Madhav, 6 yrs

1. I help in India
2. I help old man
3. I help Police man
4. I help auto man
5. I help bus man
6. I help car man
“These 14- and 15-year-olds didn’t know how to use some basic parts of speech... because they were missing a crucial understanding of how language works.”

Peg Tyre*

‘The Writing Revolution’, the Atlantic (Oct 2012)

*Director of Strategy at the Edwin Gould Foundation and the author of The Good School; How Smart Parents Get Their Kids the Education They Deserve
Can we enhance a child’s metalinguistic awareness by providing visual feedback?
Who is this for?
Annie, 5 years

Likes: Reading, playing with “her” iPad

Goal: To play all by “myself”
Let’s see Wordcraft in action!
Creating the App
• Corpus created from wordlists designed to teach children to read
• Selected visual words, in the context of a farm
• Subject - Verb - Object structure
~1000 words
~1.4M sentences
How do you visualize sentences?
Let’s start by converting words into images..
Visualizing Words

sheep = sheep_skin + sheep_mouth + sheep_eyes
Adding Emotions

sheep_skin_positive

sheep_skin_negative

sheep_mouth_happler

sheep_mouth_happy

sheep_mouth_sadder

sheep_mouth_sadder

sheep_mouth_angry

sheep_eyes_happler

sheep_eyes_happy

sheep_eyes_sadder

sheep_eyes_sadder

sheep_eyes_angry

sheep_eyes_asleep
Positioning the Object

- Sky
- Vanishing Plane
- Back
- Middle
- Front
- Left
- Center
- Right

ground
How can words fit into valid sentences?
Building Grammar Rules

A Cat N  is HV walking VB behind PRP the fences N

5 word piece
Building Grammar Rules

The Cats

A Cat

are

is

behind

with

near

walking

the fences
Building Grammar Rules

- the DET
- sad ADJ
- cats N
- behind PRP
- happy ADJ
- are HV
- walking VB
- with PRP
- an DET
- cat N
- is HV
- near PRP
- the fences N
How do we make sentences meaningful?
How do we make sentences meaningful?

Taxonomy
Horizontal Movement
"animation" : [  
  
  
  "duration" : "" ,
  "animation_params" : {
   "start" : "0",
   "end" : "24",
   "mid" : "12"
  },
  "speed" : "normal",
  "scale" : ""
},
  "animation_type" : "rotate"
],

{| duration | animation_params | speed | scale | animation_type |
<table>
<thead>
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<td>rotate</td>
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{ "revolve" : true

<table>
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<tr>
<th>duration</th>
<th>animation_params</th>
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Iteratively designing the experience..
7 locations

20 children

3 weeks
"The cow is not laughing, it’s only smiling"

"That’s funny!"

"Come on. Come on!"
"That's not rolling, that's walking"

"Let's replay that!"

"Oops! I hit 'green' because I wanted another sentence"
Prototype 3 (13 kids)

“I want below, but I can’t find it”

“Refresh does not have two arrows”

development testing prototype
"I’ve never seen an app like this!"

"I love the color coded tiles"
What did children understand?
Beginner (4 kids, aged 4 - 6 yrs)

Has trouble reading. Is still trying to understand how words form a sentence.

“P-I-G is pig”

“If the word is ‘a cat’, I should not use ‘are’”

“In 3 words, you use 1 color for each blank”
Intermediate (7 kids, aged 5.5 - 8 yrs)

Can read simple words. Learning to make sentences.

“Amused means...super happy?”

“How can fierce be smiling?”

“Barns roll...because it’s make believe”
Expert (5 kids, aged 7.5 - 8 yrs)

Can read, and has worked on sentence diagramming.

“Depressed means sad”

“Purple words are the ones doing the action”

“When there is ‘with’, we have to use another animal. It cannot be fence”
What’s Next?
• More feedback on errors
• Further research to evaluate impact on learning
• Other areas of application - ESL for adults & deaf children
Thank You