



# 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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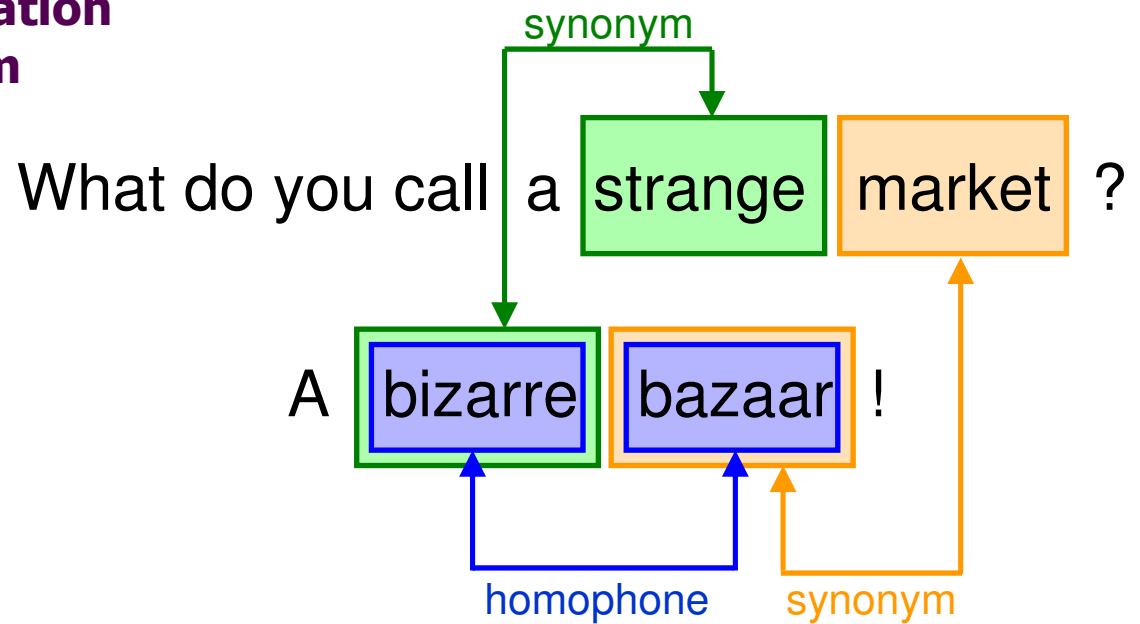




