

# Living Data Workshop 1

Link to google slideshow <https://goo.gl/9zTF6N>

# In this workshop...

## Video

- Recap of **Narrative Structure**;
- Pick a **Topic** related to this course;
- Select an **Audience**;
- Select a **Style**;
- Review the **Video Plan Document**.

## Processing

- Recap [hello.processing.org](http://hello.processing.org) material;
- Recap worksheet material (for loops, `map()` and `Table`);
- Build example described in the prework from scratch.

# Video Part 1: Narrative Structure

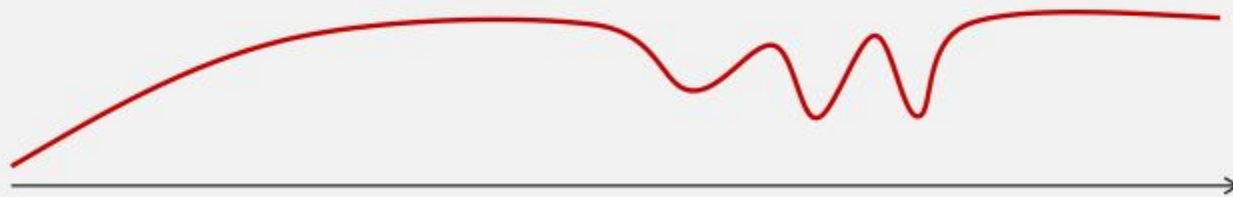
## Narrative Structure

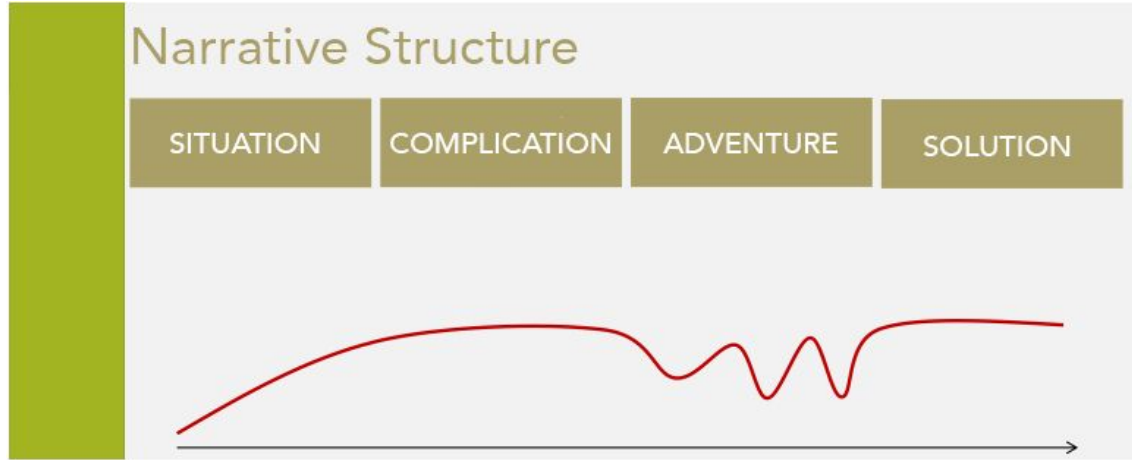
SITUATION

COMPLICATION

ADVENTURE

SOLUTION



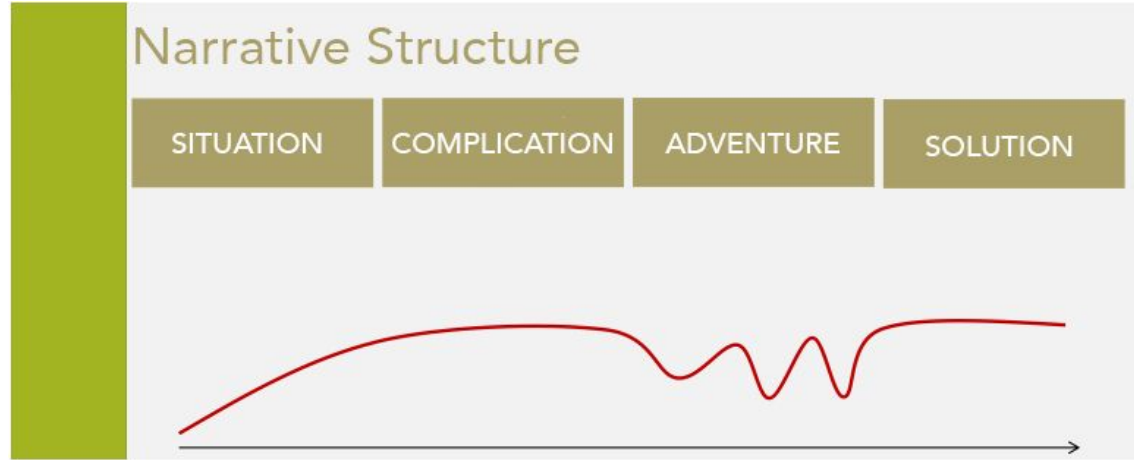


**Situation:** Cat is walking down the street on a sunny day.

**Complication:** Something scares the cat up a tree.

**Adventure:** Attempts to rescue the cat drive it further and further up the tree.

**Solution:** When it seems that the cat is going to fall and die, the cat is rescued in a surprising and satisfying way



**Situation:** Set up the situation or current understanding of the topic of your essay.

**Complication:** Introduce your topic, which disrupts or complicates this situation.

**Adventure:** Discuss the complexities of your topic.

**Solution:** Reach a solution that enlarges your reader's understanding of the topic.

<https://goo.gl/9zTF6N>



[https://youtu.be/gX18QqFX8\\_k](https://youtu.be/gX18QqFX8_k)



**Situation:** Can we ever breathe water?

**Complication:** No, But we may be able to breathe a different liquid

**Adventure:** Explore potential of being able to breathe PFCs, etc...

**Solution:** There are some promising applications!



<https://goo.gl/9zTF6N>



<https://youtu.be/8nHBGFKLHZQ>



**Situation:** What happens if a black hole the size of the coin appears near you?

**Complication:** It depends - does it have the mass or the size of a coin?

**Adventure:** Discussion/comparison of the two situations

**Solution:** ??

# Video Part 2: Selecting Topics

# Unit Learning Outcomes

After successfully completing this Unit, you will be able to:

