

# International Interprofessional Service Learning Projects – Chicago to Bogotá and Back

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## INTRODUCTION

Most of the undergraduate programs at the Illinois Institute of Technology (IIT) require two Interprofessional Projects (IPRO), which are multidisciplinary team projects that include major components of team building, communication, ethics, and project management. (<http://ipro.iit.edu>)

This abstract describes the development of a sequence of international service learning IPROs aimed at improving educational opportunities in Latin America for studying orthotics and prosthetics. The projects involved mainly engineering students but also included students from other majors such as psychology, architecture, and biology.

The initial projects were aimed at developing and improving educational programs in orthotics and prosthetics in Latin America. However, in the most recent version of this ongoing sequence of courses, one of our collaborating institutions in Bogotá, Universidad de los Andes, is now helping us to develop a similar educational program in the greater Chicago area.

## BACKGROUND

The population of the United States is approximately 300 million people. There are about a dozen institutions of higher education that offer educational programs in various aspects of orthotics and prosthetics. This number includes three developing programs. The programs are accredited by the National Commission on Orthotics and Prosthetics Education (NCOPE).

On the other hand, the population of Latin America is well over 500 million people. Yet, it has fewer than five education programs in orthotics and prosthetics with only one of the programs accredited by the International Society for Prosthetics and Orthotics (ISPO). It is obvious that there is a genuine need for more educational programs.

## INTERPROFESSIONAL PROJECT DESCRIPTION

All the students in the projects were new to the field of orthotics and prosthetics and had little or no background in biomechanics. Each project team was divided into several sub-teams who were each assigned a particular topic. The sub-team members researched the topic and developed educational modules based on the results. The educational modules consisted of Power Point Presentations, brochures, and other written material such as worksheets. Hands-on demonstrations were also

developed as part of the presentation of the materials to students in orthotics and prosthetics.

The educational modules were evaluated by outside experts from some of the collaborating organizations. Moreover, some of the presentations were given to students and faculty in the Orthotics Certificate Program at the Northwestern University Orthotic and Prosthetic Center (NUPOC). The educational modules were modified according in response to the feedback.

## UNIVERSIDAD DON BOSCO

In May, 2002 the authors visited Universidad Don Bosco (UDB) in El Salvador and delivered a five-day short course concerning the non-operative treatment of deformities of the spine. UDB has the only education program in orthotics and prosthetics in Latin America accredited by ISPO. One author (KPM) lectured on the biomechanical aspects of spine deformities, which has significant mechanical engineering content. The other author (MG) lectured on the medical aspects of spine deformities. The topics were synthesized in a hands-on clinical workshop where real patients were treated by the students in the course. This experience opened the path for proposing an international service learning project at IIT aimed at providing training to treat one specific spine deformity called “scoliosis”.

In the 2002-2003 academic year, there was a sequence of two IPROs designed to prepare a group of IIT students to play a significant role in delivering a specialized five-day workshop on non-operative treatment of scoliosis. While the courses were assigned to an IIT faculty member (KPM), they included participation of several outside experts from our collaborating organizations.

The two IPRO course sequence culminated in a trip to Universidad Don Bosco in May, 2003 to deliver the short course. Thirteen students from the IIT IPRO team participated. Perhaps the most novel feature of the experience was participating in the treatment of real patients as an undergraduate.

## LABORATORIO GILETE

Laboratorio Gilete is located in Bogotá, Colombia. It was founded in 1989 by Miguel Gomez, M.D. with help from The Rotary Foundation. In 2004, the authors spent five months together at Laboratorio Gilete working on a variety of projects including beginning the development of the first orthotics and prosthetics education program in

Colombia located at Centro Don Bosco (CDB). CDB is a large technical high school and is part of a system of schools around the world run by the Salesian Order of the Roman Catholic Church. UDB is also part of this system.

