# Learning From Experience And Performing Learned Actions Are Easy; Novel Actions, Problem Solving, And Calculation Are Hard

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Designing with the Mind in Mind,

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### Overview

- The Three Brains
- The Two Minds
- Learning From Experience
- Performing Learned And Novel Actions
- Problem Solving And Calculation
- Implications For Design

### The Three Brains

### **Old Brain**

Divides things into three groups (edible, dangerous, and sexy) and regulates body's automatic functions (digestion, breathing)

#### **Mid Brain**

Controls emotional responses

### **New Brain**

Responsible for intentional, purposeful, and conscious activity

### The Two Minds

# Unconscious (old brain and middle brain) - System 1

- Automatic
- Based on experience
- Executes learned actions
- Quick response

### **Conscious (new brain) - System 2**

- Controlled
- Based on new action
- Consciousness and self-awareness
- Slow response

There are 30 people in a warehouse. Some have turned into zombies, and some are still alive. If the ratio of zombies-to-living humans is 2:3, how many zombies are there?

There are 12 zombies and 18 humans.

# Learning From Experience

## Examples



Avoid 8am classes

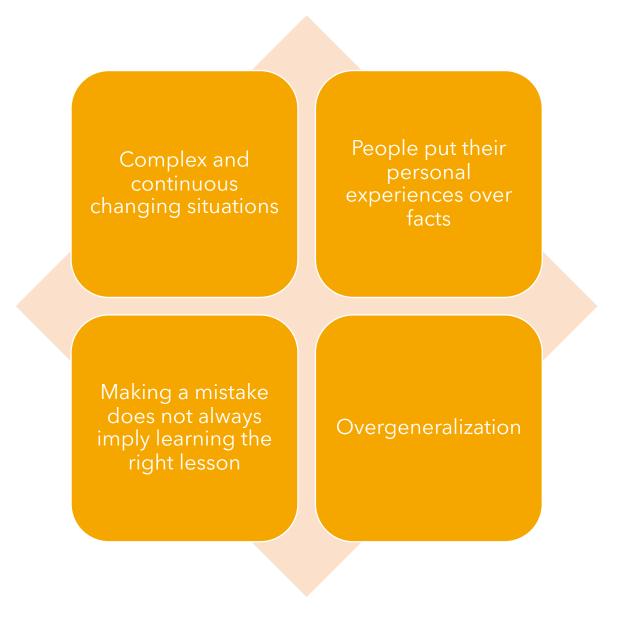


Walk slow when walking on black ice

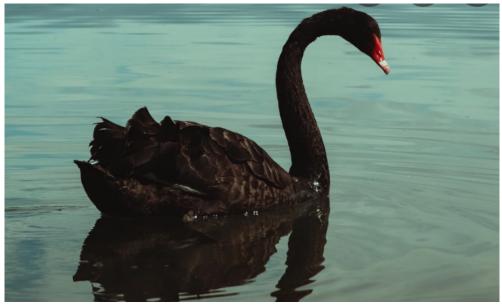


Lower your expectations for Lowry food

### Limitations







Swan Also a swan

### Performing Learned Actions

01
Knowing the

Knowing the lyrics to your favorite song

02

Swiping into the dining hall 03

Making ramen noodles

04

Walking to your dorm

### Performing Novel Actions

01

Knowing your Wooster password backwards

02

Driving on the left side of the road 03

Reciting the alphabet backwards

# Problem Solving And Calculation

 John's cat is not black and likes milk. Sue's cat is not brown and doesn't like milk. Sam's cat is not white and doesn't like milk. Mary's cat is not yellow and likes milk. Someone found a cat that is yellow and likes milk. Whose cat is it?

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# Implications for User-Interface Design

# Design Rules

- 1. Prominently indicate the system status and user's progress toward their goal
- 2. Guide users toward their goals
- 3. Tell users explicitly and exactly what they need to know
- 4. Do not make users diagnose system problems
- 5. Minimize the number and complexity of settings
- 6. Let people use perception rather than calculation
- 7. Make the system familiar
- 8. Let the computer do the math

### Questions?