

Project Plan IPRO 309

Educational and Technical Support of Orthotics and Prosthetics Education in Latin America

1.0. Objectives

- The primary objectives of the IPRO are to develop educational modules for an ISPO Category Three program. The Category Three program involves training Orthotists and Prosthetists who are able to build much need devices for patients. This program is being implemented in Bogotá, Colombia at Cento Don Bosco High School. We are trying to develop hands-on, interactive sessions that can be used as learning and review material in the subject of the biomechanics of human movements. the group was divided into subteams to cover the topics:

- palpation of anatomical landmarks and orthometry measurements

- range of motion testing and manual muscle testing

- evaluation of sitting and standing posture

- dermatomes, myotomes, reflexes and the spinal cord injuries

- observational gait analysis and use of crutches, canes, and walkers

By the end of the IPRO, each subteam should have developed a highly engaging 2 hour presentation that can be used in the class room setting. These modules may also be used at Joliet Junior College in Illinois, which is developing a similar program.

- By the end of this semester, each member of the team will have the knowledge to perform any of the tests discussed.

2.0. Background

There are over 513 million people (2000 Census) living throughout Latin America and the Caribbean. And yet there is only one ISPO (International Society for Prosthetics and Orthotics) accredited school. This program is located at the Don Bosco University in El Salvador. There are three unaccredited schools, two in Mexico and one in Argentina. The United States, with a population of almost 300 million (2000 Census) is home to 13 accredited O&P educational programs. It is estimated that there are less than 50 certified O&P practitioners and 1500 uncertified practitioners. There are approximately 2.5 million people throughout Latin America with unmet needs for this care.

The school we are working with, Centro Don Bosco, is a colegio or trade school. In February of 2005 an O&P program was started there to train technicians. Because it is just starting, this program is not yet accredited. When students graduate they will not be able to acquire a license from the ISPO. The situation is similar at Joliet Junior College.

There is a new law in Colombia that in the next few years all orthotics and prosthetics practitioners must be certified. This will mean an even greater scarcity of practitioners, and make the education program at Centro Don Bosco even more necessary.

During the spring semester of 2006, IPRO 309 produced 5 educational modules. Another of their foci was to create a bilingual website that would become a support tool for O&P instructors.

The cost of graduating a student from the O&P program at Centro Don Bosco is approximately \$3000. This cost includes the cost of equipment and tuition. This is a small expense when compared to the number of patients that could be treated. Many orthotics devices can be fabricated in one day, or overnight at the most. This causes most fulltime O&P practitioners to estimate seeing 250 patients a year. If a graduate works for 20 years, that comes out to less than \$1 cost per patient to train a technician. So although the initial cost may seem high, it is minimalized over a lifetime of practice.

3.0. Methodology/Brainstorm/Work Breakdown Schedule

A. Our problem: To learn the basics of clinical biomechanics as they relate to an entry level O&P technician training. The main challenge is to learn enough information that we have pertinent information to share. But we also have to share with our target audience in mind: high-school age students.

B. Our solution: The team is divided into subgroups that will each be researching an assigned area of clinical biomechanics. We also have designated the following positions to coordinate certain areas: International Liaison to communicate with Centro Don Bosco; Joliet Junior College (JJC) Liaison to communicate with JJC, and Accreditation Expert to check that we are fulfilling the requirements for accreditation.

C. Test solution: Each subgroup will be reporting to the rest of the class every other week. This will allow us to review each other's work to see if the material presented makes sense. This means that every other week each subgroup will be responsible for preparing a 15 minute presentation of new material. Each subgroup will also be ready to listen and critique the work of the other 4 groups.

D. Documentation: As the subgroups prepare the information, they will be working on PowerPoint presentations as well as worksheets and brochures. These will be uploaded to iGroups on an ongoing basis. If a group is not producing measurable work, they will be contacted by the team leader. As the information is presented to the group, the success will be measured by verbal and written feedback as to what is good in the presentation and what can be improved.

E. Accreditation Review: All material produced for either the Centro Don Bosco or JJC will be subject to review by the designated Accreditation Expert on the team. This will be to ensure that the material produced complies with the appropriate standards for accreditation. Also, we will have periodic presentations and check-ups to ensure that our work is on track.

F. Deliverables: The deliverables: the Project Plan, Mid-semester Reports, Website, Poster, Project Abstract, etc. will be generated by the team as a whole. The individual subgroups will be responsible for their own parts of the website and IPRO Day presentations, but the whole team documents will be composed by a compilation of members then reviewed by the whole team.

4.0. Expected Results

A. We will produce a curriculum that covers the basics of clinical biomechanics. There will be five different areas: Palpation of Anatomical Landmarks and Orthometry Measurements; Range of Motion Testing and Manual Muscle Testing; Evaluation of Standing and Seating Posture; Dermatomes, Myotomes, and Reflexes and Spinal Cord Injuries. These will focus on the how-to of the products, as well as address basic concepts that can be applied to a multitude of problems. In addition to the PowerPoint Presentation, this will include hands-on or interactive experiments and demonstrations that can be reproduced in a classroom. Worksheets and reference material that students can use in everyday practice will also be a focus of the team.

B. For the IPRO aspect we will produce a website, Poster, IPRO Day Presentation, Project Abstract, and all other deliverables that are required by our status as an IPRO.

C. These results will be addressing some of the needs of our clients. At the end of this semester the programs will not yet be eligible for accreditation; however, with the addition of one more piece of curriculum that satisfies the guidelines, they will be closer.

