



Using Consumer Input to Develop Telerehabilitation Applications for Vocational Support

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 **RERC on Telerehabilitation** at  **RST** Department of Rehabilitation Science and Technology at School of Health and Rehabilitation Sciences, University of Pittsburgh



Rehabilitation Engineering Research Center on Telerehabilitation (RERC-TR)

Core Project: Telerehabilitation in Employment/Community Supports Using Video and Sensor-based Activity Recognition



National Institute on Disability and Rehabilitation Research (NIDRR)

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Voice of Disability in Science and Technology

- By history, PWD have traditionally had limited participation in science and technology policy and development (Seelman, 2001)
- Relegated to input in health policy
- Science and technology are seen as autonomous and self-governed (e.g., engineering)
- In its clinical and research pursuits, Telemedicine/ Telerehabilitation have traditionally incorporated medical model, perceived by PWD limiting choice and full participation

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Participatory Action Research

- An approach to research designed to place individuals being studied at the center of the decision making process (Tewey, 1997)
- Policy emphasis placed on involvement and participation (ICF); empowerment promoted and consistent with PAR
- Key steps in PAR: define problem, choose action, design and assess, engage action, data collection, reflexive knowledge (Taylor, Braverman & Hammel, 2004)

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PAR and Telerehabilitation

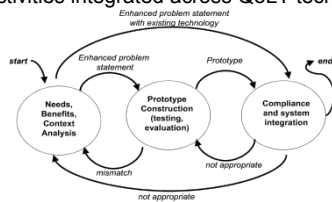
- TR development typically guided by service provision needs (e.g., specialist in rural areas) or by anticipated cost savings
- Typical design involves testing remote vs. FTF
- Usability analysis provides participation and input

TR and PAR

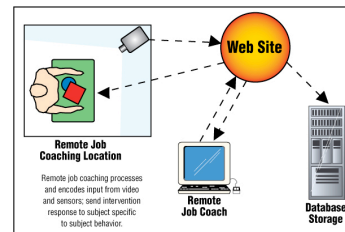
- TR may extend beyond FTF comparisons to evidenced based practice models where TR applications may be superior to FTF (e.g., in vivo applications)
- For PAR, must incorporate involvement and participation at the **problem definition** stage, not just usability info, after the fact

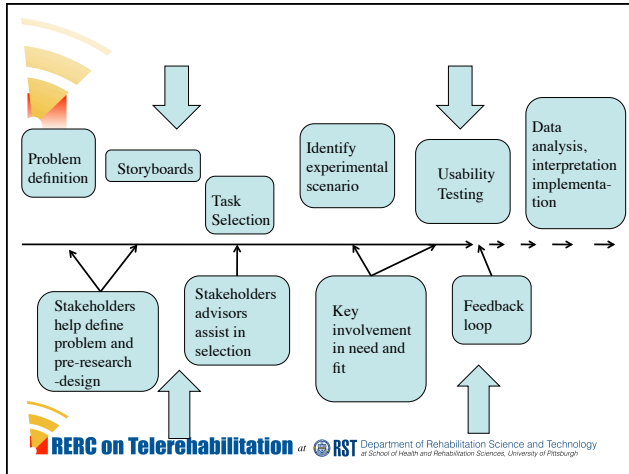
Expanded Problem Definition

- NSF QoLT Center expands problem to include consumers and stake-holders input into the technology development process (Seelman, 2008)
- Uses Person & Society Technology (PST) thrust R&D activities integrated across QoLT technical thrusts



Using algorithms gleaned from video and accelerometers developed by tracking the motion of subject performance, we will develop a mechanism for automatic, remote assessment and intervention in the natural environment





- ## Stakeholders
- End users, consumers, PWD, PW BI
 - Job coaches
 - Rehabilitation counselors
 - Rehabilitation administrators
 - Employers
 - Researchers
 - Advisory committee, funding agency
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- ## Key Decisions Points
- Problem identification (task guidance, job coaching)
 - Experimental scenario (food services)
 - Technology applications (video... accelerometer)
 - Potential applications (training vs employment)
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- ## Focus Group Exploration
- Consumers, vocational rehabilitation trainers, job coaches
 - On site tours of manufacturing, food services and others occupational areas
 - On site exploration of VR training programs PWD were quite positive regarding using the technology
 - Benefits might be greater in training rather than job coaching application
 - Privacy issues were recognized but were not considered an obstacle if addressed
 - Support from VR/SE programs for participation and implementation
 - Recommendations for more robust, multifaceted system
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Focus Group Input

- Common challenges seen in persons with cognitive disabilities
- Common errors made by persons with cognitive disabilities
- Potential applications of the model?
- How to tie in job coaches or job coaching agencies?
- Potential training applications?

Footnote

Recent Response to posting for subject recruitment (IRB):

- Those who have taken time to respond are offended that anyone would have such a low opinion of people who experience brain injury as to study their ability to flip burgers
- ...some even go on to further their education. Of those, some even participate successfully in Masters and PhD. programs
- Some forge through the wide range of debilitation that is thrust upon them from within society at large, the allopathic medical community and academia

- Those success stories usually avoid any connection with studies conducted by their peers who have yet to experience brain injury as a survivor.

References

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