

Drexel University, the University of Maryland, and their Libraries' Experiences Collaborating with Various Research Programs

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Topics

- Description of Various Research Initiatives
- Review and Background of the Literature
- Library Instruction
- How Successful Was The Collaboration?
- Other initiatives by IATUL members

Various Research Initiatives

- DREAM: Drexel Research Experience in Advanced Materials
- Research Experience for Teachers: RETAIN & RET-NANO
- Gemstone: University of Maryland (U.M.) Honor's Research Program
- ESTEEM: Engineering Science & Technology to Energize & Expand Young Minds

DREAM: Drexel Research Experience in Advanced Materials

- NSF-funded project hosting 11 undergraduates from various universities
- Emerging technology areas such as Biomaterials, Nanomaterials, Advanced Materials
- DREAM Fellows work in research teams with faculty mentors & graduates and receive \$4,000 stipend
- 10 week program include research seminars, equipment demonstrations, library workshops, and field trips
- Fellows keep journals, produce oral presentations, and written reports

- DREAM received high rating from Fellows for providing knowledge, hands-on-experience, & sense of personal growth

http://www.materials.drexel.edu/programs/dream_reu/

RETAIN: Research Experience for Teachers in Areas of Innovation & Novel Technologies

- NSF sponsored - Experiential engineering education to Delaware Valley K-12 teachers
- 5 weeks research experience in emerging technologies with \$5,000 stipend
- Biotechnology, IT, Nanotechnology focus
- Each participant has a faculty member and graduate student as mentors
- Collaboration with leading researchers in engineering
- Hands-on experience in research lab, intro to Drexel Engineering Curriculum courses, field trips, etc.

RETAIN: Research Experience for Teachers in Areas of Innovation & Novel Technologies (continued)

- Weekly seminars by education faculty on how to bridge the technology they learn with classroom teaching
- Seminars on emerging technology and professional development
- Field trips to experience engineering in action
- Create website, grant proposal sketch and a poster
- Enable participants to enhance delivery of science education to HS students at respective schools

<http://www.coe.drexel.edu/ret/>

RET-NANO: Research Experience for Teachers in the Area of Nanotechnology

- NSF-funded 3 year program RET program
- Partnership between Drexel Nanotechnology Institute & University of Pennsylvania's IGERT fellowship program
- 20 high school math/science teachers & community college faculty learn about nanotechnology
- Each participant has a faculty member and graduate student as mentors
- Workshops: proposal writing, library research
- Equip RET-NANO Fellows to teach & inspire students in nanotechnology-related careers
- Create lesson plan, website, and a poster

<http://nano.materials.drexel.edu/ret/>

Gemstone: University of Maryland (U.M.) Honor's Research Program

- 1996, Dr. William Destler, U.M. Provost/Sr. V.P. of Academic Affairs (former James A. Clark Engineering School Dean)
- Convinced NSF-funded 4 year program would trump CAPSTONE, senior research/design teams
- Unique multidisciplinary research program exploring interdependence of science & technology with society
 - Allowance of great latitude in students' decision-making
 - interdisciplinary (any major welcome)
 - four years (final three years together)
 - living-learning community

ESTEEM: Engineering Science/Technology to Energize & Expand Young Minds

- U.M. sponsored program enhancing interest in engineering & science/technology among K-12 students
- Also, Exploring Engineering at U.M. (Women in Engineering), Up Up and Away, Upward Bound Math/Science Regional Center, etc.
- Students conduct independent year-long research project under direction of engineering faculty member
- Co-founder, professor Dr. Otto Wilson requested library instruction often for sections of 10 students each

Review of Literature

- Collaborative partnerships play important role in students achieving “Information Literacy” goals
- Research Collaboration – 2 or more individuals work together to provide unique contributions to produce new knowledge
- Collaboration among librarians, students, faculty, & institutions provide mechanisms targeting specific problems facing university students
- Librarian/Faculty collaboration is fundamental in attaining information skills among participants & becoming more crucial (i.e., academic honesty)

