METTA: A Tablet-Based Platform for Monitored at Home Training
as Demonstrated through the EPICWheelS Wheelchair Skills Training Program

Ian M. Mitchell[1], Boyang Tom Jin[1], Andy J. Kim[1], Edward M. Giesbrecht[2] & William C. Miller[2]

[1]Computer Science   [2]Occupational Science & Occupational Therapy

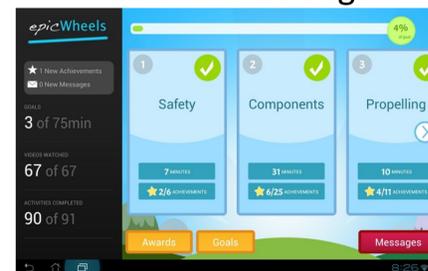University of British Columbia, Vancouver, Canada

Introduction

- Structured education programs can produce significant improvements in skill capacity, but are often not available due to resource limitations
- Monitored home rehabilitation training programs can be an effective alternative
- The *Monitored Education and Training Tablet App* (METTA) is a platform for video-based training
  - Content is designed and structured by a training program provider
  - Program is delivered at home on an Android tablet
  - Progress is monitored asynchronously by trainers through a website
  - METTA software is content agnostic

Example Training Program

- *Enhancing Participation In the Community by improving Wheelchair Skills* (EPICWheelS)
  - Manual wheelchair skills training program
  - Informed by WSTP [1] but different
  - Designed through an iterative participatory action design process with users, caregivers and clinicians
  - Currently undergoing a randomized controlled trial [2]

1. Initial Prototype Development
2. Initial Prototype Evaluation — Focus Groups: MWC Users — Data Analysis
3. Revised Prototype Evaluation — Focus Groups: MWC Users, Clinicians & Care Providers — Data Analysis
4. Beta Prototype — Review — Pilot Testing — RCT Clinical Trial
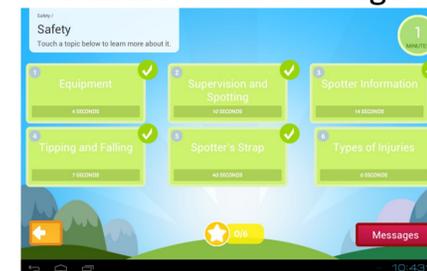
Trainee Interaction

- Custom launcher starts app whenever tablet is on
- Trainees navigate through a hierarchy of content by touching large buttons on the tablet screen
- Feedback on which videos have been watched and number of minutes (total and per video)
- Voice / video mail to communicate with trainer
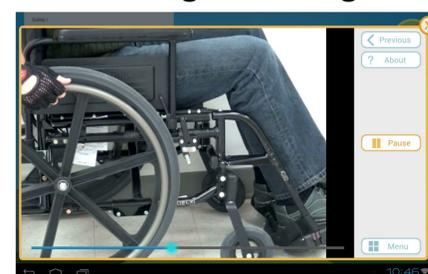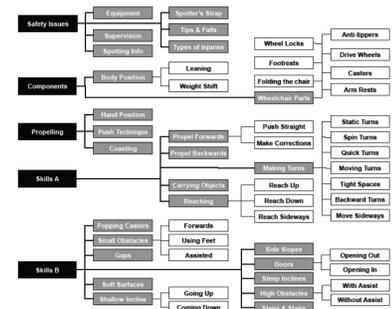- Daily survey (extra practice minutes, any falls?)

Trainee Home Page

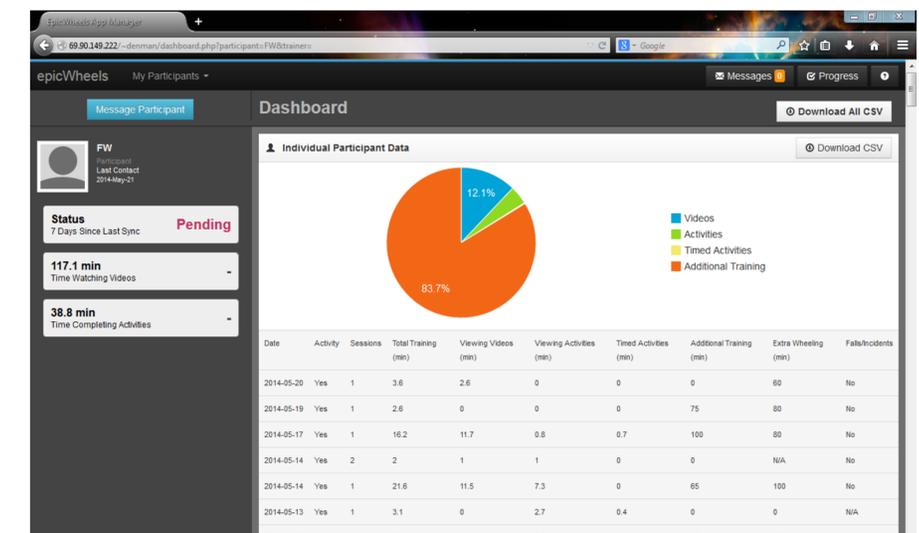Trainee Submenu Page

Training Video Page

EPICWheelS Content

Build Your Own Training Program

- Content designer website for creation of new training program video collections
- METTA is open source software (contact authors)
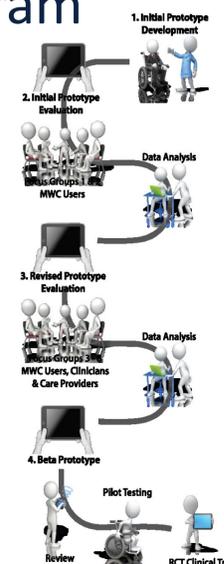
Trainer Interaction

- Button press timestamps uploaded to server
- Trainer website displays summary and detailed statistics about trainee interaction
- Data can be downloaded to spreadsheet tables
- Trainer can enable / disable selected content

A Portion of the Trainer Website Interface

References & Acknowledgements

[1] Best, Kirby, Smith & MacLeod. "Wheelchair skills training for community-based manual wheelchair users: a randomized controlled trial" in *Archives of Physical Medicine & Rehabilitation*, 86: 2316–2323 (2005).

[2] Giesbrecht, Miller, Eng, Mitchell, Woodgate & Goldsmith. "Feasibility of the enhancing participation in the community by improving wheelchair skills (EPICWheelS) program: Study protocol for a randomized controlled trial" in *BMC Trials*, 14:350 (2013).