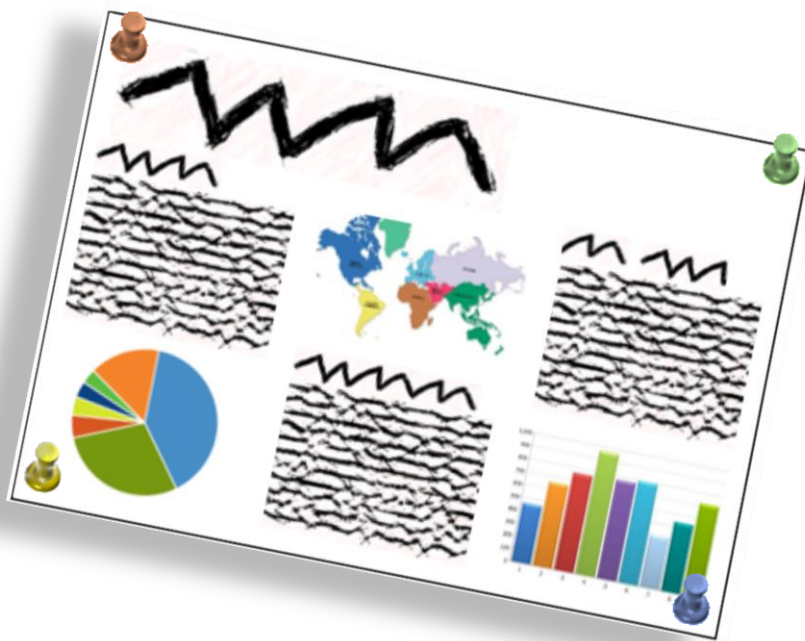


General Guidance For

Poster Presentations



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Learning Development Service

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What this workbook covers

This practical workbook will help you to put together a well-designed, academic poster presentation in **Microsoft PowerPoint** or any number of other graphic design software packages. The advice given in this workbook is not software specific – it is simply a number of practical pointers to consider when creating posters.

If you are considering using **Microsoft PowerPoint** to create a poster presentation, consider looking at our two workbooks - **Introduction to PowerPoint: 1. Oral Presentations** and **Introduction to PowerPoint: 2. Poster Presentations**.

By the end of this workbook you should be able to:

- Understand what academic content to include in a poster
- Use an appropriate amount of text
- Correctly format that text
- Prepare and use images, tables and charts
- Design the poster's layout
- Choose an appropriate colour scheme

Getting Started

At Queen's University, you may be asked to produce a poster on which you will be assessed. Posters can be a useful way to communicate information in an unambiguous and visually attractive way. Academic posters summarise information on a research topic and act as way to deliver that information and thereby stimulate discussion.

Poster assessment usually considers two things – the content and structure of the poster and the organisation and presentation of the information.

Examples of Poster Presentations

Posters like the two shown below are typical examples of academic posters. They are large format (usually printed on A1 or A0 paper) and they have other design and presentation conventions associated with them.

Elite women and material culture in Ireland, 1760-1840

Set in the context of international research on domestic material culture and consumption, this project addresses the question of how elite women in Ireland engaged with the world of goods and shaped and experienced their homes. Material culture is taken here to include the buildings they inhabited and the objects they acquired, used, made, bequeathed and gave as gifts.

Building and remodelling the country house

Architectural history simplifies patronage, typically attributing a house to a male patron and his architect. Women are generally absent from sources employed by architectural historians. This research uses alternative sources such as personal correspondence, sketches and material evidence to explore the influence and input of ten women in Ireland. It demonstrates that designing and executing these buildings was a much more collaborative process.

Design and creativity

- Less well-defined roles between architect and patron in this period facilitated greater input by women.
- Elite women routinely made amateur sketch plans to formulate and communicate ideas. Many are hidden in sketchbooks.
- Access to publications disseminating findings from the ancient world allowed women to display their education by creating neoclassical decorative schemes.
- Material evidence can be crucial in recovering a woman's role. The survival in England of decorative plasterwork by Lady Templeton (right), who designed for Wedgwood, allows attribution of another scheme at the family seat, Castle Upton, Co. Antrim, where she built to Robert Adam's designs during her son's minority.

