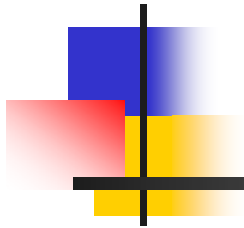


# Evolution of ideas: tools for creativity



Carol Wakeford  
*Faculty of Life Sciences*  
*University of Manchester*

**Creativity in the Sciences**  
*University of Glasgow*  
*29 April 2009*



# Darwin's birthday

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Charles Darwin was born 200 years ago, on February 12 1809 in Shrewsbury.



# Department for Innovation, Universities and Skills

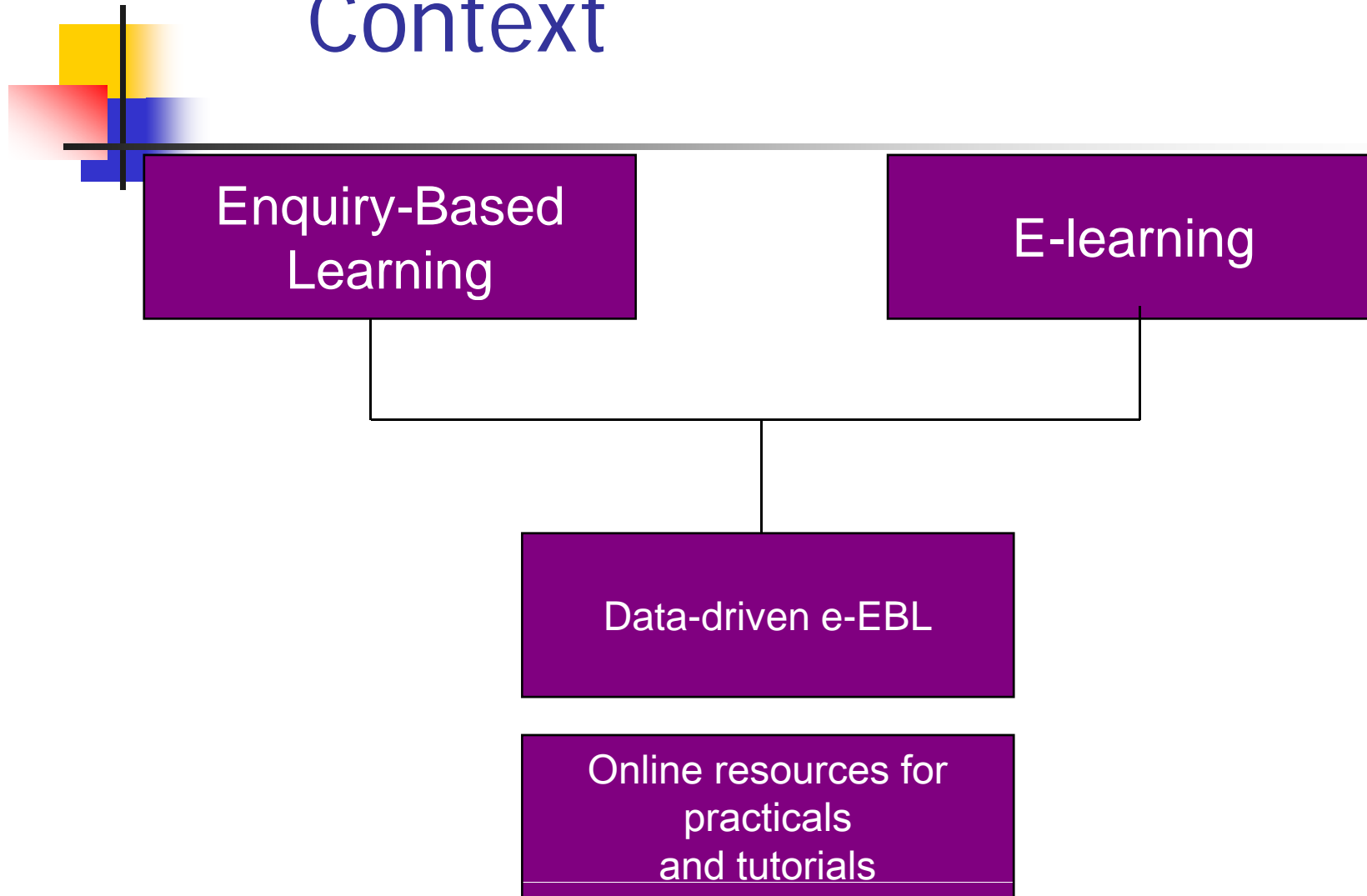
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Mission statement: "Accelerate the commercial exploitation of creativity and knowledge, through innovation and research, to create wealth, grow the economy, build successful businesses and improve quality of life." (DIUS, 2008)

European Year of Creativity and Innovation (2009) 'to raise awareness of importance of creativity and innovation for personal, social and economic development, to disseminate good practice, stimulate education and research, and promote policy debate and development '

[http://www.dius.gov.uk/innovation/euro\\_year](http://www.dius.gov.uk/innovation/euro_year)

# Context



# Learning design

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Information  $\xrightarrow{\text{reading}}$  knowledge

Information  $\xrightarrow{\text{exploration}}$  knowledge

# Creativity: the missing link?

Generation of new ideas

Blank sheet: totally new ideas

Modify existing design

4 considerations:

**Fluency** - ability to generate many ideas

**Flexibility** - ability to generate many types of

**Originality** - ability to generate novel ideas

**Elaboration** - ability to flesh out a particular idea



Skills

Lateral thinking

De Bono, E (1970) *Lateral thinking*, Penguin Books, London

Image from: <http://www.flickr.com/photos/94213756@N00/2462278373/>



# Darwin did it

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## Provocative

postulated the theory of evolution by natural selection

## Challenged assumptions

Origin of species by evolution not creation

How do we help students to think more creatively?