1. Describe how the structure and function of body systems interrelate for normal human activity;
2. Explain how the tight integration of complex cellular and whole-body mechanisms underpin homeostasis;
3. Explain the current challenges and emerging solutions facing human biology research;
4. Communicate key concepts in biology to diverse audiences through a variety of media;
5. Work independently and in groups to analyse and evaluate important questions in human biology;
6. Demonstrate competence in core laboratory and related skills;
7. Collect and analyse data related to human biology;
8. Appreciate the role that the science of human biology plays in contributing to the betterment of society as a whole;
9. Develop the skills for self-managing and successful learning at university.

# Video Part 3: Audiences

<https://goo.gl/9zTF6N>

# Audience List

Primary school children

Peers/First year university students

General public

Promoting a government agenda

# Explaining a concept at different levels of complexity:



[https://youtu.be/sweN8d4\\_MUg](https://youtu.be/sweN8d4_MUg)

*Biologist Explains One Concept in 5 Levels of Difficulty - CRISPR | WIRED*

# Primary School Children: Example Videos

The Sci Guys: Science at Home: Air Pressure Can Crush

<https://www.youtube.com/watch?v=DCLvwk3zh8>

SciShow kids: Salt's Secret Powers

<https://www.youtube.com/watch?v=BaBRoGc4gOM>

The Spangler Effect: Egg in a Bottle

<https://www.youtube.com/watch?v=35cgB5Z3GJs>



# Primary School Children: Attributes

- Use simple language;
- Show practical examples;
- Relate concepts to things they know (eg: when you have a hot drink you blow on it: a car radiator works the same way...)
- Keep facts bite-sized and recitable;
- High-energy presentation;
- Maybe include a partner or friend that helps the presenter by asking questions that the audience might have, and answers some questions that the presenter asks;
- Use science to explain something that a child may notice and ask about.

