

# The Virtual Home Modifications Educational Assistant (VHMEA)

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## Project Goal

To develop an interactive training tool to help professionals, people with disabilities, and older adults learn about and “try out” different modifications and universal design approaches for the home environment

# Why Home Modifications?

- ▶ Studies have shown that home modifications can:
  - Increase independence and confidence in performing routine activities
  - Improve safety
  - Enhance health outcomes and prevent functional decline and disability
  - Increase the effectiveness of caregivers
  - Decrease the likelihood of institutionalization
- ▶ Over 2.5 million people with disabilities needed modifications to their bathroom, doors, hallways, stairs, or kitchen, but had not received them (Disability Followback Survey, 1999)

# Lack of Awareness of Home Modifications

- ▶ Consumers lack information to make decisions
- ▶ It is not part of the required curricula for accreditation in design or rehabilitation programs
- ▶ Continuing education opportunities are limited
- ▶ Current tools don't provide a way for students to experience home modifications

# Design Goals

- ▶ Allows the user to safely and inexpensively experience how a person with a disability would interact with the home's features
  - ▶ Provides information about different options and their tradeoffs
  - ▶ Can be used independently or as part of a class
  - ▶ Can be used with an in-person or remote class (or with a remote lecturer)
- Decided to base it on a virtual world

# VHMEA Platform: Unreal Development Kit & Unity 3d gaming engines

- ▶ Widely used in video games
- ▶ Can simulate realistic motion and timing
- ▶ Applications can be easily downloaded; don't require other special software
- ▶ Enables up to 64 users to interact in the virtual world at the same time
- ▶ Experiences can be captured and saved for later review

# System Flow

- ▶ Users select an avatar with a functional limitation
  - Mobility, dexterity, or vision. No multiple disabilities (currently).
  - Possible assistive device (e.g., mobility aid)
- ▶ Users select an area of the home or can navigate their avatar to a location
- ▶ Users try to complete task assignments in these areas (e.g., use toilet), encountering barriers, trying solutions, and learning about the tradeoffs between solutions
- ▶ Supplemental information provided via links to [assistivetech.net](http://assistivetech.net) / [ATWiki](http://ATWiki)

# Demo

- ▶ Moving to the entrance (outside links missing in this demo)
- ▶ Bathroom

# Next Steps and Scalability

- ▶ Still early in the development process; just starting usability and accessibility testing
- ▶ Will be conducting field tests in design and occupational therapy classrooms in the spring (see me if you would like to be a test site)
- ▶ Lessons learned (if you want to try this sort of thing)...
  - Preset animation vs. control of everything
  - Students /learning curve
  - Accessibility (keyboard control)
  - Communicating priorities to non-AT specialists

# Thank you for your attention

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