Language Play and Computers

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School of Computing
University of Dundee, UK

http://groups.inf.ed.ac.uk/standup
Joke generation by children with complex communication needs: Approaches to evaluation and findings in the STANDUP project

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Capability Scotland: Joanna Shannon & colleagues
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• Review
• The evaluation methodology
• The evaluation instruments
• Participants
• STANDUP in use
• Preliminary results
• Future work
What do you call a strange market?

A bizarre bazaar!
Hello, RoIff! How do you want to get a joke?
Review (3)

What do you call a washing machine with a september? An autumn-atic washer.
Research Methodology

Baseline Phase

Week 1 - Forma testing

Introduction Phase

Week 2 - Intro

Intervention Phase

Week 3 - Week 4 - Video observation

Evaluation Phase

Week 5 - Week 6 - Intervention

Post intervention

Week 7 - Week 8 - Evaluation

Week 9 - Formal testing
CELF Clinical Evaluation of Language Fundamentals (Semel, Wiig, Secord, 1995)

- **CELF Linguistic concepts** (participants are asked to point to: “the blue line”, “the line that is not yellow”; participants must point to a stop sign if they think they cannot do what they are asked to do.)

- **CELF Sentence structure** (e.g. show me...: “The girl is not climbing”, “The dog that is wearing a collar is eating a bone”)

- **CELF Oral directions** (e.g. point to...: “The black circle”, “The last white triangle and the first black square”)

- **CELF Word classes** (participants choose two related items from a set of four, e.g. “girl boy car table”, “slow nurse doctor rain”)

PIPA Preschool and primary inventory of phonological awareness (Frederickson, Frith and Reason, 1997)
Keyword Manipulation Task (KMT) (O’Mara, 2005): standardised across 57 children, including language impaired children; 5 – 12 years.

**Stimulus:** How can you tell there has been an elephant in your fridge?

*Footprints in the butter.*

**Keyword Alternates:**

**Stimulus:** What do you get when you cross a car and a sandwich?

*A traffic-jam.*

**Keyword Alternates:**
<table>
<thead>
<tr>
<th>Level</th>
<th>Participant</th>
<th>Communication</th>
<th>Head switch</th>
<th>Direct access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Primary</td>
<td>NI, female; age: 8y4m</td>
<td>Dynavox DV4 user: PCS</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AL, female; age: 10y10m</td>
<td>Intelligible speech: poor articulation</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SA, female; age: 10y9m</td>
<td>Communication book: gross fist &amp; eye gaze</td>
<td>✔</td>
<td></td>
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<tr>
<td>Middle Primary</td>
<td>EO, male; age: 10y3m</td>
<td>Communication Board: PCS, TechSpeak</td>
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<td></td>
<td>LE, male; age: 10y3m</td>
<td>Clear speech</td>
<td>✔</td>
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<tr>
<td>Senior Primary</td>
<td>DA, male; age: 11y3m</td>
<td>Dynavox DV4 user: PCS</td>
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<tr>
<td></td>
<td>OW, male; age: 12y9m</td>
<td>Speech: poor intelligibility uses PCS</td>
<td>✔</td>
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<tr>
<td></td>
<td>ST, male; age: 11y10m</td>
<td>Dynavox DV4 user: PCS</td>
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<tr>
<td></td>
<td>EM, female; age: 11y3m</td>
<td>Intelligible speech</td>
<td>✔</td>
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</tr>
</tbody>
</table>

For all participants: Aetiology: Cerebral Palsy
Mobility: Wheelchair
Literacy: Emerging and assisted
Evaluation STANDUP in use

DA telling punchline first Week 5
Evaluation STANDUP in use

NI exploring to get 'any joke'
Week 8
Preliminary Results
### Preliminary Results: Pre/Post Testing

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Participant</th>
<th>CELF Word Classes (out of 27)</th>
<th>PIPA Rhyme (out of 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre-test</td>
<td>Post-test</td>
</tr>
<tr>
<td><strong>Early Primary</strong></td>
<td>NI, female; age: 8y4m</td>
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<td>AL, female; age: 10y10m</td>
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<td>SA, female; age: 10y9m</td>
<td>23</td>
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<td></td>
<td>EO, male; age: 10y3m</td>
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<tr>
<td><strong>Middle Primary</strong></td>
<td>LE, male; age: 10y3m</td>
<td>17</td>
<td>26</td>
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<tr>
<td><strong>Senior Primary</strong></td>
<td>DA, male; age: 11y3m</td>
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<td>4</td>
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<tr>
<td></td>
<td>OW, male; age: 12y9m</td>
<td>17</td>
<td>24</td>
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<tr>
<td></td>
<td>ST, male; age: 11y10m</td>
<td>9</td>
<td>8</td>
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<tr>
<td></td>
<td>EM, female; age: 11y3m</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

CELF WC: choose 2 related items from set of 4, e.g. “girl boy car table”

PIPA Rhyme: Phonological awareness
**Unexpected Outcomes** impact on school curriculum

**Questionnaires** with parent, teachers and Classroom assistants (not significant issues raised but all positive)

**Semi-structured interviews** with SLTs
Preliminary Results
Participant Feedback using Talking Mats

Bad – OK - Good
Jester character
Jokes
Touchscreen/Switch
Voice
Preliminary Results

Participant Feedback using Talking Mats

Bad – OK - Good

Jester character
Voice
Touchscreen/Switch
Jokes
• Answered research question:
  – Interfaces CAN be designed which provide children with CCN with successful access to complex underlying technology

• Using STANDUP:
  – the generative capabilities allows opportunity for natural language development, cf DA choosing punchline first
  – the generative capabilities allows novel explorative learning, cf NI searching subjects

• All children benefited
  – ethical consideration
  – enhanced desire to communicate
  – knock on effect on other AAC usage
  – illustrated children’s abilities and potential of AAC

• STANDUP illustrated use of technology within a wider environment
• Issues with interface design
  – scanning
  – voice output
  – improved appropriateness of vocabulary

• The telling of the joke is important - what is the impact of STANDUP:
  – on interactive conversation
  – on joke comprehension and vocabulary acquisition

• BETTER jokes?
  – Well...do we want better jokes?

• STANDUP with speaking children with language impairment