**NB: Make sure to tell viewers to *ask an adult to help* if you encourage them to do an experiment involving anything sharp, hot, breakable and so on.**

# Peers/University Students

Armando Hasudungan

<https://www.youtube.com/user/armandohasudungan/videos>

Science - Yeast Experiment: measuring respiration in yeast.

<https://youtu.be/Cngt2HmJuSo>

Numberphile: Squaring the circle:

<https://youtu.be/CMP9a2J4Bqw>

# Peers/University Students: Attributes

- You can assume familiarity with technical terms;
- You can assume the viewer is interested in the topic and will pay attention;
- You don't have to rely on being as entertaining as content for primary school children or the general public;
- You do need to pitch the level of complexity at the right level though.

# General Public/Science Communication: Examples

Physics Girl: why do mirrors flip horizontally (but not vertically)?

<https://youtu.be/vBpxhfBIVLU>

VSauce: would headlights work at the speed of light?

<https://youtu.be/ACUuFg9Y9dY>

Veritasium: Anti-gravity wheel:

<https://youtu.be/GeyDf4ooPdo>

The Brain Scoop - Mammoths vs. Mastodons: Can we 'de-extinct' them both?

<https://youtu.be/2NyggtUEvY9k>

# General Public/Science Communication: Attributes

- Entertaining;
- Topics are relatable;
- Presenters are friendly;
- Concepts are less sophisticated than for university students

# Government Agenda: Examples

ScienceCasts: A Supermoon Trilogy

<https://youtu.be/A4v5YgC9vkE>

CSIRO: Graphene: water filter of the future

<https://youtu.be/VjMfiuUG6tA>

WHO: What is antimicrobial resistance (AMR)?

[https://youtu.be/LHOIPmSJn\\_8](https://youtu.be/LHOIPmSJn_8)

Facts in 90 Seconds (childhood immunisation)

<https://youtu.be/fU6RVxa8abl>

# Government Agenda: Attributes

- Authoritative;
- Serious;
- Formal;
- Often use graphics on screen;
- Often includes facts and figures;
- Uncontroversial.

<https://goo.gl/9zTF6N>

# Video Part 4: Styles



# Styles in Adobe Spark

Promote and Idea

Personal Growth

Tell What Happened

Teach a Lesson

A Hero's Journey

An Invitation

Show and Tell

Choose your own

<http://spark.adobe.com>

# Video Part 5: Video Plan Document

<https://goo.gl/9zTF6N>

# Video Plan

Time	Content	Visual	Justification

You can download the blank video plan document here:

[https://www.dropbox.com/s/42ee1np6g72k4rj/VideoPlan\\_blank.docx?dl=0](https://www.dropbox.com/s/42ee1np6g72k4rj/VideoPlan_blank.docx?dl=0)

