ADAPTIVE LEARNING ENVIRONMENTS:
More examples

Helen Pain/ (helen@inf.ed.ac.uk)
STANDUP
Supporting Language Play in Children

http://www.csd.abdn.ac.uk/research/standup/

**Standup:** (based on JAPE, Binsted & Ritchie 1994, 1997):
Facilitating language play in non-speaking children through computer-supported joke construction*

- Built support tool that enables children with complex communication needs (CCN) to experience language play (through humour)

- Current AAC tools are primarily functional, focusing on needs-based communication
  - Interactivity and customizability
  - User-centred design

Brings together a number of aspects of AI, Cognitive Science, Human Computer Interaction, Education

*EPSRC Grants GR/S15402/0 and GR/R83217/01
STANDUP

System To Augment Non-speakers’ Dialogue Using Puns
Play through humour

What do you get when you cross a monkey and a peach

An ape-ricot.

What do you call a murderer with fibre?

A cereal killer.

What kind of vegetable can jump?

A spring onion.

What do you get when you cross cars and sandwiches?

Traffic Jam

How does a whale cry?

Blubber blubber.

How is a car like an elephant?

They both have trunks.
Exercise:

Consider what knowledge is needed to understand such jokes - what different types of knowledge do you have to have?

What might the educational function of playing with such jokes be?

Can we automate this - what would we need to know and represent to do this?

What would be the purpose of this?
Would need a word list = Lexicon

Part-of-speech (POS) tags

Phonetic spelling, for computing:
- homophones: time ↔ thyme
- rhyme: pub ↔ tub
- spoonerism: bare/spank ↔ spare/bank

Compound nouns and their components
- e.g. long time, traffic jam

Distinct senses of a word/phrase,
- e.g. match=sporting event, match=ignition stick

Semantic relations:
- synonyms: strange ↔ bizarre
- hypernyms: thyme ↔ herb
- meronyms: traffic ↔ car
e.g. Augmenting Wordnet

Starting point: WordNet (200k senses, synonyms, hypernym hierarchy, meronyms)

Phonetic forms: Unisyn: pronunciation dictionary, phonetic strings assigned to >115k word forms (Edinburgh accent)

Pictures: Widgit “conceptcodes” already linked to two picture libraries; linked to WordNet senses, manually.

Familiarity ratings: data from spelling lists, SemCor, Widgit conceptcode set, MRC psycholinguistic database, BNC

Topics: adopted hierarchy supplied with Widgit coding.

Excluded items: anything in Shorter Oxford “coarse slang” or “racially offensive”, plus a few from personal knowledge.

(Thanks to Widgit Software and Mayer-Johnson for pictures)
How could we automate this?  
JAPE: example of structure

What do you call a strange market?  
A bizarre bazaar.

It searches a general purpose dictionary to find words that fit pre-defined structures called schemas and templates.
Purpose: need for language play

Word play is critical part of language development
- typically-developing (TD) children enjoy jokes and riddles
- provide opportunity to practise language, conversation and social interaction skills.

Jokes
- are a type of conversational narrative
- play an important role in the development of storytelling skills.

Role of punning riddles in language development
- pragmatics => turn taking, initiation etc.
- vocabulary acquisition

Children with speech and/or language disabilities do not always have language play opportunities
- Pre-stored rather than novel jokes
- little opportunity for independent vocabulary acquisition and word play
Standup goals

To build a tool that helps children with complex communication needs (CCN) to play with language:

– **generate novel puns** using familiar vocabulary,
– **experiment** with different forms of jokes.
– **provide social interaction** possibilities
– **go beyond** the “needs” and “wants” of AAC*

*AAC: augmentative or alternative ways to communicate for people with limited or no speech
“Are you ready?” – Using STANDUP
“Are you ready?” – Using STANDUP

NI exploring to get 'any joke'
Week 8

Feb-9-15
NI telling a joke
Computer games in education

Children find computer games motivating and spend a lot of time playing them *

Teachers and parents recognise that children develop collaboration, thinking and discussion skills through computer games *

BUT – there is a mismatch between curriculum and commercial game content which prevents games from being used in the classroom

Purpose made educational games can be developed to fit the curriculum

Pupils can learn from making their own games

Adventure Author: storymaking through computer game design

Judy Robertson, Keiron Nicholson and Cathrin Howells.

