IPRO 309 Midterm Report
Spring 2006

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

Updated Objectives

Our primary and secondary objectives for this project remain the same as our project plan. The objectives are listed below.

Primary Project Objective

· There is an enormous need for creating and supporting education opportunities in orthotics and prosthetics in Latin America. The primary objective of this IPRO is to support the first orthotics and prosthetics educational program (established in February 2005) in Bogotá, Colombia.

Secondary Project Objectives

· To develop five educational modules for instruction in orthopedic biomechanics.

· To deliver a 3-day presentation in Bogotá Colombia May 15-17.

· To create a Spanish/English website to get the information out to the community.

· To follow ABC, NCOPE and ISPO accreditation and to collaborate with clinical practitioners and other organizations with the content of the educational modules.

· To develop several low-cost laboratory demonstrations for the presentations to be as visual and hands-on as possible.

· To develop an ongoing project and establish relationships that will result in further service to Latin America beyond this semester.

Results to Date

Our team is split into 5 subsections: Upper Limb, Lower Limb, Spine, Biomechanics, and Materials Design. Each group's progress is listed below.

Upper Limb Completed Tasks

The curriculum covering functions of the arm is complete. It consists of a Power Point presentation, worksheets, and live demonstrations. The presentation begins with bone, muscle, and nerve structure of the hand and arm along with student follow-along handouts. These handouts may be used to assist in note taking or as quizzes at the end of the lesson. Next, the presentation includes the types of handgrips. There are pictures of each type of grip as well as suggested materials, or props, needed to demonstrate the grips during the lesson. The final part of the lesson includes videos of the basic types of hand and arm movement. Here the lecturer may demonstrate the types of motion as well as can the students as a visual aid. A brochure has been made to summarize this lesson.

Lower Limb Completed Tasks

At this point we have created several modules as well as coinciding information brochures. As a group, we have gained a better understanding of the anatomical make up of the lower limb. The increasing knowledge base is vital in creating ways to demonstrate the material to the high school students.

Spine Completed Tasks

The spine group extensively studied the loading and natural alignment of the spine. The functions were broke down into the three moving sections of the spine: the lumbar spine, the cervical spine, and the thoracic spine. The educational module will include the details of each section and show what directions it is allowed to move and to what degrees of freedom. This will provide a better understanding of the fabrication and importance of spinal orthotics. Alongside the functions of the spine, the general anatomy and function of the spine is detailed to allow students a complete understanding of what the spine is and why proper alignment is important. Finally, we have discussed and researched general, common deformities of the spine and their normal treatments.

Biomechanics Completed Tasks

So far the biomechanics group has completed preliminary research and has a set plan for the rest of the semester. Rough versions of the PowerPoint presentations have been completed and are continually revised as more information is gathered and the class is updated.

Materials Design Completed Tasks

The materials group has given weekly updates on the following topics: Fabrication Process, Availability of material, Future Advances Different types of Materials used in Different Prosthesis, and Different Properties of Materials. We have given weekly Power Point updates and handouts to the class. The goal is to continue to research and find more information about each of the categories listed above. The information will then be consolidated into one final Power Point presentation and education modules including brochures and handouts. As of right now we plan for no changes in our weekly update methods or the timeframe for giving our updates. Our goal is to have our final module and presentation created by May 1.

Task/Event Schedule

Each group created a task schedule to fulfill their own needs and group objectives. Since the project report, the group schedules are as follows:

Upper Limb

- Upper Limb functions curriculum – 28 February 06
- Device functionality curriculum – 23 March 06
- Hand/Wrist Orthotics curriculum – 6 April 06
- Trans-radial Prosthetics curriculum – 20 April 06
- Final Presentation – 1 May 06

Lower Limb

- Week 6 – Research on lower limb prosthetics
- Week 7 – Continued research on lower limb prosthetics
- Week 8 – Mid-term report
- Week 9 – Spring Break
- Week 10 – Contact Children Memorial Hospital experts for guidance
- Weeks 11-14 – Elaboration of lower limb module
- Week 15 – Trip Plan
- Week 16 & 17 – Final Deliverables

Spine

- 9 March 06 – Natural Alignment of Spine
- 23 March 06 – Elaborate on devices for specific trauma/deformity cases
- 30 March 06 – Scoliosis tests and treatment
- 6 April 06 – Acquiring of visuals and how to use
- 13 April 06 – Final Power Point
- 20 April 06 – All module handouts and deliverables