## Review (1)



## Joke Generation System





## Review (2)



CAPABILITY SCOTLAND  
TURNING DISABILITY INTO ABILITY

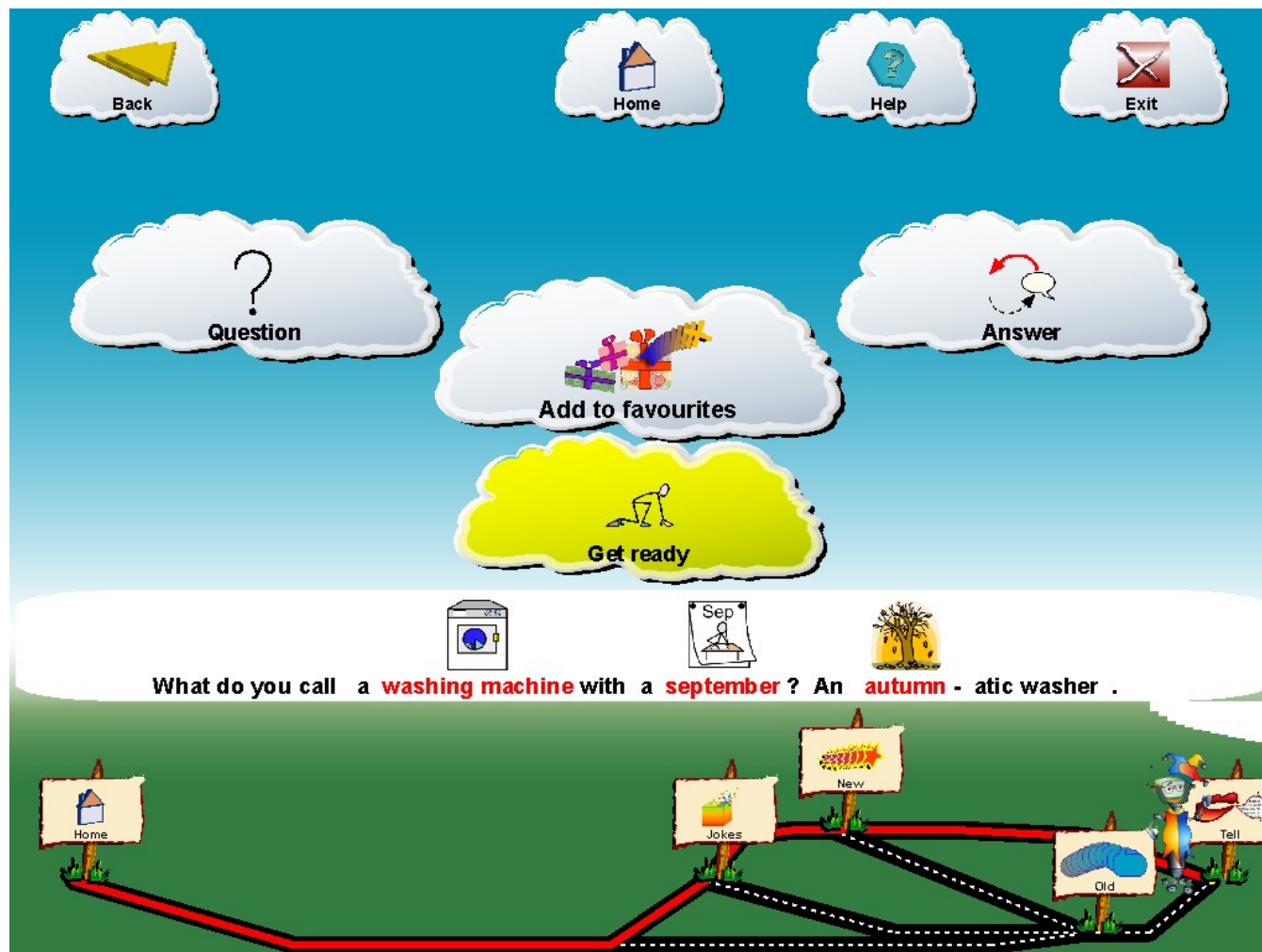




## Review (3)



CAPABILITY SCOTLAND  
TURNING DISABILITY INTO ABILITY





## Research Methodology



**Baseline Phase**

**Introduction Phase**

**Intervention Phase**

**Evaluation Phase**

**Post intervention**

**Week**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

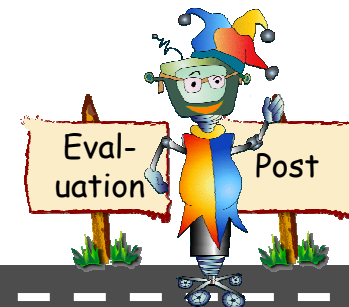
**8**

**9**

Formal  
testing

Video observation

Formal  
testing





## Evaluation Instruments



## 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)





**Evaluation  
Instruments:  
The KMT**



**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:**  
*Mouse. Giraffe. Cat. Rabbit.*

**Stimulus:** *What do you get when you cross a car  
and a sandwich?  
A traffic-jam.*

**Keyword Alternates:**  
*Bicycle. Plane. Train. Truck.*