“Creating a 3D interactive immersive game provides new opportunities for authors.

We see conventional writing at work, but also gain insights into ways pupils use the visual, spatial and interactive elements of game design to contribute to the storymaking process, carrying meaning beyond words.” (Judy Robertson)

‘Adventure Author’ is a freely available game creation tool for children aged 10-14, a modification of the Neverwinter Nights 2 game-making toolset for designing and building interactive stories.

Feb-9-15

(slides edited from those of Judy Robertson)
Adventure Author…
www.adventureauthor.org
Aims to study the creative process learners go through when making their own computer games

Team worked with schools in Edinburgh and Dundee, holiday workshops, to design and refine game making software

Children must consider:

How do I build a story spatially?

Under what circumstances should I try to tell the story through words and when should I use visual design?

How can I anticipate what my reader might do?

What makes a good writer-designer???
Neverwinter Nights 2
Game making toolset

Toolset comes free with Neverwinter Nights 2 game
The wise old bear Cedric is losing his sight. We need your help to save his vision - he alone can read the Books of Lore, the spells that keep our land green and beautiful and safe from harm. Without his skill we will be in great danger from the Wizard of the North. Don't worry, you will be rewarded well for your efforts.
Conversation Writer: dialogue

MAISERABBIT: Welcome to Verdant Land. We are hoping you will accept a challenge to help us.

PLAYER: What challenge might that be?

MAISERABBIT: The wise old bear Cedric is losing his sight. We need your help to save his vision - he alone can read the Books of Lore, the spells that keep our land green and beautiful and safe from harm. Without his skill we will be in great danger from the Wizard of the North. Don't worry, you will be rewarded well for your efforts.

PLAYER: I don't like all this talk of spells and wizards.

PLAYER: This sounds serious. Tell me more.
Dialogue: choices

PLAYER  hello who are you?

ARNORARCHER  I am an archer of the kingdom of arnor our scout team has been killed and we are the only survivors

PLAYER  what who done this?

ARNORARCHER  the evil king arthidale there is great evil in this place it has been corruupted by evil will you help us?

PLAYER  ahhhhhhh!!! to scary run away!

PLAYER  ok i'm in so how bad is this?

PLAYER  Hmmm...... sounds dangerous i don't like this

Feb-9-15  ALE-1 2015, UoE Informatics
CRYSTAL ISLAND (video)
Crystal Island: Outbreak

James Lester, IntelliMedia group, North Carolina State University

Crystal Island Outbreak - Walkthrough

Crystal Island is an intelligent game-based learning environment

Focus of middle science education (Grade 8) emphasizing microbiology

Students interacting with the Outbreak episode of Crystal Island solve a science mystery that unfolds on a recently discovered island, e.g. backstory

The project focuses on narrative-centered learning and modeling students’ problem-solving activities.

Feb-9-15
ALELO Serious Games
Alelo: Foreign language and culture training

Using socially intelligent virtual humans to interact with learners, and speech-recognition technology to provide instant, constructive feedback in context.

Alelo – introduction

Danish Simulator is a Speech Recognition based online language and culture learning platform for Danish
http://www.alelo.com/dansksimulatoren-danish-simulator/

Alelo's Virtual Role Players (VRP) for Bohemia's VBS2 Mission Rehearsal software
http://aloha.alelo.com/web/alelo_inc_trailer_vrp_mil.html

Alelo's VRP (Virtual Role Players) – consequences....
https://www.youtube.com/watch?v=VpET1b1ZBoc