



QoLT Engineering Education Outreach Facilitates Systems Analysis Study for Wheelchair Use in Mexico



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I. EXTENDED ABSTRACT

The National Science Foundation's (NSF) Quality of Life Technology Center (QoLT) and PROMISE: Maryland's Alliance for Graduate Education and the Professoriate (AGEP) created an engineering education "bridge" program for graduate students. The research experience provided by this collaboration exposes underrepresented minority graduate students in the College of Engineering and Information Technology at the University of Maryland, Baltimore County (UMBC) to some of the QoLT's research experiences in the Human Engineering Research Laboratories (HERL) at the University of Pittsburgh, and at Carnegie Mellon University. The project described here presents some of the ongoing exemplary procedures for managing assistive devices that have been utilized by the Telethon Children's Rehabilitation Centers (Spanish – Centro de Rehabilitación Infantil Teletón) in Mexico, and observations that resulted from a visit to the Cancun, Quintana Roo, Mexico center during the Latin American and Caribbean Consortium of Engineering Institutions (LACCEI) 2013 conference. There may be an opportunity to implement the Benter Foundation's 4R model for lifelong mobility: Recycle, Reuse, Repair, and Retrofit, to address wheelchair mobility at this center. This concept revolves around the provision of a wheelchair maintenance workshop, and it is not currently being implemented. The objective of this project is to analyze the current procedures used by the Telethon in Mexico as a manufacturing system. Use of flow planning can introduce improvements. Limiting factors can be rearranged, and bottlenecks in the distribution logic model can ultimately be eliminated. This analysis is followed by suggestions that could potentially optimize the usable lifetime of wheelchairs. These next steps could improve the system's architecture, enabling a user-friendly implementation, and requiring minimal attention in the support phase.

Keywords – rehabilitation, engineering, mobility, outreach, wheelchair

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