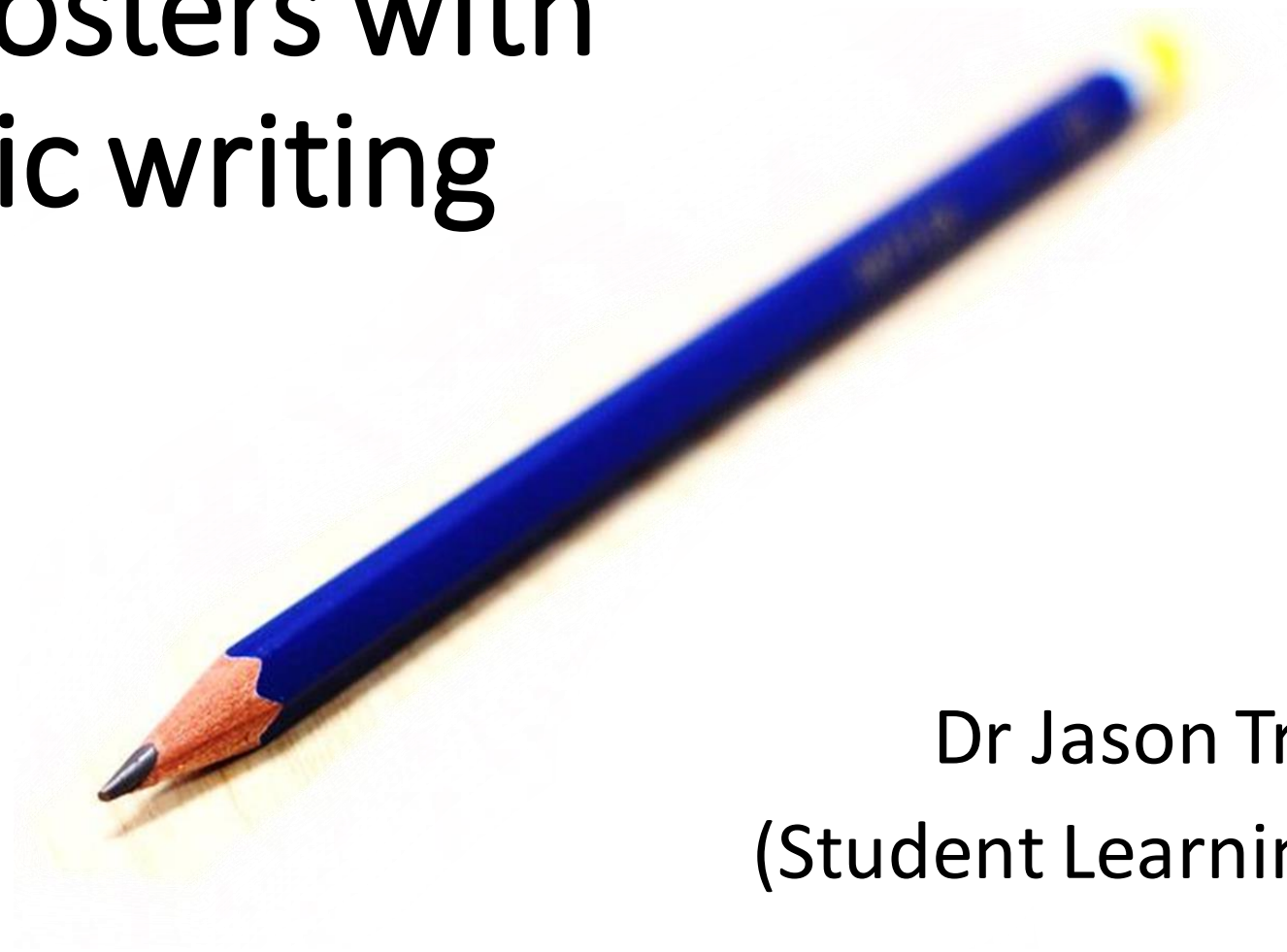


# Creating posters with academic writing



Dr Jason Truscott  
(Student Learning Services)

# Contents

- Quick recap – where Student Learning Services can help you
- What is a poster?
  - Academic posters
- Learning from what we know
- Constructing posters
- Questions
- Examples of posters
- Sum up and end of session



# The 'Digital' Writing Café

- Drop in (no booking!)
- 1pm – 4pm Mon-Fri (Semester time)
- Via Zoom moving to in person
- Student writing mentors – breakout rooms
- English as second language support on specific days.

[www.plymouth.ac.uk/learn](http://www.plymouth.ac.uk/learn)

Look out for these lanyards

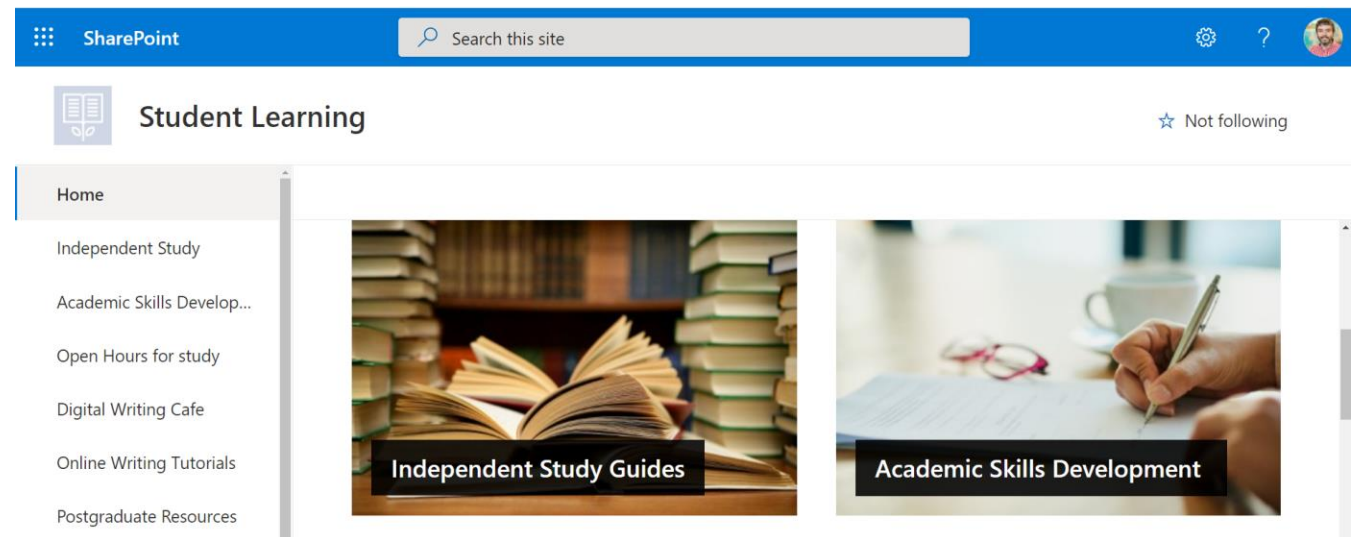


# Where to find additional support

These are available throughout your University experience:

- **Speak with an Advisor (Jason)**
  - Bookable 30 min session – individual or groups
- **Study guides and digital resources (e.g. Help videos)**
- **Email:** [studentservices@plymouth.ac.uk](mailto:studentservices@plymouth.ac.uk)
  - questions and advice
  - Contact the 01752 587676
  - or go to the **Student Services Hub (Charles Seale-Hayne Library)**

# Further details here:



[www.plymouth.ac.uk/learn](http://www.plymouth.ac.uk/learn) – External (anyone)

<https://liveplymouthac.sharepoint.com/sites/x77> – Internal (Your UoP login)



# What is a poster?

Your thoughts



We all have  
an 'image'  
of what a poster  
might look like...

Some might NOT be  
suitable.