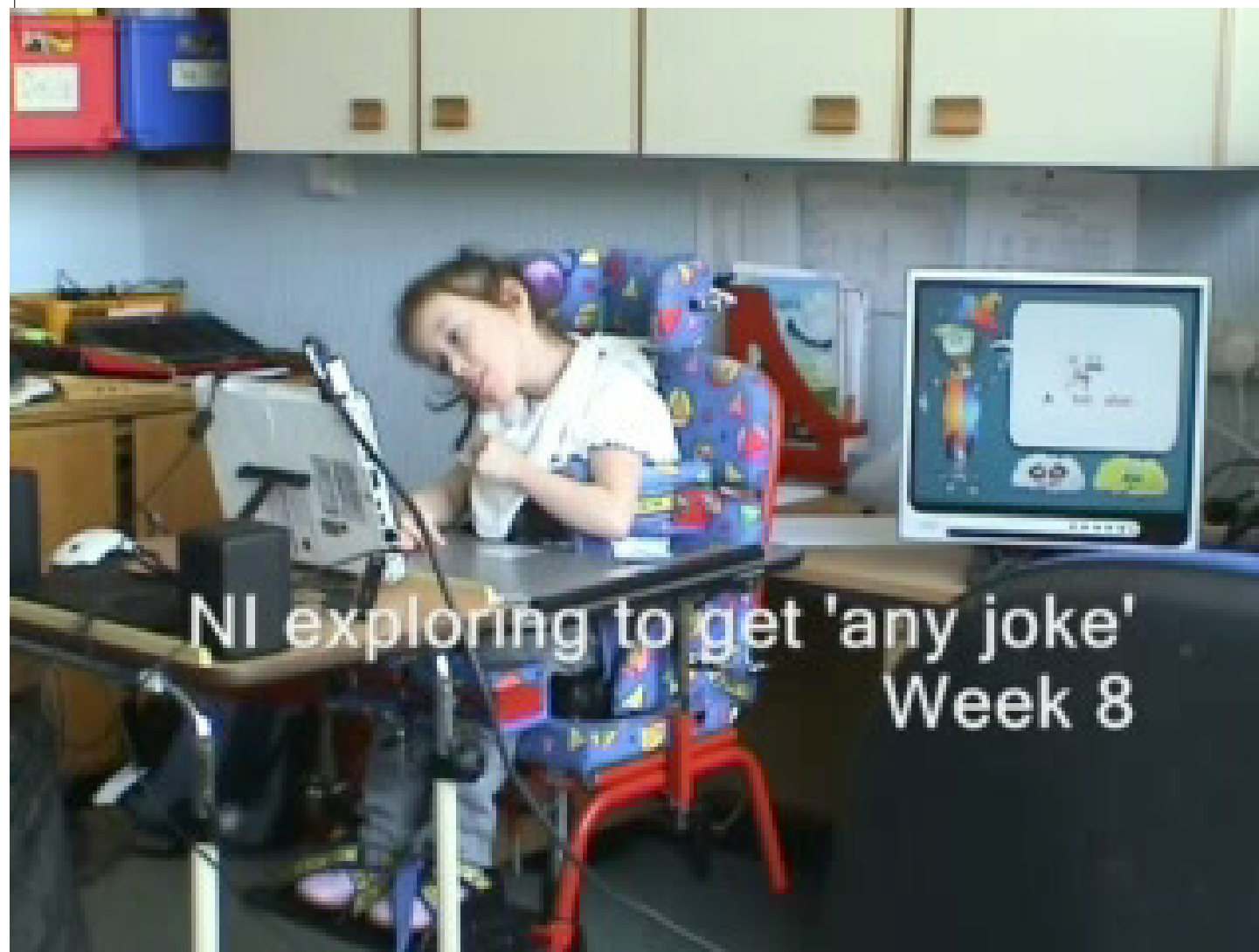
# standup

Evaluation  
**STANDUP**  
in use



# standup

Evaluation  
**STANDUP**  
in use



NI exploring to get 'any joke'  
Week 8



# Preliminary Results





## Preliminary Results: Pre/Post Testing



### CELF Word Classes (out of 27)

### PIPA Rhyme (out of 12)

Pre-test Post-test Pre-test Post-test

Early Primary	NI, female; age: 8y4m	<b>19</b>	<b>25</b>	<b>10</b>	<b>11</b>
	AL, female; age: 10y10m	<b>11</b>	<b>18</b>	<b>3</b>	<b>3</b>
	SA, female; age: 10y9m	<b>23</b>	<b>26</b>	<b>11</b>	<b>11</b>
	EO, male; age: 10y3m	<b>0</b>	<b>2</b>	<b>10</b>	<b>9</b>
	LE, male; age: 10y3m	<b>17</b>	<b>26</b>	<b>11</b>	<b>11</b>
Middle Primary	DA, male; age: 11y3m	<b>1</b>	<b>4</b>	<b>1</b>	<b>8</b>
	OW, male; age: 12y9m	<b>17</b>	<b>24</b>	<b>12</b>	<b>11</b>
	ST, male; age: 11y10m	<b>9</b>	<b>8</b>	<b>5</b>	<b>3</b>
	EM, female; age: 11y3m	<b>12</b>	<b>13</b>	<b>10</b>	<b>11</b>
Senior Primary					