CDB has the necessary basic facilities to teach students how to fabricate orthotic and prosthetic devices. They also have most of the necessary faculty. For some of the more specialized topics, part-time faculty from Laboratorio Gilete are available. Moreover, there is very strong student interest.

One area that needed help was providing educational materials for the specialized topics. This led to the establishment of a second sequence of IPROs beginning in the spring of 2006. The structure of the projects remained the same as before. The authors had the opportunity to encourage participation of an individual from Universidad de los Andes in the spring 2006 IPRO. That individual provided extremely valuable input for translating our educational modules into Spanish. (<http://www.iit.edu/~ipro309s06/>)

In May, 2006 the first educational modules were delivered by five IIT students from the IPRO at a conference held in Bogotá. There were approximately 170 people in attendance at the conference, which was held at La Escuela Colombiana de Rehabilitación.

### **JOLIET JUNIOR COLLEGE TECH PREP PROGRAM**

Even though there are many more opportunities to study orthotics and prosthetics in the USA compared to Latin America, there is still a shortage of practitioners. To help address that need, a program with virtually identical content to the one being developed in Bogotá was established at the Joliet Junior College (JJC) in Joliet, Illinois. It began with its first students in January, 2007.

All of the educational modules that were developed for CDB are transferrable to the JJC program. In fact, they are being used as part of the new program. Because of the demographics in the Joliet area, there is a significant Hispanic population. Having our educational materials available in both English and Spanish makes them even more accessible and may help encourage individuals whose first language is Spanish to consider studying orthotics and prosthetics. Without the participation of Universidad de los Andes, it is unlikely that our educational materials would have been translated into Spanish.

### **CONCLUSION**

The IPRO team from the fall 2006 semester continued developing additional educational modules. One of the students from that team graduated in December, 2006 and is spending one year living and working in Bogotá. He is spending time at Laboratorio Gilete as well as working with faculty and students from Universidad de los Andes to establish a “parallel” IPRO experience there.

What began as a “one way” project, from Chicago to Bogotá, to help develop and improve orthotic and prosthetic education in Latin America has come full circle. Indeed, by collaborating with institutions in Colombia, the value of the educational modules developed by the student teams has actually doubled. It is true that this was an unintended consequence, but a most welcome one.

### **COLLABORATING ORGANIZATIONS**

Listed below are some of the collaborating organizations:

- Universidad de los Andes, Bogotá
- La Escuela Colombiana de Rehabilitación, Bogotá
- Centro Don Bosco, Bogotá
- Laboratorio Gilete, Bogotá
- Bioconcepts, Inc., USA
- Mercy Health System, USA
- Dynamic Orthotics and Prosthetics, USA
- Children’s Memorial Hospital, Chicago, USA
- Joliet Junior College Tech Prep Program, USA
- Northwestern University Prosthetics and Orthotics Center, USA

### **SUB-TEAM STRUCTURE BY SEMESTER**

Fall 2002 and Spring 2003 – Specialized Treatment Procedure for Adolescent Idiopathic Scoliosis

- Sub-teams of two students each
- Each sub-team learns same specialized procedures for plaster impression of torso
- Procedures demonstrated by each sub-team

Spring 2006 – Biomechanical Fundamentals

- Upper Limb Orthotics and Prosthetics
- Lower Limb Orthotics and Prosthetics
- Spine Orthotics
- Orthopaedic Biomechanics
- Materials for Orthotics and Prosthetics

Fall 2006 – Clinical Biomechanics

- Anatomical Landmarks and Orthometry
- Range of Motion and Manual Muscle Testing
- Dermatomes, Myotomes, and Reflexes
- Standing and Sitting Posture
- Observational Gait Analysis

Spring 2007 – Applications to Specific Pathologies

- Diabetes and Club Foot
- Stroke and Cerebral Palsy
- Osteoporosis and Spine Trauma

### **References**

1. <http://www.iit.edu/~ipro309s06/>
2. <http://www.iit.edu/~ipro309f06/>

3. <http://www.iit.edu/~ipro309s07/>