... perhaps it is not always as we imagine an academic poster would be.

Russell, S. (2008) 'Taking Stock of the World's Species [POSTER]', The Plymouth Student Scientist, 1(2), p. 354.

# TAKING STOCK OF THE WORLD'S SPECIES

Wouldn't it be great if every animal and plant had an easy-to-read label, telling you to which species it belongs?

0 1 6 96 2 12 4 5 6 83

**Introduction** by Samantha Russell


Scientists are working to identify and catalogue life on Earth. A "barcode" every specimen on Earth. This poster is here to provide an overview of DNA barcoding, what it is, how it works, and its future.

## A barcode for biodiversity

A barcode is a machine-readable digital tag that can identify items on a near-infinite scale (1).

The idea of DNA barcoding is to use a short DNA sequence from a universal location on the genome to:

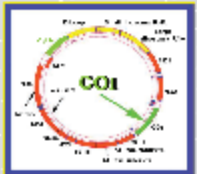
- Assign unknown individuals to species (2)
- Reveal hidden animal diversity



*Example:* An apple may, in addition to a tag indicating what sort of apple it is, have a major classification 'fruit powder', a 'best before' date and a weight code (3).

## Short code

The segment of DNA used to rapidly gain access for 'barcoding' animal species is the first 658 DNA bases of a gene called cytochrome c oxidase (COX). The gene is one of the few that escape the 'big bang' of gene mutation between genera (4). It is located in the mitochondria, a energy-producing structure of the cell that is inherited solely from the mother.



COX is perfect for this, because of these unique features:

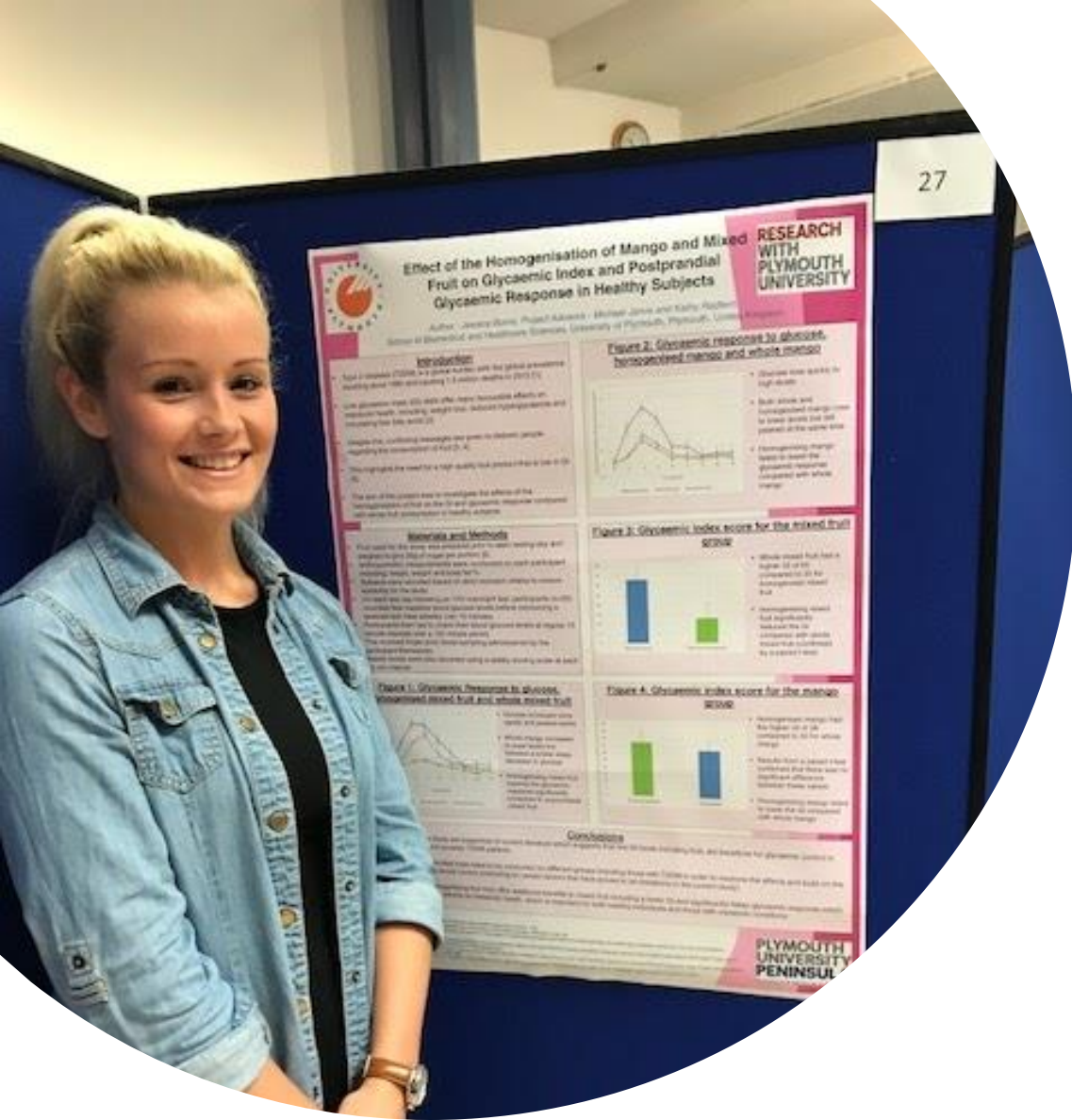
- Fast rate of change
- Easy to amplify
- Low intra-specific variability

## One gene fits all?

The current idea of 'one gene, one barcode' is flawed, because the vast majority of DNA barcoding reports follow this assumption, but COX is not only COX is used and analysed through the Neighbour Joining (NJ) method, which is a simple, pairwise distance into paired through phenetic clustering to produce the hierarchical tree of species clusters (5).

But the COX gene alone may not have sufficient power to document the full animal groups; the effectiveness of DNA barcoding for identifying specimens is species-specific (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100) (101) (102) (103) (104) (105) (106) (107) (108) (109) (110) (111) (112) (113) (114) (115) (116) (117) (118) (119) (120) (121) (122) (123) (124) (125) (126) (127) (128) (129) (130) (131) (132) (133) (134) (135) (136) (137) (138) (139) (140) (141) (142) (143) (144) (145) (146) (147) (148) (149) (150) (151) (152) (153) (154) (155) (156) (157) (158) (159) 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# SCIENTIFIC POSTER

- A large poster used to communicate research results at conferences
- Highly visual method of presentation
- **Summarises** key points briefly on a single page
- Can be used as a tool to initiate conversation or stand alone display
- Usually includes information on methods and outcomes, graphs and figures, are typically referenced.



# ‘Abstract’ texts are often good model for posters

- Very brief summary of a paper/research
- Usually around 500 words (essentially very short)
- Typically contains:
  - Very brief introduction of topic/aim
  - Most significant findings from the discussion
  - Summary of the ‘main’ conclusion of the paper

# Academic posters

- Typically, keep it 'visual' with less text
- Puts across the main points
  - Structured contains Introduction, methods, results and discussion
- '**...show what we want to tell**'

Rowe, N. (2017) *Academic & Scientific Poster Presentation: A Modern Comprehensive Guide*. Springer International Publishing.



# Before we go further

- Not everyone has experience of creating posters
  - Don't panic!
- Consider the 'context'
  - What is the audience and purpose?
  - Are there any specific rules? Assignment brief
- Use the Critical Thinking model
  - Good also for writing approach
- Looking at examples often helps (research)





# Assignment brief

Consider the requirements

# Assignment requirements:

see COMP1004 assignment brief for further details!

Create a poster illustrating the key features of your application and the architecture.

The presentation and poster should be pitched at an audience that is scientifically literate, but non-expert in this particular subject specialism.