Biomechanics

- PowerPoint Update: 23 February 06
- PowerPoint Update/Brochure: 7 March 06
- PowerPoint Update/Brochure: 23 March 06
- Create Demonstrations: 23 March 06
- Pictures for Website: 6 April 06
- PowerPoint Update/Brochure: 6 April 06
- PowerPoint Update/Brochure: 20 April 06
- Levers Built for Demonstration: 20 April 06
- Module Evaluation: 2 May 06

Materials Design

The materials group has decided that every week they will rotate on researching information about the sub-categories that they have formed. They will either combine it as a word document or make a PowerPoint to report to the group. The sub-categories that they developed are as shown below:

Fabrication Process
Availability of Material
Future Advances
Different Types of Materials Used in Different Prosthesis
Different properties of the Different Materials used

Their goal will be to add some new information under any of the above categories on a weekly basis so when it is time to put together all the information they will have more than enough information to provide.

Assignments

The team assignments have remained the same since the start of the project. Listed below is the current team layout.

Biomechanics:	David Gracia	Webmaster
	Vinit Prabhu	Travel Coordinator
	Kristen Kelley	Team Leader: Educational Modules
Materials:	Christopher Pellico	Team Leader: Management/Budget
	Prachi Singh	Shipping
Upper Limb:	Natalie Rezek	Travel Coordinator
	Elise French	USA Liaison
	Michael Grilley	Accreditation Expert-ABC&NCOPE
Lower Limb:	Amara Ogbonnaya	USA Liaison
	Piotr Maksimowicz	Webmaster
	Jahir Caro	Accreditation Expert-ISPO
Spine:	Shea Lemley	International Liaison
	Matthew Hamblen	IPRO Facilitator
	Sonali Patel	Shipping

Barriers and Obstacles

Thus far in our project the main problem that the team encountered was a full concept of how detailed and intensive the educational modules will be. Also, problems understanding the concept of teaching only the biomechanics of orthotic and prosthetic education was cleared once our project advisor presented us the standard curriculum for ISPO's Category III classification.

The individual teams have run into their own problems and challenges. The most common of which seems to be a full understanding of medical knowledge and terminology. This is becoming more and more clear as each group has done individual research.

A list of individual group barriers is provided below.

Upper Limb

While completing the first lesson plan knowledge of proper medical terms created minor barriers. While researching movement of the arm these terms were referenced but not explained or defined. By searching the internet for these terms the barrier was easily overcome. In researching for the upcoming lesson plans again terms specific to the field have created obstacles in our work. Many of the websites refer to procedures as "The usual manor" however because we are just learning about the processes by which things are made the usual manor is part of our research. In upcoming research it may be difficult to find information on the more basic prosthetics and orthotics. We may be able to overcome this barrier by using medical books or visiting manufacturers to get a first hand idea of how these devices are made instead of relying on the internet and private companies to divulge this information.

Lower Limb

There are no foreseen obstacles at this time. However, the most difficult challenge we are facing as a group is deciding how to organize the modules. This includes deciding which topics should precede or follow other topics.

Spine

A lack of full knowledge of medical terminology and procedures has created soft barriers for some members of our group. Once a little research was completed this is becoming less and less of a hassle. The next barrier will come in deciding how we should organize our modules and which areas we should put the most focus on. After this, we will have to decide which visual aides to purchase to help us with this the best.

Biomechanics

The biomechanics group has not run into many problems. There was slight miscommunication and two members did similar work but this ended up enhancing the content on that topic. Other then that the group has been working well together and the work has been completed in a timely manner.

Materials Design

One of the problems that seem to be occurring is that the other groups tend to incorporate many of their own materials information into their presentations and therefore ours seems redundant. It would be more beneficial for them to utilize our group for this information. Also, finding more information is becoming harder because there doesn't seem to be too much information specifically about the materials used in the development of orthotics and prosthetics.

The listed barriers and obstacles have not proven overly difficult. Most of these barriers were at the beginning of the project and have sense been overcome allowing the groups and the team as a whole to move more smoothly into what we see as a successfully running project. At the current pace we will meet all deadlines and be ready to present a great total project during this Spring's IPRO day.