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

PIPA Rhyme: Phonological awareness



**Preliminary  
Results  
Feedback**

**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**

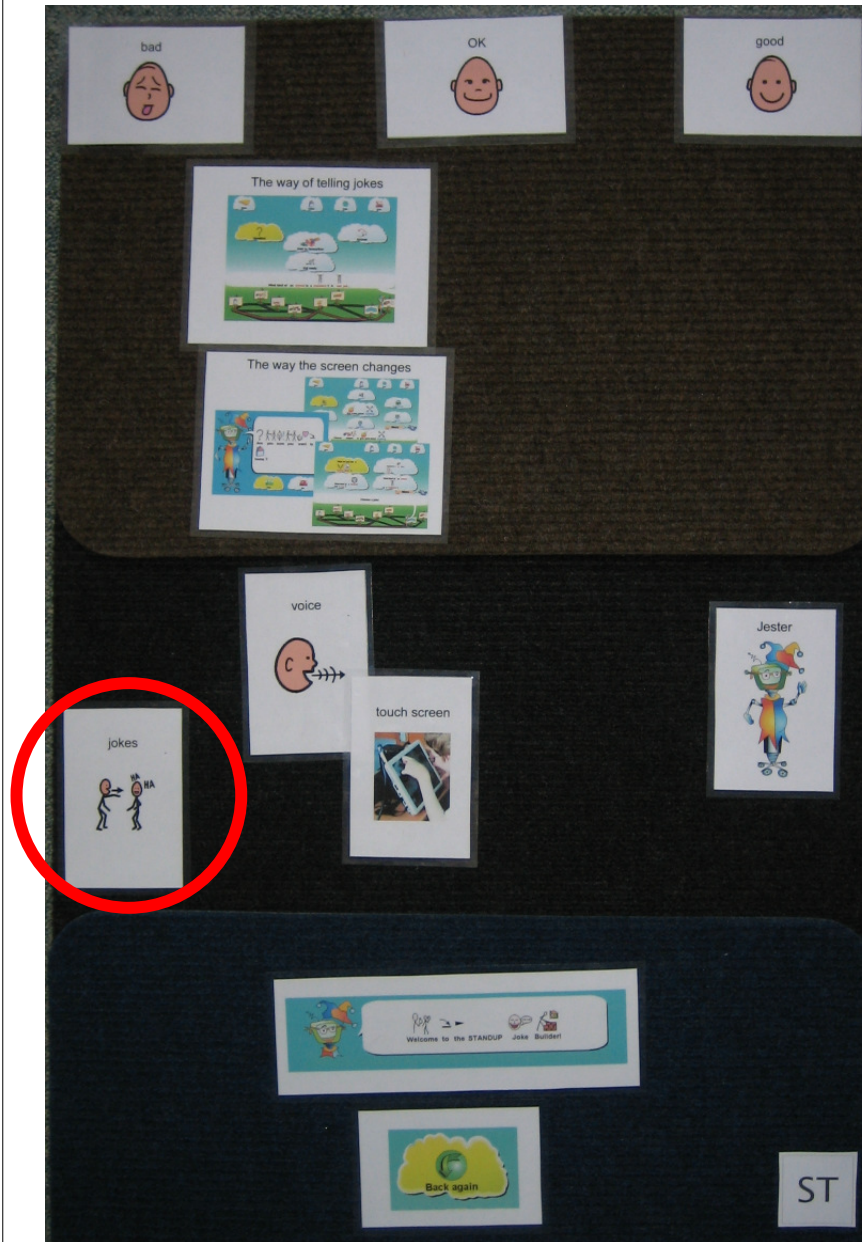
**Voice**





## Preliminary Results

## Participant Feedback using Talking Mats



**Bad – OK - Good**

**Jester character**

**Voice**

**Touchscreen/Switch**

**Jokes**



## Discussion



- 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



## Future work



- 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