

Council of Industry and Academic Advisors

Report of Meeting On March 24, 2008

June 18, 2008

The Center for Promoting STEM (CP-STEM) held its second meeting of the Council of Industry and Academic Advisors (CIAA) on March 24, 2008. Next meeting will be **Monday, March 9, 2009** from 2 – 5pm with lunch at 1pm. Please see Appendix One for the meeting agenda and Appendix Two for the list of CIAA participants.

Dr. Nancy Prendergast, Assistant Vice President of Academic Affairs, made some welcoming remarks. After attendees introduced themselves, Dr. Tingxiu Wang presented CP-STEM research on STEM attitudes at Oakton Community College. Gloria Liu presented the objectives, overview, highlights, and updates of the grant. At different points of the meeting, participants were invited to respond to various questions, which focused on STEM attitudinal research, support from the Board of Trustees, pedagogy, connecting with high school and Oakton students, connecting with Oakton alumni, and overall program assessment.

Below is a summary of comments and suggestions shared at this meeting.

Research on STEM Attitude

CP-STEM conducted STEM attitudinal surveys on students who received interventions from CP-STEM programs and on a control group of students who did not receive CP-STEM interventions. Many suggestions toward deepening the analysis include comparing CP-STEM attitudinal scores with results from other institutions; breaking the data down by gender, ethnicity, and first generation, although current sample size is too small to make generalizations; and comparing generational attitudes.

CP-STEM could solicit feedback from Elaine Seymour, who co-authored the book Talking about Leaving. Two other resources CP-STEM should consider are the DO-IT program at the University of Washington and the work of Dr. Freeman A. Hrabowski III, President of the University of Maryland in Baltimore County.

Meeting attendees offered some insights to building students' confidence. Effective intervention to increase confidence should include improving content and locus of control. Mentors might be able to determine student's confidence better. Expectations affect students' performance. A student expecting a C, but received a B will boost his/her confidence more than if the student were expecting an A, but received a B.

For the Board of Trustees

CP-STEM could seek faculty support of STEM professional development workshop from the Board of Trustees. CP-STEM could also submit a proposal to Oakton's Educational Foundation and other funding sources.

Pedagogy

General statements about teaching pedagogy included, “Cover less in class is more.” Activity-based learning promotes group work. PBL among other similar approaches are designed to boost enrollment. Traditional STEM learners tended to be loners versus group learners in current popular pedagogy.

A CCLI proposal with a focus on Second Life could be too big to tackle. Without sufficient existing Oakton foundation for the technology, NSF will most likely not fund the proposal. Oakton could consider adaptation and implementation of PBL. CP-STEM should consider a CCLI that builds from the STEM Enrichment Program. Since this advisory meeting, CP-STEM discussed many ideas for CCLI and decided to take another year to form a better proposal.

At one institution, faculty research is integrated into class as STEM service learning. A possible keynote for iTECH 2009 is a Northwestern University engineering professor who focuses on problem-centered learning.

High school outreach

Successes of CP-STEM require strong high school outreach. Recommendations for improving outreach included identifying target audience, recruiting current STEM students to visit their high school alma mater to promote Oakton, collaborating with high school teachers on jointly beneficial projects such as dual credit of calculus, teacher exchange on different teaching perspectives, and having community college faculty teach one or two classes at high schools. Fred Flener of NEIU was cited to have taught a high school geometry class to gain experience to teach a math education course. Community college faculty may need to obtain a temporary high school certificate. Hughes Hallett mentioned a teacher cooperative program in which a high school teacher is allowed to be on sabbatical to teach at a local community college.

High schools are most interested in dual credit with Oakton. Providing a seamless transition from high school to college, dual credit is attractive especially for first generation students. In a 2004 report titled “Dual Credit in Illinois: Making it Work” (http://occr1.ed.uiuc.edu/Projects/dual_credit/DualCredit_in_IL.pdf), the Office of Community College Research and Leadership offered other benefits as well as challenges to dual credit. Would Oakton find a common ground with high schools to develop dual credits in academic math and science courses?

Oakton students

Besides research on students’ STEM attitudes, discussions about Oakton students focused on data collection and transferability. When student requests transcripts to 4-year institutions, Oakton can request that the 4-year institution share whether the student was accepted, denied, wait listed, or enrolled. CP-STEM could require students who are accepted into CP-STEM programs to declare STEM as their major.

Oakton must emphasize that STEM students should complete the entire sequence of science or math courses (for example, CHM121 and 122) before transferring. Otherwise, the transfer school may require students to retake the entire sequence of courses at the 4-year institution. Workshops on differences between Oakton and 4-year institutions may help students prepare for differences in campus culture and increased opportunities. Oakton can offer paid internship with college credit and unpaid internship as “field experience” with college credit.

