

## **Crossing Professional Boundaries: The Interprofessional Projects Program at IIT**

**Thomas M. Jacobius, Gerard G. S. Volland**  
*Illinois Institute of Technology*

Illinois Institute of Technology is transforming its undergraduate program through the concept of *interprofessional* education by requiring project-based team experiential learning across the span of disciplines within the Undergraduate College and by involving graduate programs from across the university, including those in engineering, science, law, business, psychology, design and architecture. Through the IIT Interprofessional Projects [IPRO] Program, the distinctiveness of this learning model has been tested for more than four years via 100 pilot projects to-date, involving more than 600 students and 60 faculty.

The core of our IPRO Program is the formation of project teams, each with a mix of 5-15 students from across the professional disciplines and from multiple levels (sophomore through graduate). All undergraduate students are required to complete a minimum of two such semester-long interprofessional team-based learning projects before graduation. Workplace organizations (e.g., corporate, entrepreneurial, non-profit, government) supply multifaceted topics and interact with the teams in a co-mentoring role, along with a faculty mentor and graduate student project leader.

### I. Examples of IPRO Projects<sup>1</sup>

One successful IPRO project {which involved separate teams working sequentially over several semesters) used the power of cyberspace to help restore the rule of law in Bosnia following the 1992-96 war that devastated the country. Undergraduates in computer engineering, computer science, and psychology, together with graduate students from IITs Chicago-Kent College of Law, formed the Project Bosnia IPRO teams. They successfully acquired donated equipment from Sun Microsystems, U. S. Robotics, Cisco Systems and Motorola, together with significant monetary contributions from the Soros Foundation and the United States Information Agency. These teams created a first-ever digital infrastructure for Bosnian courts and legislature, established Internet servers and forums to help assure the free flow of information both within and from Bosnia, and traveled to the Balkans over spring break to install the equipment. This computer system provided a new and unanticipated benefit beginning in 1998: the documentation of thousands of Albanian refugees displaced by ethnic repression in Kosovo. Our Operation Kosovo IPRO group established a system to track and reunite these refugee

families. IPRO team members also interviewed atrocity victims in the refugee camps in order to gather detailed evidence needed to prove genocide and crimes against humanity before the International War Crimes Tribunal for the former Yugoslavia.

Another cluster of sequential IPRO teams focused upon the problem of revitalizing an urban Chicago neighborhood. Bronzeville once thrived as the home of Chicago's blues and jazz communities, but the neighborhood has enjoyed little success in new business development during recent times. With support from the John D. and Catherine T. MacArthur Foundation, several IPRO teams developed a plan to revitalize the neighborhood by converting an historic landmark -- the Overton Building -- into a 'business incubator', in effect serving as a program site offering business know-how, start-up support and shared overhead to neighborhood entrepreneurs. Team members from architecture, manufacturing technology, law, marketing, and computer engineering performed a variety of tasks, ranging from the research needed to develop a viable remodeling plan for a registered landmark through the financial analysis of renovation costs to the development of management procedures for the incubator itself.

Other recent IPRO project topics include the following:

- *Automated Patient Monitoring/Diagnosis by Statistical & Artificial Intelligence Tools*
- *Remote Sensing and Real-Time Diagnostics for a Locomotive Gear Case Subsystem*
- *Open GL Window Manger for "X" Windows (A Virtual Reality Interface)*
- *Tools for Schools: Hardware/Software for Expediting Teacher-Student Decision Making*
- *Computer Visualization of Evidence in Criminal Law Cases*
- *The Electronic Nose*
- *State-of-the-Art Assessment of Web-Based Distance Education and Training*
- *Wireless Information Network for the Chicago Transit Authority*
- *Investigating Juror Reactions to Presenting the Quantitative Results of Forensic Tests*
- *Using Multimedia and Interaction to Improve the Effectiveness of Web-Based Learning*
- *Exploring Applications for the Motorola VoxML Web Markup Language*
- *Study of Noise Sources and Abatement Strategies for CTA Elevated Systems*
- *PEM Fuel Cell Power Generation System*
- *Open GL Window Manager for "X" Windows (A 3D Virtual Reality Interface)*
- *Applying Sensors & Telecommunications Technology to Monitor Tank Car Shipments*
- *Opportunities for Innovation in Assistive Technology*
- *Heat-Driven Refrigeration for Developing Countries*
- *The IIT Invention Center Team*