Expenditure and supervision

- Landlords were often absent from Irish estates for long periods and wives supervised building projects, not just executing a husband's orders, but taking decisions, sourcing materials and managing builders.
- Women used their consumer skills to limit expense on materials and fittings.
- In contrast to the stereotypical view of the extravagant female, several of the elite women in this study proved more prudent than their husbands and urged them to rein in spending. While supervising the building of Killymore Castle, Co. Tyrone, designed by John Nash, Hon. Elizabeth Stewart (left) informed her husband James, 'I think Mr Nash is more magnificent in his finishings than we need be'.

Networks and travel

- Family and social networks influenced women's design choices and patronage of architects and decorative artists.
- Ideas and designs were drawn from country houses owned by the family circle in England and Ireland. Identical stucco ceilings, for example, can be used to trace such influences. Women shared their experience and contacts with younger female relatives.
- Plans were circulated in elite circles and pattern books shared.
- Travel impacted on stylistic choices: Bernard and Lady Anne Ward's response to Inveraray, Argyll is evident in the compromise at Castle Ward, Co. Down (above).
- The experience of continental travel found expression in Irish houses in terms of taste in decorative styles and the influence of friendships forged abroad.

The world of goods

Patriotic consumer campaigns in Ireland in the eighteenth century recognized the purchasing power of elite women. However, these related mainly to apparel.

The role of women in buying and commissioning fashionable furnishings is more difficult to define but generally bear a husband's name regardless of who made decisions. A burgeoning array of luxury consumer goods in the late eighteenth century, along with the increasingly complex concept of good taste, made furnishing and decorating a grand house a task requiring skill and discernment. The woman in this engraving, printed in Dublin c.1786, plays a supporting role in the process, but what happened in practice? This chapter examines female consumption, shopping by proxy from the provinces and attitudes to Irish and British makers/retailers before and after the Act of Union.

Experiences of the domestic interior


The homes of the elite – townhouses and country seats – are regarded as sites for display, but how were they viewed and experienced by the women who inhabited them? This chapter will examine their attitudes and priorities regarding comfort, privacy, show and polite sociability in the domestic environment.

The material world of widows

A wife was merely custodian of the contents of a country house and, as a widow, left it with few possessions. Capital bequests of objects (beyond a carriage) were rare. What could a widow take and where did she live? This chapter examines what constituted the paraphernalia to which she was legally entitled and the nature of gifts made to elite women for their 'sole and separate use'. At a husband's discretion, widows might be left a life interest in a townhouse and its contents and the late eighteenth century saw the first dowry houses built on Irish estates. Most widows, however, rented accommodation in Dublin, London or English spa towns.


The symbolic value of objects

Did women invest objects with meanings in a distinctive way? The final chapter will assess the significance of gifts in building and maintaining elite female friendships. It will also consider how artefacts were made and exchanged in family and social circles, and acquired particular associations over a lifetime. The detailed descriptions and concerns expressed in the wording of bequests reveal much about women's lives, relationships and material culture.




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Plasmas in Conducting Liquids: Formation Mechanism and Production of Reactive Species for Biomedical Application

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Plasmas and plasma treated products can be found everywhere in daily life, e.g. in fluorescent lights. Usually they are gases containing charged as well as neutral particles, giving them unique physical and chemical properties. Plasmas are complex environments dealing with many reactive species. Two examples of these are radicals which are formed by degrading molecular compounds and high-energetic radiation. Both are known to influence behaviour of living cell disconnection and reconnection. To apply modification of sensitive material in its most natural environment plasmas in liquids are investigated.