Video – Workshop 2 Processing

Time	Content	Visual	Justification
0:00	Welcome, overview of what we're looking at today	Intro slide and Phil <b>STAMP</b>	Orient students to the content being covered
0:15	Describe how we draw with a pen/paper: <ul style="list-style-type: none"><li>- Pen on page</li><li>- Move pen</li><li>- Lift pen off the page</li></ul>	Drawing on grid paper <b>DESK</b>	Prime viewer for the way that beginShape() endShape() works
1:00	Compare hand drawing to code version of the same drawing	Phil talking, transition to code/screen capture <b>SCREENCAST</b>	Explain the way that beginShape() endShape() works
1:30	Use the drawing to draw a line chart of some synthetic data used in workshop 1	Code/screen capture <b>DESK / SCREENCAST</b>	Connect to the activity from last week
1:45	Recap beginShape() endShape()	Phil Talking <b>STAMP</b>	Switch to animation topic
2:00	Introducing frameCount for animation	Phil Talking/transition to code/screen capture (or pseudo code) <b>STAMP</b>	Animation relates back to hello.processing.org exercise, also primes students for class activity
2:15	Use frameCount to move a circle across the screen	Screen Capture <b>DESK / SCREENCAST</b>	Elemental example of animation
2:45	Mechanical motion using frameCount + sin() – also explain why we need radians()	Screen capture – transition to drawing for radians() <b>DESK / SCREENCAST</b>	More complex example of animation
3:15	Animation around a circle using sin() + cos()	Screen capture <b>SCREENCAST</b>	
4:00	Add data into movement	Screen Capture	Prepare students for in-class challenge
5:00	Outro / what to do before class	Phil talking <b>STAMP</b>	Recap information

Hi  
Intro  
Drawing shapes  
beginShape() endShape()  
Animation  
Compare Processing to drawing by hand.  
line chart  
beginShape() and Shape are more advanced shapes

draw w/ code similar to Phil any 4pts

This is why we use setup() draw()

we add beginShape animation  
Q: Your quiz!

remember hello... using setup() draw()  
Remember for test in Processing.  
One way to do was frame Count.

# Decision Time!

Think about

- Which audience you want to make a video for
- What style of video will create
- What topic you will be presenting

Next workshop

- Plan document submitted before next workshop (1% yes/no)
- Peer-to-peer feedback (4%)

<https://goo.gl/9zTF6N>

# Processing

# Getting Processing

Download app <http://processing.org/download> (you don't have to donate)

Online with login <http://www.openprocessing.org> (can save, upload .csv files etc)

Online, no login <http://sketchpad.cc>

<https://goo.gl/9zTF6N>

# hello.processing.org recap

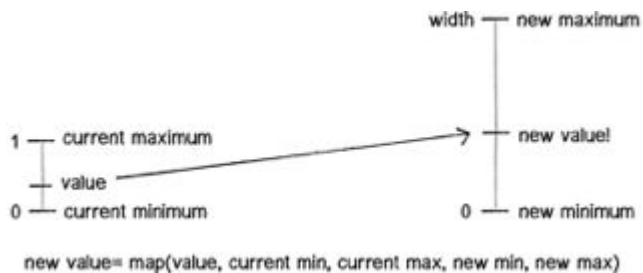
Variables and Functions

Setup and Draw

If statements

# Pre-work recap: map( )

## Map



## Example:

```
// create a new variable  
float value = 0.4;  
  
// print the value when  
// mapped from 0-1 to width  
println(map(value, 0, 1, 0, width));
```

<http://natureofcode.com/book/>



# Pre-work recap: Loop

Loops let us a block of code

1. The *init* statement is run.
2. The *test* is evaluated to be true or false.
3. If the *test* is true, jump to step 4. If the *test* is false, jump to step 6.
4. Run the statements within the block.
5. Run the *update* statement and jump to step 2.
6. Exit the loop.

<https://processing.org/reference/for.html>

Example:

```
//for(init;    test;    update)
for(int i = 0; i < 10; i++) {
    println(i);
}
```

# Pre-work recap: Table

Tables are Processing's way of loading a data file such as a .csv

<https://processing.org/reference/Table.html>

Functions used with a table:

```
loadTable(filename, options);
```

```
getRow(rowNumber);
```

```
getRowCount();
```

```
getInt(columnName);
```

```
getFloat(columnName);
```

```
for(int i = 0; i < table.getRowCount(); i++) {  
    print(getRow(i).getFloat("column header");  
}
```

# Template

Let's build the example we used in the pre-work!

- You will understand how it works well enough to use it as a template
- You will have your own copy, with your own comments and notes
- You can save a copy to experiment and change