## II. Lessons Learned

Through the IPRO Program we have learned a number of important lessons about ensuring successful academic-industrial partnerships in project-based education. These include the following critical elements that should be embedded within such partnerships:

- All participants should enhance the traditional undergraduate curriculum by addressing real-world issues and problems in the proposed projects, and by working closely with the student teams in carefully evaluating viable approaches and solutions
- Student teams should be created that cut across the boundaries of appropriate disciplines and professional programs (engineering, science, law, business, psychology, design and architecture) in order to ensure the necessary vigor and knowledge needed to solve real-world problems
- Teams should involve graduate students (e.g., professional master's) as project leaders or consultants whenever appropriate
- Teams and sponsors should interact closely with faculty throughout the lifespan of each project
- Project topics should
  - Be structured with specific, measurable goals for defining successful effort
  - Allow students to develop appropriate skills and perspectives needed for successful teamwork (e.g., competency in such areas as communication, leadership, creative thought, problem-solving methodologies, project management, technology transfer, information searching and synthesis, balancing quality and economics, ethics, safety issues, environmental concerns, global diversity, client and customer relations, entrepreneurship, and the legal protection of intellectual property)
  - Offer real and tangible benefits to the sponsor in the form of significant milestones achieved within the given timeframe of the project
  - Require multiple disciplinary perspectives, integrated through teamwork
  - Be sufficiently challenging and stimulating to energize students and faculty
- The staff member or other individual serving as the sponsor's principal representative or liaison to the team should
  - Have a stake in the project that complements her or his daily responsibilities
  - Be committed to working with the team on a regular and frequent basis
  - Bring both technical and business perspectives, with access to top management
  - Hold sufficient authority to represent corporate views and make decisions
  - Have a high level of interest, enthusiasm, patience and commitment to work with college students in a supportive role
  - Be willing to work with the faculty mentor to focus the team on project goals, operational constraints and professional standards, without squelching creativity and enthusiasm or influencing team dynamics
  - Maintain the flexibility to adapt the project to unanticipated developments
  - Have the ability to share experiences in working on or leading teams in the workplace

### III. Conclusion

IIT's efforts to develop the pedagogy, policy, practice, and assessment methodologies for interprofessional education through a university-wide consensus-building process has produced many fruits. We expect that the IPRO Program will continue to flourish as a signature element of our institution's educational offerings.

#### THOMAS M. JACOBIOUS

Thomas M. Jacobius is Director of Industrial Liaison and Technology Transfer at the Illinois Institute of Technology. His responsibilities broadly encompass IIT's efforts to build relationships with external organizations through such new initiatives as the Interprofessional Projects [IPRO] Program as well as to transfer IIT's technologies through licensing or new venture formation.

#### GERARD G. S. VOLAND

Gerard G. S. Voland is the Associate Vice President for Undergraduate Education at the Illinois Institute of Technology. Dr. Voland's work in educational reform initiatives has been funded by the National Science Foundation, the U.S. Department of Education, and the General Electric Learning Excellence Fund. He has received numerous awards for teaching excellence and he has written three textbooks, the latest of which is *Engineering by Design* (Addison-Wesley Longman, 1999).

---

<sup>1</sup> More detailed information about these (and other) projects can be found in the current IIT Viewbook (from which these project descriptions have been adapted) or by visiting our website at <http://www.iit.edu/academics/ipro/>.