## **You should communicate:**

- What has been done so far for the whole course of the project.
- A summary of project results/discussion

# Assignment requirements:

see COMP2003 assignment brief for further details!

You should ensure that the following team created items are complete in your GitHub repo and the poster submitted to the DLE submission point:

- **a poster illustrating the key features of your application and the architecture.**
- **This must be uploaded to the Final Poster (Team) submission point.**

**Note: the poster is digital! JPG?**

The poster should be pitched at an audience that is scientifically literate, but non-expert in this particular subject specialism:

It should communicate:

- The rationale for the project and the project aims (with any essential background information).
- What has been done over the course of the project.
- A summary of project results/discussion.
- The main project conclusions.

# Assignment requirements summary

- **Title** – something that reflects your project vision
- **Your project vision** – What is it? What is the problem it will solve?
- **Provides a glimpse into the technology** – Why or How it tackles the problem?
- **Image format**
  - Do you need to convert it to JPG file format



# Let's look at typical poster structure

This will help you to be, selective, purposeful and critical of texts

# Components of an academic poster

Also good for the basic structure of reports of essays!

**Title:** A typical poster

**Your name – might include institution / company etc**

**Introduction**

**Discussion**

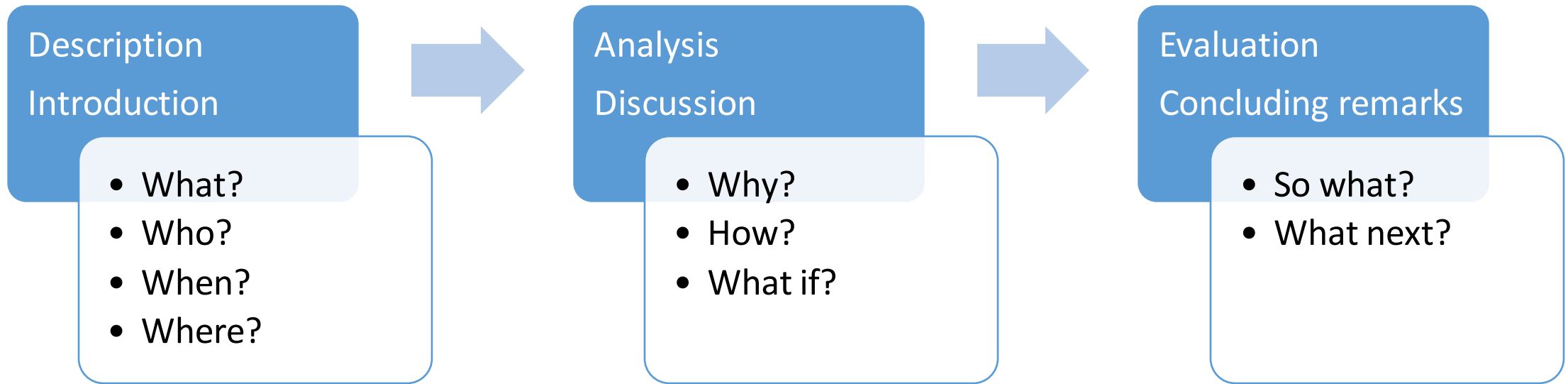
**Conclusions**

**References**

# Critical thinking for posters

## 'Every' main point/argument/claim...

- Uses this approach



# Look for key characteristic for posters: description, analysis and evaluation



## Introduction - Description

- Introductory phrases – outlines aims of project and or problem/s to solve
- Highlighting and stating facts (might be supported by references)

## Discussion points - Analysis

- Often referred to as 'critical analysis' (might be supported by references)
- Asking questions
- Compare and contrast – how and why it works or is better. How it solves the problem

## Conclusions – Evaluation (a summary)

- Often referred to as 'critical evaluation' (not typically supported by references)
- Summary of main findings (only after analysis)
- Final remarks
- Concluding remarks
- Future work

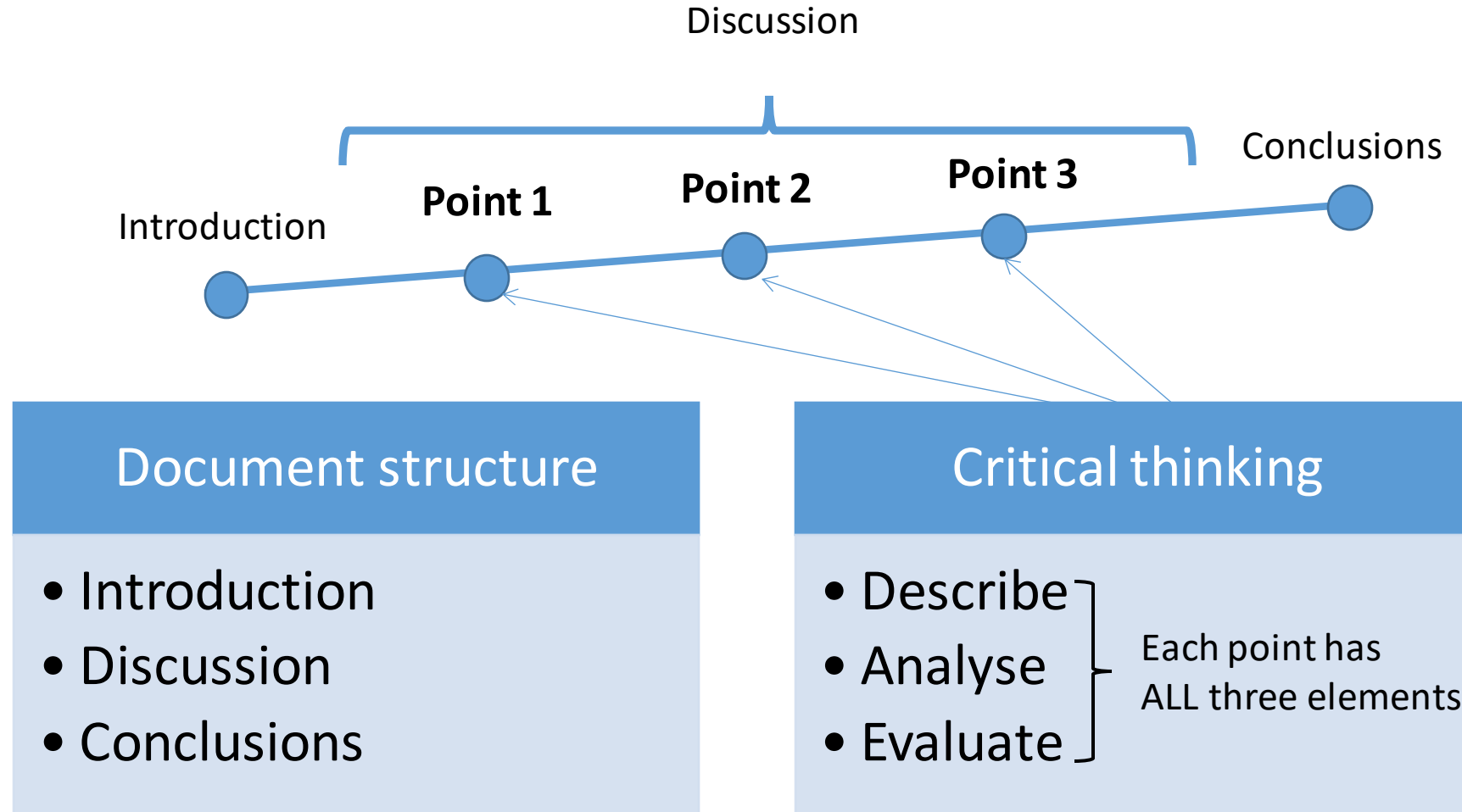


Looking at agile software development processes (ASDP) for any software company,...it is particularly important to consider ... (Peters, 2016). According to Matthew (2015) this should always... Certainly Peters (2016) gives effective approaches for usability improvements... [text removed]

**However**, looking first at...there are concerns that poor ASDP practices can lead to..., therefore...(Harrison, 2016). Certainly, ASDP need proper implementation, to ensure... as also suggest by Adams (2006). Although, **one major drawback** of this approach is that... (Peters, 2016). Therefore, in order to ensure that the outcome is favourable..., a new approach was introduced to counteract these issues... Brian (2016) provides a solution whereby ASDP was are able to... **In contrast** others were not able to implement a new structure, due to the constraints...that Jacobs (2017)...

