa State University, who was a visiting professor with the Cain Project in spring 2002, represented Iowa State University.

Participants learned about the mission and curricula of the two universities and worked with Dr. Burnett to refine the definition of intercultural communication as it pertains to students preparing to work abroad. In the final session, small groups met to envision the best possible program to foster intercultural and international communication skills and proposed concrete steps that could accomplish such a vision. Miguel Angel Montoya of Instituto Tecnologico y de Estudios Superiores de Monterrey has since visited Rice to discuss the plans further.

Mexico is the United States' number one trading partner, and an increasingly large number of people of Mexican heritage live in the United States. As Mexico and the United States become more closely connected through business and interpersonal relationships, the need to educate students to communicate well with people from other cultures will become more important for political stability and business. Internships and study abroad opportunities can help students learn to communicate.



Mayan Interns Renee Pean, Heleo Sanchez, and Sarah Rufca



The Mayan Palace Resort at Nuevo Vallarta

The Mayan Resorts is the largest chain of resorts in Mexico, and six Rice students were given internships there in the summer to experience Mexican business culture. Three of the students, Andrea Zimmer, Kristin Tucker, and Renee Pean, are studying for B.S. degrees in Civil Engineering. Andrea Zimmer will have a double major in German as well. Heleo Sanchez, whose major is computer science, Andrea Metz, who earned a BA in Arts and Music and Sarah Rufca, who is double majoring in history and sociology, were also interns.

The beautiful Mayan Palace resort complex at Nuevo Vallarta is still being expanded, and the student interns were able to be involved in many construction and administrative projects. The resort has the largest swimming pool in the Americas, winding through the property, which has over a mile of beach front. The youth and the significant responsibilities of their Mayan Palace mentors impressed the Rice students. Some of these students will receive scholarships as international communication mentors with the Cain Project in spring 2004.

Students interested in preparing for internships abroad should consider enrolling in "Preparing to Communicate in Five Countries, Many Cultures," taught by Dr. Ute Cezeaux in the spring (NSCI 307/ENGI 307, one credit hour).

PREPARING FOR PROFESSIONAL COMMUNICATION *In Five Countries, Many Cultures*

ENGI/NSCI 307

To become world class in today's job market you must know how the world communicates.

ENGI/NSCI 307 will teach students how to anticipate the roles, situations and expected communication practices they will encounter. Countries such as the United Kingdom, China, Germany, Mexico, and the Middle East are the ports of call.

Taught by Dr. Ute Cezeaux, who has spent the past 10 years designing and facilitating intercultural programs for business travelers, company employees, and American families to prepare them for travel and life overseas.

Sponsored by the Cain Project in Engineering and Professional Communication