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An Investigation into Various Human-Computer Interfaces which may Enhance Communication for Students with Motor Impairments

Presented by Amy E Lewington

Supervisor: Dr. Steve Woodhead
Overview

• Brief introduction
• Literature findings
• Technologies
• Results and conclusions
• References
• Further work
Introduction

• Background
  » Aim
  » Why?

• Technology aiding communication

• Ethics involved

• Current research explored

• Methodology

• Represent results
Literature

- Sources of information
- Current findings
- Engineering Rehabilitation
- Organisations
- Information on various technologies
Mouse Technology

- Head mice
- Three types explored:
  1. Standard mouse
  2. SmartNav
  3. QualiEye
Design

51.7
Mouse Selection
- Webcam (QualEye)
- SmartNav
- Standard Mouse

Start
Stop

Targets
- 10

Target 1 hit in 3.3 Seconds
Target 2 hit in 5.0 Seconds
Target 3 hit in 4.7 Seconds
Target 4 hit in 3.9 Seconds
Target 5 hit in 5.3 Seconds
Target 6 hit in 5.2 Seconds
Target 7 hit in 5.3 Seconds
Target 8 hit in 3.3 Seconds
Target 9 hit in 4.7 Seconds
Target 10 hit in 4.7 Seconds

Finish in 51.7 with 8 targets hit and 2 targets missed.

OK

15/06/2009
Department of Computer and Communications Engineering

University of Greenwich
Results

A bar graph showing the mean time and percentage number of targets hit out of 30

15/06/2009 Department of Computer and Communications Engineering
Keyboard Technology

- Text entry
- Three types:
  1. Standard keyboard
  2. Penfriend word predictor
  3. Penfriend with on-screen keyboard
Results

Text Entry Trials

Shows the number of words users typed correctly using each text entry technology.
Speech Technology

• Speech recognition
• Training is required
• Any success rates?
• Valid Results?
Conclusions

- Opinions of participants
- Technology a valuable tool
- Disadvantages/Problems faced
- Some trials unsuccessful
- Time limited
REFERENCES


Further Work

• Undertake tests with new devices
  - regular periods
• Questionnaires for participants, support workers.
• Include "real work" examples
• Use a "control group"
• Design rigorous recruitment process
Thank you for listening

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