**Having considered** all the important issues associated with ASDP in..., there is clear evidence that more needs to be done..., particularly... Making these changes would not only improve software usability, but also.... These were clearly proven in a number of cases and situations, particularly... Therefore, it is recommended that...

# Writing structure, flow – visual comparison



# Critical language

The screenshot shows the Manchester Academic Phrasebank website. At the top is the Manchester University logo (1824) and the title 'Academic Phrasebank'. A navigation bar contains links: 'Introducing Work', 'Referring to Sources', 'Describing Methods', 'Reporting Results', 'Discussing Findings', and 'Writing Conclusions'. The main content area is titled 'Being Critical' and includes a 'HOME »' link. A sidebar on the left lists 'GENERAL LANGUAGE FUNCTIONS' with 'Being Critical' highlighted. The main text explains that being critical means questioning information and provides a quote by Edward de Bono: '... being against is not enough. We also need to develop habits of constructive thinking.' Below this, several phrases are listed: 'Highlighting inadequacies of previous studies', 'Identifying a weakness in a single study or paper', 'Offering constructive suggestions', 'Introducing problems and limitations: theory or argument', and 'Introducing problems and limitations: method or practice'. At the bottom, there is a note about an enhanced PDF version and a link to 'ABOUT PHRASEBANK'.

MANCHESTER 1824 The University of Manchester Academic Phrasebank

Introducing Work Referring to Sources Describing Methods Reporting Results Discussing Findings Writing Conclusions

HOME »

GENERAL LANGUAGE FUNCTIONS

- Being Cautious
- Being Critical**
- Classifying and Listing
- Compare and Contrast
- Defining Terms
- Describing Trends
- Describing Quantities
- Explaining Causality
- Giving Examples
- Signalling Transition
- Writing about the Past

As an academic writer, you are expected to be critical of the sources that you use. This essentially means questioning what you read and not necessarily agreeing with it just because the information has been published. Being critical can also mean looking for reasons why we should not just accept something as being correct or true. This can require you to identify problems with a writer's arguments or methods, or perhaps to refer to other people's criticisms of these. Constructive criticism goes beyond this by suggesting ways in which a piece of research or writing could be improved.

*... being against is not enough. We also need to develop habits of constructive thinking.*  
Edward de Bono

Highlighting inadequacies of previous studies

Identifying a weakness in a single study or paper

Offering constructive suggestions

Introducing problems and limitations: theory or argument

Introducing problems and limitations: method or practice

An enhanced and expanded version of PHRASEBANK is available in PDF or Kindle format:

PDF Kindle

ABOUT PHRASEBANK

The Manchester Phrase Bank:  
[www.phrasebank.manchester.ac.uk/being-critical/](http://www.phrasebank.manchester.ac.uk/being-critical/)

# Sizes for posters

- A0 841 x 1189 mm
- A1 594 x 841 mm
- A2 420 x 594 mm
- A3 297 x 420 mm
- A4 210 x 297 mm
- A5 148 x 210 mm

Consider sizes  
based on  
whether you are  
printing on paper  
and/or digital

- Top two are most commonly used
- Either in landscape or portrait
- A1 is the most common, so consider this as your first option.
- As digital software allows scaling (plus the ratios are the same), it is often easier to create an A0 but print it to A1 or less.
- N.B. A4 to A0 is a bad idea, unless you use vector graphics!!!



# Title: A typical poster

Your name – institution / company etc

**Introduction**

**Discussion**

**Conclusions**

**References**

**Landscape OR Portrait**

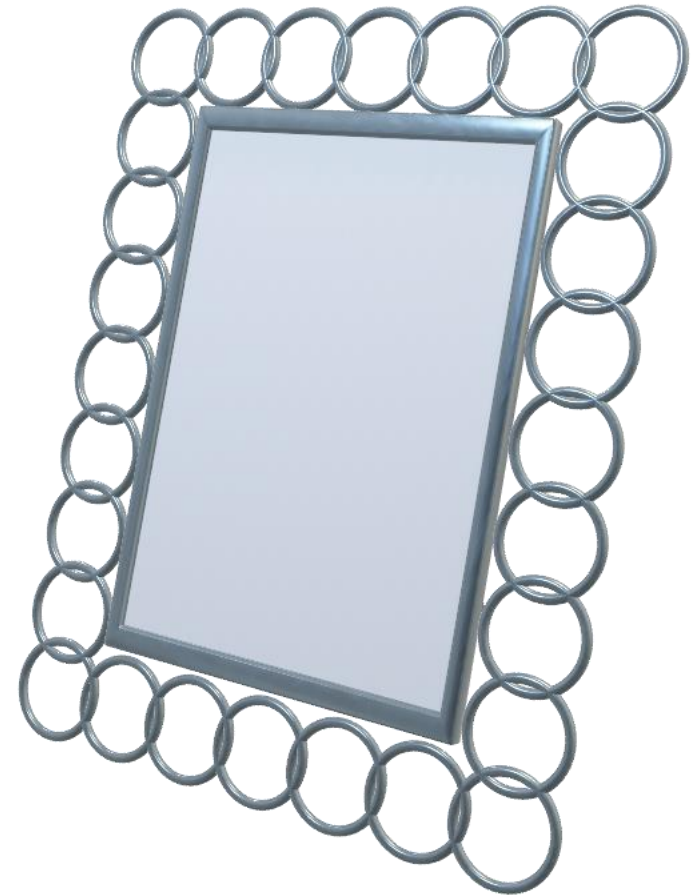


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**STUDENT  
LEARNING**

# What about images?

- Images for the sake of images?
  - They have to be meaningful
    - Consider the theme of your project
    - How connects ideas?
- Types of images?
- Royalty free images
  - free images = used many times already?
  - [unsplash.com](https://unsplash.com)
- Consider taking your own photos
  - Screen shots



# Visual impact...

Good posters have visual impact

# Quick look at options

PowerPoint

# Questions so far



# Posters for discussion

Research!



# Critical synopsis\*

1. Why am I reading this?
2. What are the author trying to achieve?
3. What are the author saying that is relevant?
4. How convincing is the author?
5. Visually stimulating?
6. Conclusion, did I learn anything new?
7. Does it work as a poster?

\*A critical synopsis is a condensed 'critique' of what is known.

# Posters for academia

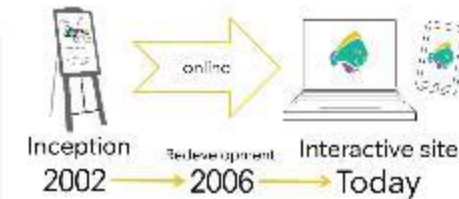
- Example poster created by me for a conference a few years back.
  - Has a computing theme
  - Highlighting software
  - Reasonable balance of text and imagery?
  - Clearly more focused to marketing the software

## Catch of the day: Wrasse, a resource for academic writing

Joe Allison / John Hilsdon / Jason Truscott Plymouth University, Devon, UK

About **WrAssE: Writing for Assignments E-library, an interactive online resource**

### Principles



- "How can students see what critical writing looks like in the context of their discipline?"
- "Where can I get examples of academic writing that can be accessed on demand?"
- "How is it possible to do this efficiently, collaboratively and globally in our expanding digital world?"