5.0. Budget

Our proposed budget is as follows:

Anatomical Models = 2 units x \$20	= \$40
Laser levels = 1 unit x \$60	= \$60
Reflex – testing Hammers = 10 units x \$20	= \$200
Print Budget = \$100	= \$100

These are the only expenses we have currently decided on. More expenses will be added in as the needs at the school become more apparent.

6.0. Schedule of Tasks and Milestone Events

A. Tasks and Due Dates:

- Research and Present to Class: updates on September 26, October 10, and October 24.
- First Draft of Presentation: October 10
- Midterm Report: October 20
- Final Draft of Presentation: November 2
- Review of Educational Modules: November 7-14
- All brochures and other module material due: November 14
- Exhibit/Poster: November 22
- Project Abstract: November 22
- Website: November 27
- Final Oral Presentation: November 29
- Final Report: November 30

B. To complete the educational modules the task is similar to what has already been laid out: the teams will each research and present information on their assigned area. Most of the other work, especially the deliverables for IPRO Day, will be summarizations of the work completed for the modules. For these to be completed we will need the modules completed and available.

C. We estimate a total of 720 team hours needed to complete our tasks. These will be broken up in the following manner:

Total Module Research Time: 360 hours

Total Module Design Time: 50 hours

Total Module Creation Time: 210 hours

IPRO Deliverable Creation Time: 100 hours

7.0. Individual Team Member Assignments

- A. First list all the team members with their first and last names, their educational background/major; include any other skills, strengths, experience or academic interests each team member may have.

Name: Michael Addis

Major: Biomedical engineering specialization cell and tissue

Skills/Strengths/Interests: Problem solving, public health, a third world experience

Name: Ed Aramayo

Major: Mechanical Engineering/Materials Science Engineering

Skills/Strengths/Interests: Semi-fluency in Spanish, somewhat familiar with Latin America.

Name: Russell Derrick

Major: Biomedical Engineering

Skills/Strengths/Interest: Former emergency medical technician, basic Spanish communication skills, and previously educated in physiology and mechanics.

Name: Jared Gardner

Major: Mechanical Engineering

Skills/Strengths/Interests: Semi-fluency in Spanish, IPRO experience and success, good communicator and business ethicist.

Name: Alayna George.

Major: Molecular Biochemistry and Biophysics

Skills/Strengths/Interests: Semi-fluency in Latin American Spanish. After living in Costa Rica for the summer, I have a familiarity with the medical need in Latin American Third World countries; premedical student with a strong interest in the ethics of lacks in medical care throughout the world.

Name: Julia Northrop

Major: Aerospace Engineering

Skills/Strength/Interest: Previous IPRO, interested in Latin American lifestyle, driven

Name: Sandra A. Ogbonnaya

Major: Biomedical Engineering

Skills/Strengths/Interests: Strong background in anatomy and physiology. Good communicator and strong work ethic. Has previous experience with this from last semester.

Name: Katy Pyles

Major: Psychology, 4 yrs

Interests/Skills: Previous Ipro experience, Strong interest in rehabilitation counseling and providing services to persons with disabilities, some Spanish (non-fluent).

Research Experience: Member of Vassar project (longitudinal study on aging and adult development) with Dr. Margaret Huyck in spring '06. Member of Wishful Thinking-Optimism and Source Credibility research team with Ruthanna Gordon in fall '06.

Andrew B. Swantek

4th year Aerospace Eng. and Mechanical Eng.

Skills: Labview, Matlab, Autodesk Inventor

Experience: MMAE 371 Laboratory Teaching Assistant, National Diagnostic

Facility Aerodynamics Research Assistant

Academic Interests: Active Flow Control for High Lift Applications, Propulsion Systems.

Dan Wido

Biomedical Engineering

Skills: Semi-Fluency in Spanish, Clinical Lab Experience, IPRO familiarity

Interests: Biomechanics, Muscle and Skeletal Physiology

- B. Alayna George will serve as the IPRO team leader. In her capacity as such, she will be responsible for coordinating and reviewing the activities of the sub teams. In addition, Jared Gardner will act as the International Liaison and Andrew Swantek will act as the IPRO Liaison. Our JJC Liaison is Sandra (Amara) Ogbonnaya. Dr. Meade has agreed to be the Accreditation Expert for our project.
- C. The sub teams are defined as follows:

Palpation of Anatomical Landmarks and Orthometry Measurements – Katy Pyles and Michael Addis

Range of Motion Testing and Manual Muscle Testing – Andrew Swantek and Dan Wido

Evaluation of Seated and Standing Posture – Jared Gardner and Amara Ogbonnaya

Dermatomes, Myotomes, and Reflexes and Spinal Cord Injuries – Russell Derrick and Ed Aramayo

Observational Gait Analysis and Use of Crutches, Canes, and Walkers – Julia Northrop and Alayna George

- D. Consisting of only two people each, we do not have defined leaders for each of the sub teams.
- E. Each sub team is responsible for designing and creating a competent, thorough, and pertinent educational module for its assigned topic.
- F. Task assignments for the required IPRO deliverables will be completed by Andy Swantek when we begin to compile our research and prepare for IPRO Day.

8.0. Designation of Roles

- A. Our group has decided to rotate the assignment of minute taker and time keeper on a meeting by meeting basis in reverse alphabetical order. At the end of each meeting, we quickly create an agenda for the following meeting as a team, which is of course duly recorded by the current minute taker.
- B. Katy Pyles will act as the master schedule maker, and will create a compendium of information on team member contact information and schedule availability.