Plasma production in liquids has largely been confined to those in water. They have been investigated for many decades and those studies have most recently been reviewed by Malik et al [1]. There are a huge number of different electrode and power input configurations used to create such plasmas. Most of the plasmas created in liquids to date deal with low conductivity environments and require large voltages (ranging 10 up to 150kV) and/or lightning like discharges. In contrast to that the device presented here is operated in highly conducting saline solution (0.9% w/v) by applying moderate (~300 V rms) bipolar voltage pulses to electrodes. These operation parameters perfectly suit application in electro-surgery e.g. as scalpel which cut by chemical etching and don't cause inflammation.



What is a plasma?

- ▶ gas containing free moving charged particles (electrons, ions)
- ▶ electrically conductive → responds to electromagnetic fields
- ▶ considered to be a state of matter (due to unique properties)
- ▶ usually light emitting, wavelength depends on species
- ▶ Parameters characterising systems:
 - Temperature (10⁴ - 10⁶ K) and density (10¹⁸ - 10²⁴ m⁻³)

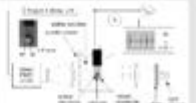
Although not obvious, essential for every day life since most commercial products undergo plasma treatment e.g. microprocessors, anti reflective coatings and painted synthetic materials



The Setup

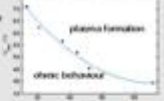
- ▶ commercial electrode setup
- ▶ commercial power supply (1000W)
- ▶ time resolved current and voltage signals
- ▶ "slow" temperature measurement
- ▶ liquid saline solution (0.9% in hospital)
- ▶ different detection possibilities

The electrode setup is immersed in a quartz glass vessel filled with saline solution (0.9 NaCl per 1000g H₂O). By the plasma emitted light can be almost time resolved with a fast photomultiplier or wavelength resolved with a spectroscopy. For space resolved measurements electrodes are backlit with parallel light and imaged magnified to an ICCD camera. Introducing a filter increases the camera sensitivity in a desired range.



Operation modes and characteristics


- ▶ two different operation modes
- ▶ mode transition strongly depends on liquid temperature
- ▶ along with water temperature conductivity changes
- ▶ higher temperatures decrease ignition voltage
- ▶ below ignition voltage: heating the liquid



For transition from one operating condition to the other, drastic changes in the current voltage characteristics can be observed. Ohmic behaviour is characterised by good agreement of current and voltage signal waveforms. In the plasma formation phase current and voltage signals have different shapes. The voltage follows the applied rectangular waveform apart from peaks after polarity switches. In contrast, the discharge current shows a strong peak for the ignition phase which decays to a constant current level for this half period of the excitation cycle.


The Physics I: Pre-plasma environment

- ▶ electrode 50° flared and backlit
- ▶ formation of a vapour layer observed
- ▶ in image: blue colour → Vapour
- ▶ vapour starts at point of lowest heat conductivity and highest electric field
- ▶ vapour formation takes "long" time → multi pulse effect
- ▶ heat deposition is liquid by ohmic heating



Below vapour formation the liquid is heated for 24 ms (2400 cycles at 1000 Hz). Initiation of the layer is at the most hot point in the system where the temperature transport to the surrounding is most limited. Once a layer is present it is extensively heated at its edges due to high local current. In the formed layer a plasma can be ignited.

The Physics II: Space resolved plasma formation

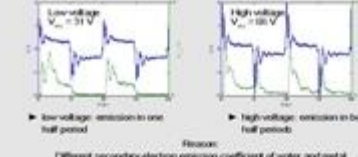


- ▶ white dotted line = vapour layer boundary
- ▶ orange, yellow, white colours: plasma formation
- ▶ two different ignition modes
- ▶ sub.c: bright, surface dominated
- ▶ sub.f: more dim, volume dominated
- ▶ complex dynamic environment
- ▶ not highly reproducible

After complete formation of the vapour layer it takes some time until a plasma is ignited. Due to the dynamics in a liquid the layer is different for each plasma formation process. In images sub.c the plasma is ignited close to the surface (in direction of the camera) not in the electrode (3 dimensional geometry). Emission mode depends on voltage polarity.