### Features

A screenshot of the WrAssE web application interface. Yellow arrows point from various features to a list of descriptions on the right. The features include a search bar, a list of assignment topics, a detailed view of an assignment with a text editor, and a comments section.

- Bespoke user interface
- Social sharing and login functionality
- Provides example reports or essays with popup comments
- Assignment briefs/discussions
- Sentences can be selected to better understand its inclusion in text (Text is also underlined in main body and colour co-ordinated to its function)
- Comments explaining why it's a good!

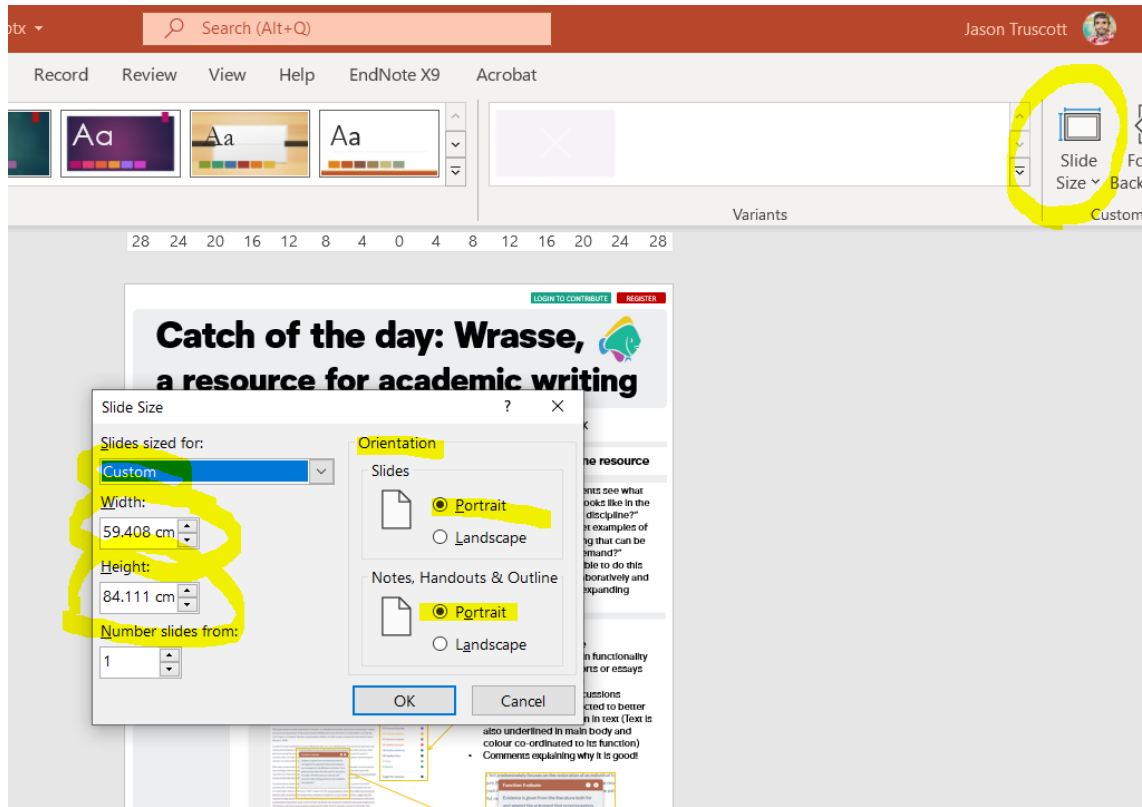
### So what?

- Valuable tool for student writing and their learning development
- Interact with text and see what makes good academic writing
- Anyone can create an account (via social media)
- Registered users can upload their own examples – get involved!
- Enables sharing of good writing practice internationally
- Excellent for distance learners

Comments >  
learn@plymouth.ac.uk



# About Jason's poster construction



- Note in screen capture is set to A1 on my poster:
- A0 841 x 1189 mm
- A1 594 x 841 mm
- Deliberately set as A1 it was the maximum I would ever need.
- Later printed off A3 and A4 handouts. As ratios of the paper are identical!

# Posters for academia

- This is a poster from 2008
- Created by a student
- Hosted on 'The Plymouth Student Scientist Journal' website  
<https://pearl.plymouth.ac.uk/handle/10026.1/13821>
- Text rich, but with complimentary imagery

Russell, S. (2008) 'Taking Stock of the World's Species [POSTER]', *The Plymouth Student Scientist*, 1(2), p. 354.

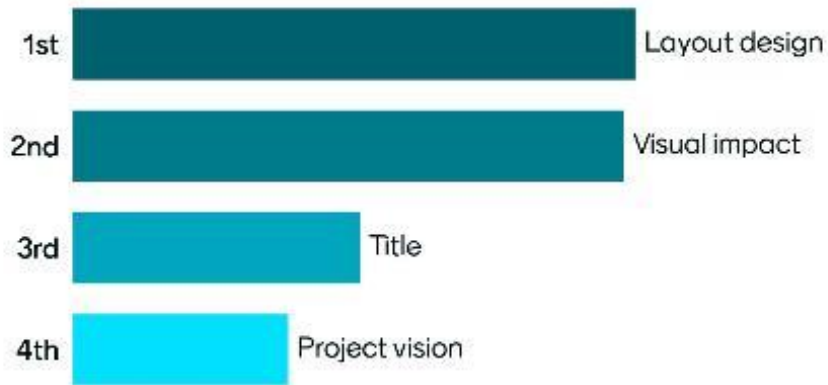
[illegible]

# Getting a 'sense' of how others view posters

The academic writing/content is VERY important – However poster creation can be 'subjective' and visual impact can also play a part in how effective your poster is to other viewers at a conference

# Example posters from others, with rankings

Rank in order - what impressed you - example 1



Consider (from a 'viewers' perspective):

1. Layout design
2. Visual impact
3. Title
4. Project vision

• N.B. PLUS keep to your brief!



## Example 1


<http://web.socem.plymouth.ac.uk/secam/public/cgd.php>

Direct link - Priest

<http://web.socem.plymouth.ac.uk/secam/assets/posters/10552787.png>

# DEEP SPACE DILEMMA

## COOP VIRTUAL REALITY SHOOTER




### GAMEPLAY

STRANDED ON A SPACE STATION CONTROLLED BY HOSTILE ROBOTS YOU MUST WORK WITH YOUR TEAM TO COMPLETE YOUR MISSION AND ESCAPE.

Fight your way through the game with up to 4 other players as your team works to recover the central databank. Along the way, you will be faced with a series of tasks which must be completed in order to reach your goal. A range of weaponry is available to help battle the droids.

You will need to work together if you want to succeed but beware, one of you may not be who they seem – a saboteur!

Inspired by games such as Battletech Galactica board game, Werewolf, Among Us and Trouble in Terrorist Town.




### IMMERSION

FOCUSING ON IMMERSION, DEEP SPACE DILEMMA WILL NOT DISTANCE YOU FROM THE ENVIRONMENT WITH THE USE OF A CUSTOM MENU MADE FOR VR.

Using a unique menu and lobby map to reduce the usage of menus, players remain immersed even while waiting for others to join. Using the menu map, locate your friends in your adventure or find a group using the matchmaker facility.

As you navigate your way through the derelict space station, your tasks will require you to interact with your surroundings so be sure to keep an eye out for important items.



### TECHNOLOGY


BUILT FROM THE GROUND UP TO ENSURE THAT THE IMMERSION IS NEVER BROKEN

Created using the Unity game engine and using its XR toolkit to provide VR tracking and controls which allow the player to navigate and interact with the space station.


