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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

The image shows a computer interface for a mouse selection task. The interface includes options for different mouse selections such as 'WebCam (QualiEye)', 'SmartNav', and 'Standard Mouse'. There are buttons labeled 'Start', 'Stop', and 'Targets'. The screen shows the user name 'Amy Lewington'. The interface also displays a message from 'Datologger' stating that the task was completed in 51.7 seconds with 8 targets hit and 2 targets missed.
Results

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

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

Text Entry Trials

Total No. of words in 3 minutes

<table>
<thead>
<tr>
<th>User</th>
<th>Std. keyboard</th>
<th>penfriend</th>
<th>on-screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>30</td>
<td>10</td>
</tr>
<tr>
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<td>20</td>
<td>5</td>
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<tr>
<td>3</td>
<td>100</td>
<td>80</td>
<td>20</td>
</tr>
<tr>
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</tr>
<tr>
<td>8</td>
<td>10</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

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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