# How do we 'teach' it?



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## Idea generation: tools for creativity

- Lateral thinking games
- Brainstorming and Brain writing
- Visual prompts
- Random words

## Idea incubation

- Mind mapping & Storyboards to take ideas forward

## Idea maturation

- Online peer review (reflection & evaluation)
- SCAMPER
- Attribute listing





# Visual prompts

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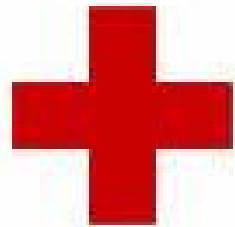
Prompts: sensory

Sights, smells, sounds

Use images to trigger ideas by

Direct association

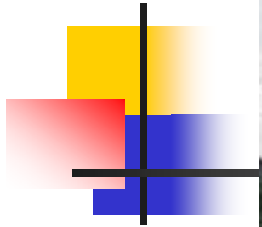
Recall of memories that link to the problem











# Who do you think you are?

Charles Darwin

Philosopher

Academic

Naturalist

Evolutionary biologist

Scientist

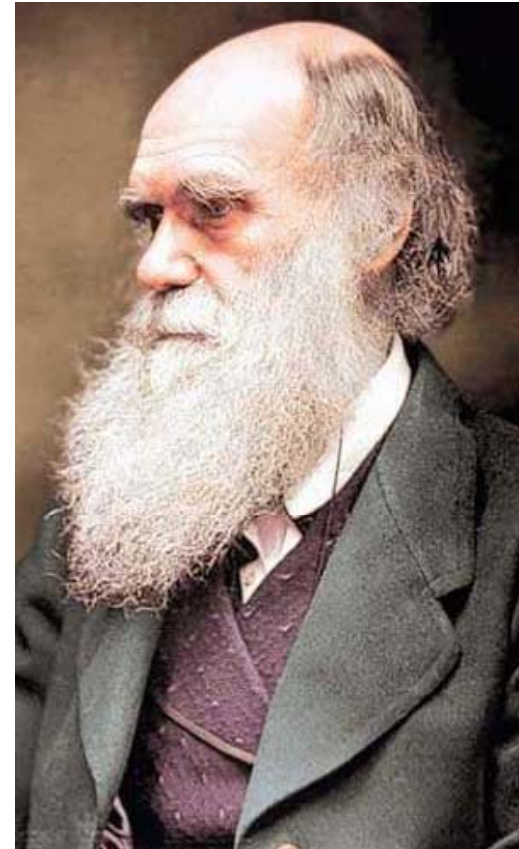


Image from: <http://www.bbc.co.uk/blogs/ni/darwin-1.jpg>

# Workshop Task 1: Visual prompts



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What makes a scientist?

Use the postcards to prompt you to recall memories about how you came to be a scientist

**Generate ideas about what makes someone become a scientist.**

What or who prompted you?

What inspired you to take up your particular subject?

What is it about your subject that excites you?

Spend a few minutes looking at the cards and thinking, then share your ideas with your colleagues.



# Random Words

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Used to trigger ideas

Directly

By association with attributes associated with the word. They form a bridge between the word and the problem

Random word selection from

Dictionary

List

Online





# 150 years ago

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Darwin, C. (1859) *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*, John Murray, London

The first purpose built railway line opened between Manchester and Liverpool in 1830

Calculating Machine, 1833

Morse code, 1840

Anaesthetic effects of ether, 1842

## Task 2: Random words

# Where will we be in 150 years?

The year 2009 is the 150th anniversary of the publication of *On the Origin of Species* (24 November 1859).

Generate ideas about where your field (or technology) might be in another 150 years?

You have a list of 60 random words. Glance at your watch and see where the second hand is pointing – this is the number of your random word.

Generate ideas by direct association

Think of words, phrases or attributes associated with your random word. Use these to connect with the problem.

# Attribute listing – online resources

Technology	Target group	Content	Context
VLE	tutorial	text	case history
PRS	practical	images	problem
laptop/PC	lecture	video	analogy
mobile device	field trip	audio	historical



# SCAMPER

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**S**ubstitute (what else could we do/use instead?)

**C**ombine (how about a blend/combination/assortment?)

**A**dapt (can I use existing resources/materials?)

**M**odify (what could I change – meaning, mode, length, frequency?)

**P**ut to other uses (can this be re-purposed, change the context?)

**E**liminate - “less is more” (what can I leave out, condensed, lighter?)

**R**earrange or reverse (what if items are interchanged, transposed etc?)



# Blue skies degrees

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TASK- Create ideas for a new degree system to replace the current subject-specific modules/units assessed by exams to give different degree classifications.

Use SCAMPER questions to trigger ideas.



# Evoke and evolve

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Ideas for

Projects

Essays and dissertations

Practicals

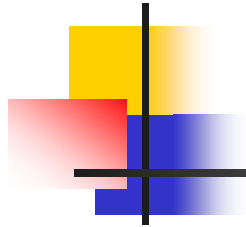
Teaching resources

Enhance skills

Problem solving

Research

Innovation



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Thank you for your attention

[Carol.wakeford@manchester.ac.uk](mailto:Carol.wakeford@manchester.ac.uk)