Utilizing Photon Unity Network to create the multiplayer network including matchmaking and synchronising the players to each other. By using Photon, players can join specific games using uniquely generated codes as well as random games through the usage of the custom consoles found within the game.




Connor Priest  
www.objectivecomplete.net

Connor.Priest@objectivecomplete.net  
BSc(hons) Computing & Games Development 2020



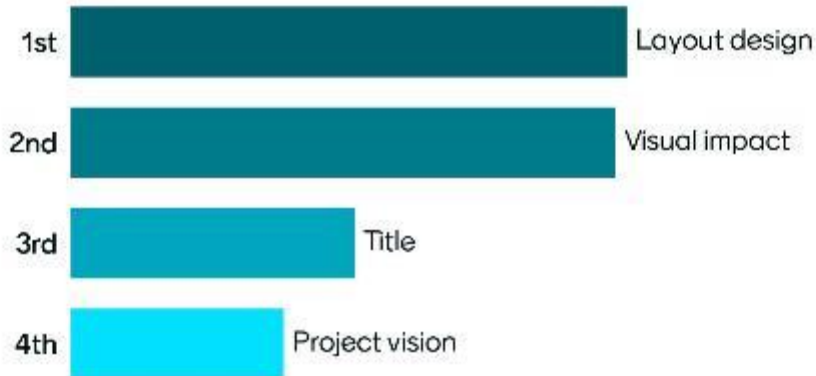
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Made with  unity  photon  
UNITY NETWORKING 

# How did it rank? Results from students

Rank in order - what impressed you - example 1



## DEEP SPACE DILEMMA

COOP VIRTUAL REALITY SHOOTER

### GAMEPLAY

STRANDED ON A SPACE STATION CONTROLLED BY HOSTILE ROBOTS YOU MUST WORK WITH YOUR TEAM TO COMPLETE YOUR MISSION AND ESCAPE.

Fight your way through the game with as many other players as your team wants to recruit in the central hub. Along the way, you will be faced with a series of tasks which can be completed in order to reach your goal. The game features a variety of tasks which can be completed in order to reach your goal.

Developed by Connor Priest, a student at the University of Plymouth, this game is a testament to the power of student-led development.

### IMMERSION

FOCUSING ON IMMERSION, DEEP SPACE DILEMMA WILL NOT DISTANCE YOU FROM THE ENVIRONMENT WITH THE USE OF A CUSTOM MENU MADE FOR VR.

Using a unique menu and lobby map to make the jump of virtual players. Immersion was not a marketing tool but a necessity for the game. Using the menu map, from your friends in your inventory to find a group using the menu map to help.

As you navigate your way through the development of the game, your tasks will require you to use your skills to be successful in a game that is not just a game.

### TECHNOLOGY

BUILT FROM THE GROUND UP TO ENSURE THAT THE IMMERSION IS NEVER BROKEN.

Creating the technology for the game was a challenge. It took a lot of time to create the technology that would allow the player to navigate the game with the space station.

Using the Unity Network to create the multiplayer network, including matchmaking and a system for the players to chat with. By using the Unity Network, the game can be played on a variety of devices, including mobile devices, as well as on a variety of platforms, including the Unity Network.

Connor Priest  
www.objectivecomplete.net

Connor.Priest@objectivecomplete.net  
BSc(Hons) Computing & Games Development 2020

UNIVERSITY OF PLYMOUTH

CGO

Made with unity photon



## Example 2

<http://web.socem.plymouth.ac.uk/secam/public/compsci.php>

Direct link - Broughton

<http://web.socem.plymouth.ac.uk/secam/assets/posters/10548629.pdf>

# Drinks Buddy

Stay connected on a night out

- Join or create a group for a night out to track friends
- Ping messages to each other incase you get lost
- Be able to track your drinks
- Have statistic relevant to you based on your information and drinks diary

## What is Drinks Buddy?

A social companion app for you on nights out

You'll be able to generate a unique code for you and your friends

This code allows you to join a group for a night; be able to see where your friends have got to, and ping a message in case you are lost.

Keep track of how much you're drinking on nights out to get unique statistics based on your experience

When the morning comes the group will end but the hangover will stay, get notification reminders to stay hydrated to feel good the next day

Personalise your account and you're ready to go!

### Technologies

    
android

 **Firestore**



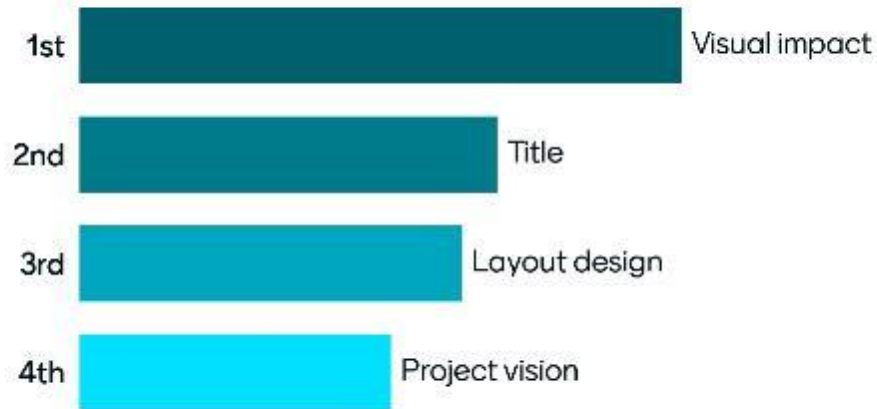
 **UNIVERSITY OF PLYMOUTH**

Thomas Broughton  
BSc(hons) Computer Science 2020  
thomas.broughton@students.plymouth.ac.uk

# How did it rank?

## Results from students

Rank in order - what impressed you - example 2



# Drinks Buddy

Stay connected on a night out

- Join or create a group for a night out to track friends
- Find messages to each other in case you get lost
- Be able to track your drinks
- Have statistic relevant to you based on your information and drinks diary

## What is Drinks Buddy?

A social companion app for you on nights out:

You'll be able to generate a unique code for you, and your friends.

This code allows you to join a group for a night, be able to see where your friends have got to, and ping a message in case you are lost.

Keep track of how much you're drinking on nights out to get unique statistics based on your experience.

When the morning comes the group will end but the hangover will stay, get notification reminders to stay hydrated to feel good the next day.

Personalise your account and you're ready to go!

**Technologies**

- Android
- Google Maps
- Firebase

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## Example 3

<http://web.socem.plymouth.ac.uk/secam/public/cis.php>

Direct link -  
Carthew

<http://web.socem.plymouth.ac.uk/secam/assets/posters/10552471.jpg>



### FaceLock

## Facial recognition door locking system

Alexander Carthew - alexander.carthew@students.plymouth.ac.uk  
BSc Computer and Information Security



#### Background and Motivation

- The door lock market is currently very small and largely based on traditional lock and key methods
- With the ever increasing Internet of Things market FaceLock takes a different approach
- We use facial recognition to help make unlocking your door a seamless process, while implementing other security measures such as logging on a front end web page.
- Whether used domestically or commercially there is an aspect of FaceLock that will improve your day to day life

#### Front End

- FaceLock uses an **Angular** front end to produce a sleek easy to navigate web page that displays statistics about who and when your door has been accessed.
- FaceLock takes full advantage of **bootstrap** to produce a scalable application that will function efficiently on many different devices such as:
  - iPad
  - iPhone
  - Desktop
  - Android
- The **dashboard** tab provides you with a quick overview of your system and shows you a graph of how many times each user has accessed your door.
- The **Users** tab shows you a table of the current users other than yourself that you allow access to your door. From this page you are able to add a new user or delete a current user meaning they will no longer have access to the door.
- The **livestream** tab shows the live view from your door. This is perfect for seeing who is at your door when you might be out of the house.
- The **twitter** tab shows a timeline of FaceLocks twitter page.
- The **upload** tab allows the user to upload an image of themselves that the facial recognition system will use to recognise your face



Users can add or remove access privileges from this page



The facial recognition system recognising me as a user



Dashboard page showing users statistics and logs



This page shows a livestream of the users door

#### Back End

##### Web Page

The FaceLock webpage uses a MEAN stack, therefore incorporates a MongoDB database, express server and Node.js

- **MongoDB** - a no SQL database program that uses JSON-like documents and is used for storing the information about users and their logs.
- **Express** - a modular web application framework for node.js that is used to host the database and allow external connections
- **Node.js** - the application runtime that the MEAN stack runs on

##### Door Lock

The Door Locking system runs on a separate Linux machine which for demonstration purposes is my laptop. This Linux machine uses a wide range of technologies to perform the door locks functions.