Program Assessment

From the meeting presentation, CP-STEM has yet to state clearly how it is determining its successes. Is CP-STEM measuring success through student attitudes, milestones of items such as student enrollment, students' STEM knowledge such as Force Concept Inventory for physics, or the interactive nature of STEM courses to engage STEM students? Once CP-STEM is able to identify a method of tracking its STEM alumni, it should translate the number of students CP-STEM has helped to transfer into dollars spent. NSF assessment grant book might offer suggestions.

Alumni

Besides connecting with STEM alumni through Facebook, CP-STEM will host an annual pizza party in June to continue to connect with STEM alumni.

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Appendix 1
Council of Industry and Academic Advisors
March 24, 2008, 2:00 – 5:00 pm
Room 1506, Des Plaines
Agenda

- 1:00 pm I. Pre-Meeting Lunch and Informal Conversations
- 2:00 pm II. Welcome Remarks and Introduction to Oakton, Nancy Prendergast,
Assistant Vice President of Academic Affairs and Dean of Ray Hartstein
Campus
- III. Introductions
- IV. Project Progress
- A. Brief review of project programs
- B. Outreach to high schools, four-year institutions, industries
- C. Connecting students with STEM careers through curriculum and
 internships
- D. Tracking alumni
- E. Using research and findings to transform the institution
- 3:15 pm V. Break
- 3:30 pm VI. Continue project progress
- 4:30 pm VII. Conclusion

Discussion Questions

- A. What national trends are occurring in STEM teaching pedagogy and education?
- B. What STEM initiatives are being pursued in your institution?
- C. What national policies that relate to STEM education are being considered and/or adopted?
- D. What supports should we request from Oakton's Board of Trustees?

Tentative date and time for next meeting:

Monday, March 9, 2009, 2 – 5:00 pm, with lunch from 1 – 2pm.

Appendix 2

The Second Annual Meeting of The Council of Industry and Academic Advisers

March 24, 2008

Participant List

<p>Dr. Charles Bomar Applied Science Program Director Executive Director, Orthopterists' Society Professor of Biology University of Wisconsin-Stout Menomonie, WI 54751 715-232-2562 bomarc@uwstout.edu</p>	<p>Michele Brown Director of Admissions and Enrollment Management Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1724 mbrown@oakton.edu</p>
<p>Dr. John Carzoli Chair of Physical Sciences Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-376-7210 jcarzoli@oakton.edu</p>	<p>Cliff Casey Oakton Community College 1600 E. Golf Road Des Plaines, IL 60016 847-635-1747 cliffc@oakton.edu</p>
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<p>Dr. Mel George Emeritus President of University of Missouri & PKAL Village Elder 1509 W. Rollins Rd. Columbia, MO 65203 mgeorge@math.missouri.edu</p>	<p>Dennis Graham Dean of Science and Health Careers Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1862 dgraham@oakton.edu</p>
<p>Julia Hassett Chair of Mathematics and Computer Science Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1974 juliah@oakton.edu</p>	<p>Donna Hoffman High School Liaison Center for Promoting STEM Oakton Community College 1600 E. Golf Road Des Plaines, IL 60016 rdhoff@comcast.net</p>

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<p>Dr. Deborah Hughes Hallett University of Arizona Department of Mathematics 617 N. Santa Rita Ave. P.O. Box 210089 Tucson, AZ 85719 520-621-6886, 520-621-8322 dhh@math.arizona.edu</p>	<p>Joe Kotowski Co-Director of CP-STEM Chair of Engineering Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1861 koto@oakton.edu</p>
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<p>Dr. Carolyn Narasimhan Professor of Mathematics, Asso. Dean DePaul University College of Liberal Arts and Sciences 990 West Fullerton Chicago, IL 60614 CNARASIM@depaul.edu</p>	<p>Dr. Jeanne Narum PKAL Director ICO-PKAL, Suite 803 1730 Rhode Island Ave., NW Washington, DC 20036 jlnarum@ico-dc.com</p>
<p>Dr. Nancy Prendergast Assistant Vice President of Academic Affairs Dean of Ray Hartstein Campus Oakton Community College 7701 North Lincoln Avenue Skokie, IL 60077 847-635-1404 nprender@oakton.edu</p>	<p>Dr. Bob Sompolski Dean of Mathematics and Technologies Co-Director of CP-STEM Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1690 sompolski@oakton.edu</p>
<p>Dr. Harry Ungar 175 Cherokee Lane Aptos, CA 95003 831-708-2049 haungar@cruzio.com</p>	<p>Dr. Tingxiu Wang Director of CP-STEM, Professor of Mathematics Oakton Community College 1600 East Golf Road Des Plaines, IL 60016 847-635-1751 tingxiu@oakton.edu</p>

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