Library Instruction: Project DREAM

- Drexel's Engineering Librarian provides general instruction to 11 DREAM students
- In-depth topical research similar to tDEC (the Drexel Engineering Curriculum) freshman design teams
- Information skill workshop in the library
 - Focus on teaching online catalog
 - Find appropriate print and electronic books, handbooks, encyclopedias, and other relevant books for developing subject background

Library Instruction: Project DREAM

- Interactive approach encouraging talking by students (questions/answers)
- Informal environment to increase student participation
- Opportunities to explore and browse through a sample of reference and regular books in class
- Individual and group consultations encouraged
- Online abstracting and indexing tools (i.e., EI Compendex, INSPEC, PUBMED)
- Develop awareness of available resources
- Follow up with each student & student groups of three allowing additional opportunities for more individualized consultations

Library Instruction: RETAIN & RET-NANO

- High school teachers/community college faculty work with engineering faculty & librarian
- Develop awareness about the availability of variety of information tools considered crucial
- Participants (18 in RETAIN/ 20 in RET-NANO) given general library instruction initially
- 4 library sessions (2 per group for 2 hours) shown many of same databases as DREAM students
- First session dealt with online catalog and electronic resources
- New subject areas for participants; understanding subject matter crucial through various print and electronic reference works

Library Instruction: RETAIN & RET-NANO

- Second session dealt with funding resources for grant proposal writing for resources/opportunities to improve classroom/labs
- Community of Science funded research and funding opportunities used to illustrate the process
- Funding alerts by e-mail
- Other funding resources for schools and community colleges
- Tips and handouts, email assistance, phone reference, and individual consultations

Library Instruction: GEMSTONE

- Librarians volunteer to become Gemstone Librarians (3 years) contributing individually or campus wide
- 3 Gemstone Librarians create & instruct 15 freshman sections (GEMS 100) on resources for mock projects
- GEMS 201, 3 year teams formed & shown crucial databases/searching methods & how to fine tune topics
- Smart Roads Gemstone Team shown COMPENDEX, TRIS, ASCE Database, INSPEC (changed project to signaling) & patent DBs, USPTO, & Espacenet
- Gemstone formal theses/May Graduation Ceremony

Library Instruction:ESTEEM Program

- High school students given information on basic library procedures (i.e.; checkouts, ILLs, catalog, etc.)
- Librarians show general databases (i.e.; Lexis-Nexis, INGENTA, ScienceDirect) to become better acquainted with 1 year long project topics
- Technical sources (i.e.; Applied Science & Technology, INSPEC, & COMPENDEX) introduced to obtain technical literature
- Patent databases, USPTO, and Espacenet, are demonstrated for related drawings (i.e.; bone implants)

Has Collaboration Worked??

- Consistent referrals in IATUL Conference papers since 2000 to “Collaboration”
- Institutional collaborations usually built on pre-existing relationships within university system or consortium
- Collaboration began during the 2004 ASEE conference when Bob Kackley and Jay Bhatt shared research programs verbally
- Program coordinators of DREAM and RETAIN were informed and possibilities of paper presentation at IATUL were discussed
- Collaboration with Bob Kackley (UM) began with sharing ideas on instruction, teaching styles, information needs and teaching methods

Has Collaboration Worked? (Continued)

- Continuous communication among various participants through email and phone between Drexel and UM
- Feedback from the program coordinators (DREAM and RET) for the workshops and future recommendations given to the librarian
- Brain storming during the paper writing process resulted in many new ideas (e.g.; honest feedback is an important part of any collaborative venture, plays an important role in improving teaching styles and methods)
- Faculty members, program coordinators, and participants learned the importance of developing information seeking skills
- Various IATUL members collaborate on Information Literacy related projects and share their findings in international conferences

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