- **Python** - This is used to perform the majority of the functionality. Using the Face\_recognition library to perform the facial recognition and the pymongo library to perform database actions
- **PHP** - This is used to accept incoming http requests from the web page in this case receiving the images to be used in the facial recognition
- **WebRTC** - I use this technology to provide the web page with a live feed from the webcam on my laptop

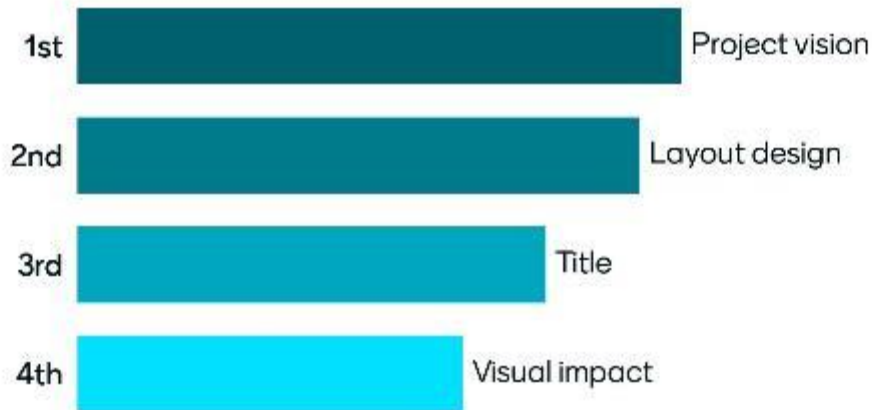
#### Conclusion


I am thrilled with how FaceLock turned out. While currently only offering some of the features I know are possible, with some more time and work I could make this into a commercially available door locking system, that could have further logging and better security measures.

# How did it rank?

## Results from students

### Rank in order - what impressed you - example 3






## FaceLock

### Facial recognition door locking system

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3Sc Computer and Information Security



#### Background and Motivation

- The door lock market is currently very small and largely based on traditional lock and key methods.
- With the ever increasing interest of hackers, the FaceLock system is a different approach.
- We use facial recognition to make making your door a seamless process, while implementing other security measures such as logging on a front end web page.
- Whether used domestically or commercially there is an aspect of FaceLock that will improve your day to day life.

#### Front End

- FaceLock uses an Angular front end to provide a clean easy to navigate web page that displays statistics about who and when your door has been accessed.
- FaceLock takes full advantage of Bootstrap to produce a usable application that will function whether on any many of the web devices such as:
  - iPad
  - iPhone
  - Desktop
  - Android
- The **dashboard** tab provides you with a quick overview of your system and allows you to sign up if how many times each user has accessed your door.
- The **users** tab shows you a list of the current users other than yourself and you have access to your door. From this page you are able to add a new user or delete a current user meaning they will no longer have access to the door.
- The **accesses** tab shows the list of users from your door. This is perfect for seeing who is at your door when you might be out of the house.
- The **webcam** tab shows a live view of the door.
- The **upload** tab allows the user to upload an image of themselves that the facial recognition system will use to recognise your face.

#### Back End

##### Web Page

The FaceLock web page uses a MEAN stack, therefore it incorporates a MongoDB database, express server and Node.js.

- MongoDB** – is a SQL database program that uses JSON-like documents and is used for storing the information about users and their logs.
- Express** – is a modular web application framework for Node.js that is used to host the database and allow external connections.
- Node.js** – the application runtime that the MEAN stack runs on.


##### Door Lock

The Door Locking system runs on a separate Linux machine which for demonstration purposes is my laptop. This Linux machine uses a wide range of technology to perform the door lock functions.


- Python** – This is used to perform the majority of the functionality. Using the Face Recognition library to perform the facial recognition and the pymongo library to perform database actions.
- PHP** – This is used to accept incoming HTTP requests from the web page in the case of needing the images to be used in the facial recognition.
- WebRTC** – I use this technology to provide the web page with a live feed from the webcam on my laptop.

##### Conclusion


am I liked with how FaceLock turned out. While currently only relating some of the features I know are possible, with some more time and work I could make this into a commercially available door locking system, but could have further logging and better security measures.




Users can view a range of users and log in to the page.



The facial recognition system records all programme users.



Dashboard page showing user statistics and logs.



This page shows a live view of the door.

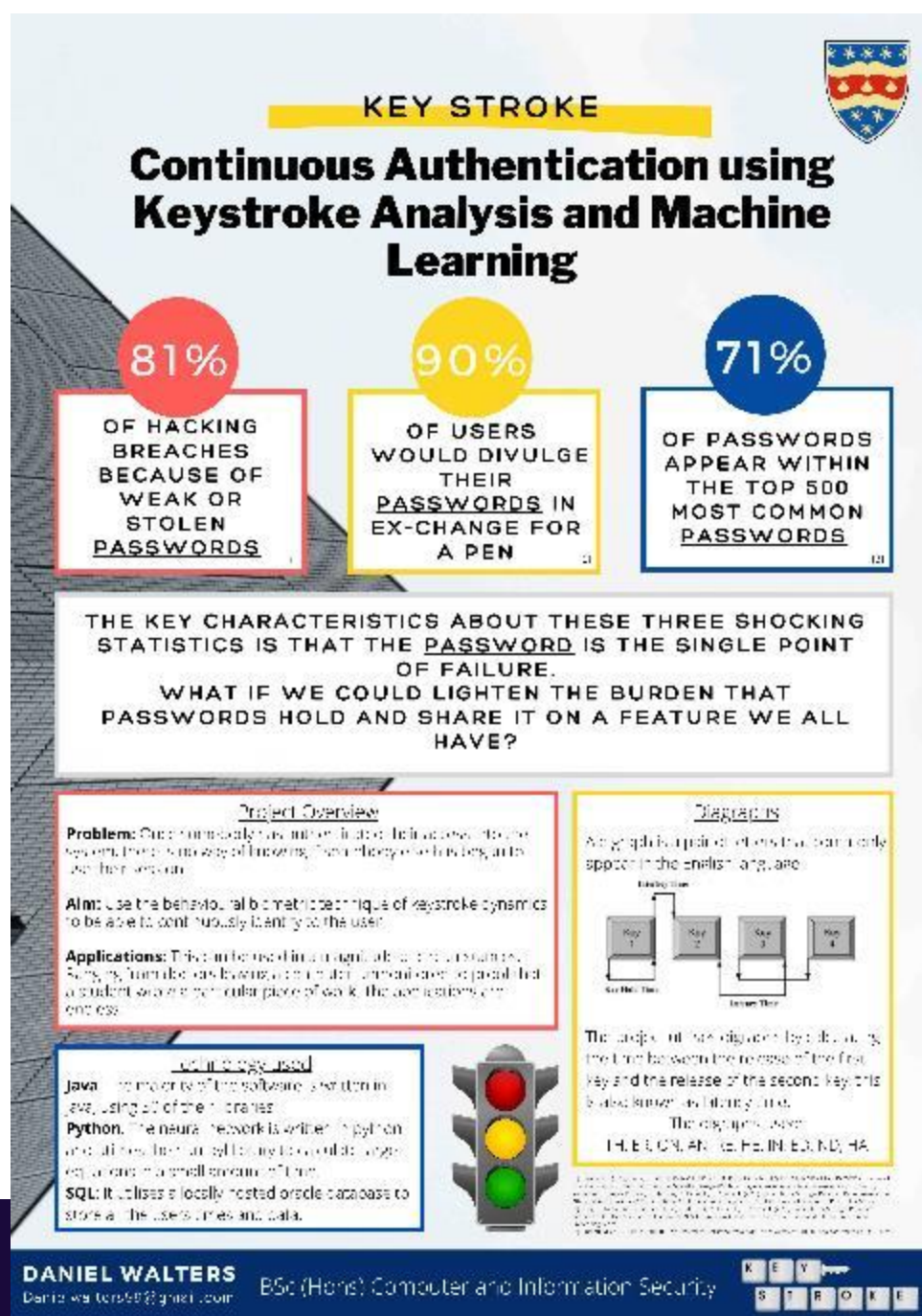


## Example 4

<http://web.socem.plymouth.ac.uk/secam/public/cis.php>

Direct link - Walters

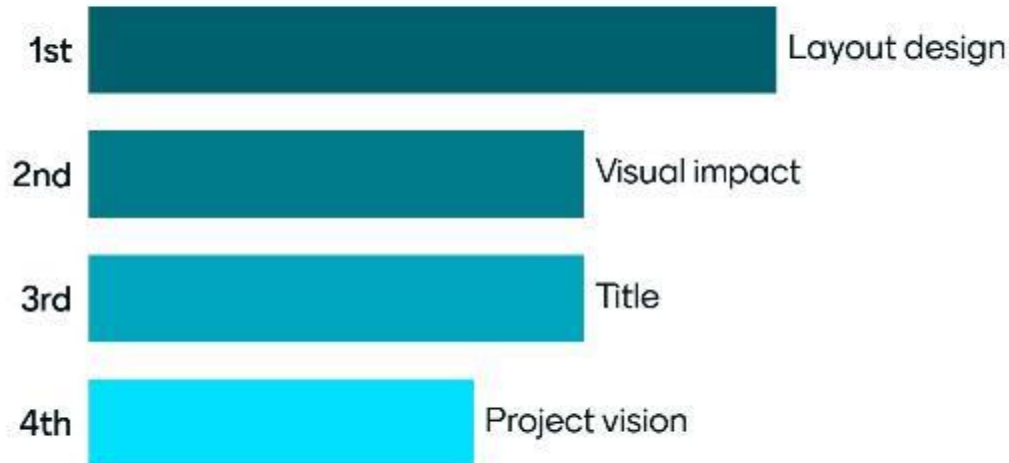
<http://web.socem.plymouth.ac.uk/secam/assets/posters/10579652.jpg>




# How did it rank?

## Results from students

Rank in order - what impressed you - example 4





KEY STROKE

Continuous Authentication using  
Keystroke Analysis and Machine  
Learning

81%

OF HACKING  
BREACHES  
BECAUSE OF  
WEAK OR  
STOLEN  
PASSWORDS

90%

OF USERS  
WOULD DIVULGE  
THEIR  
PASSWORDS IN  
EX-CHANGE FOR  
A PEN

71%

OF PASSWORDS  
APPEAR WITHIN  
THE TOP 500  
MOST COMMON  
PASSWORDS

THE KEY CHARACTERISTICS ABOUT THESE THREE SHOCKING  
STATISTICS IS THAT THE PASSWORD IS THE SINGLE POINT  
OF FAILURE.  
WHAT IF WE COULD LIGHTEN THE BURDEN THAT  
PASSWORDS HOLD AND SHARE IT ON A FEATURE WE ALL  
HAVE?

Project Overview

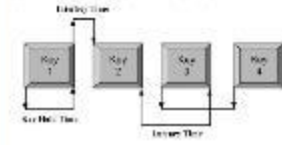
**Problem:** One of the most commonly used methods to secure systems is the use of passwords. However, this is a weak way of knowing, often a user's password is stolen or they forget it.

**Aim:** Use the behavioural biometric technique of keystroke dynamics to be able to continuously identify the user.

**Applications:** This can be used in a number of different scenarios. Firstly, it can be used to detect if a user is not the person who created a particular piece of work, the administrator can then act on this.

Diagram

Any graphical representation of data can only appear in the English language.



The diagram illustrates the process of continuous authentication by measuring the time between the release of the first key and the release of the second key. This time is used to identify the user.


The diagram shows a sequence of four keys: Key 1, Key 2, Key 3, and Key 4. Key 1 and Key 2 are connected by a line labeled 'Keystroke Time'. Key 2 and Key 3 are connected by a line labeled 'Release Time'. Key 3 and Key 4 are connected by a line labeled 'Keystroke Time'.

Technologies used

**Java:** The majority of the software is written in Java, using all of the JCR classes.

**Python:** The neural network is written in Python and utilizes the TensorFlow library to calculate the eigenvalues of a small covariance matrix.

**SQL:** It utilizes a locally hosted Oracle database to store all the users' times and data.



DANIEL WALTERS

Daniel.walters92@gmail.com

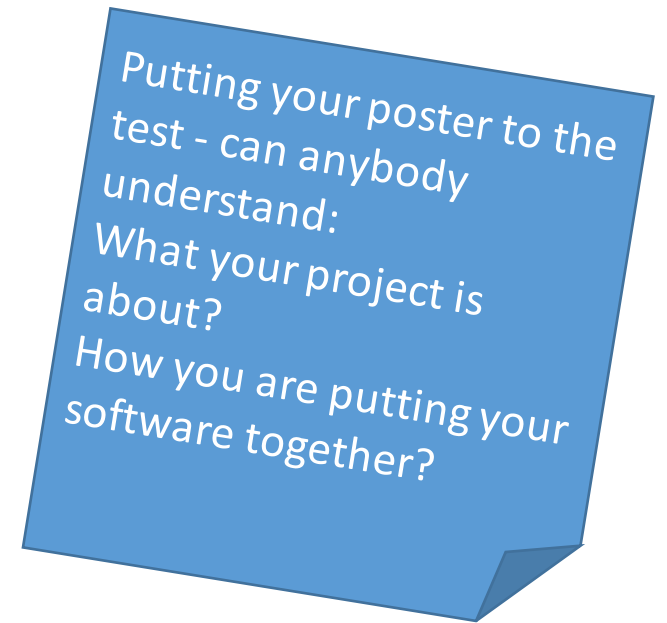
BSc (Hons) Computer and Information Security

KEY  
STROKE

# Summing up

# Suggestions to develop good posters

- Do some research – look at examples from others
  - What really stood out for you?
- **Plan your content**
  - **Ensure you keep to the criteria of the assignment brief**
  - **Keep the posters simple – and easy on the eye**
- **Ask others their opinion**
  - Also ask others, to give constructive feedback!
    - **Perhaps visit the Writing Café or book to see me for a chat!**
  - Just saying “I don’t like it” is not constructive
    - Offer ‘suggestions’ for improvements



# PLUS 'Win a prize feedback' for Jason's session

- The **Student Services** feedback form:

**bit.ly/3mQ09ox**

**Select option: 'Learning Development'**



Every response – we send a donation to the 'War Child charity'  
PLUS you get entered into a prize draw (you need to provide your email address for the draw).



Feedback on Jason's workshop

**tell us what**  
**you think...**

[bit.ly/394fLnG](https://bit.ly/394fLnG)

Enter in web browser





# Questions?