The Physics III: Time resolved plasma formation

Monitoring the emission of the plasma with a fast photomultiplier (PMT) (green line) together with discharge current (blue line), it is observed, that the PMT signal is delayed by 0.6 μs. During this period energy is deposited in reheating of the vapour layer. This is characterised by a high current drawn through the system, indicating ohmic behaviour. Plasma is ignited after formation of the vapour layer leading to decreasing current.

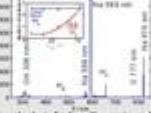


- ▶ low voltage: emission in one half period
- ▶ high voltage: emission in both half periods

Different secondary electron emission coefficient of water and metal

The Chemistry

- ▶ Emission proves presence of different species: Na, O·H and OH
- ▶ sodium dominates emission 530.0 nm and 589.0 nm (not resolved)
- ▶ line ratios show voltage dependence



For various voltages the OH/H₂O ratio remains constant, indicating the main radical formation mechanism described by $e+H_2O \rightarrow OH+H_2$ [2]. The emission fraction of sodium to H₂ increases with rising voltages. The presence of excited sodium atoms in the vapour layer is not understood yet. Also not understood is why sodium emission is seen but no chlorine emission is present in the spectra.

The Biology

Further research involves the application of the characterised source to biological content. Heavily it is already known, that

- ▶ plasma generated species influence biological samples. The influence is low for a single species but enhanced by orders of magnitude due to synergistic effects with other species. The mechanism for this is not yet understood.
- ▶ the influence is different for different cell species (bacteria vs. spores vs. single cells)
- ▶ if connective tissue is treated with the right parameters the cells loose their connection and behave like single cells. This process is reversible, cells start to reattach after some time (usually hours). Never observed with other cell treatment.

To gain more control in electro-surgical processes and furthermore enhance the application possibilities research in this sector will be continued.

References: [1] M. A. Malik, A. Ghaffar and S. A. Malik, 2001 Plasma Sources Vol. Technol. 10, 32 [2] J. Wakisaka, K. A. Suda and I. G. Okawa, 2002 IEEE Trans. Plasma Sci. 30, 1376

Lucas Schaper – School of Mathematics and Physics – 2009

Academic Content

The content of a poster could be considered as something akin to a short story about a certain piece of academic work or research. The content should describe a few major points while encouraging the reader to explore the research in greater depth at a later stage.

5 | Page

The Structure of a Poster

When reporting on a piece of work or research within an academic poster, the structure of the poster might resemble that of a report. It should have a clear beginning, middle and end and should group related information together.

A poster could be planned in a similar way to a report. The main sections of the poster could be listed as follows with a few bullet points beneath each section heading outlining the main ideas to be covered –

1. Title
2. Introduction
3. Methods
4. Results
5. Discussion
6. Conclusion
7. References

This kind of structure should help the content of the poster to flow in a logical order.

Audience

The content of a poster will also vary depending on who the audience is likely to be.

It may well be that those consuming the information within the poster is just a general audience with no particular attachment to the discipline being explored within the poster. If this is the case, the content of the poster should assume that the audience has only a general knowledge of the topic being covered. This kind of poster should avoid jargon and very subject specific language. It should instead concentrate on basic descriptions only.

Alternatively, the audience may well be specialists in a similar discipline to that being outlined in the poster. If this is the case, the content can dive a little deeper into the topic but, again, very specific language or jargon should be avoided where possible.

Finally, it may well be that the audience are experts in the discipline being discussed. In this case, it's reasonable to use technical or discipline specific language as the audience is likely to have a high level of knowledge in the subject area.

Using Text

Using an Appropriate Amount of Text

Once the structure of the content of the poster has been planned out and the audience established, it will be important to trim the content down to a reasonable amount.

Posters are designed for visual consumption and often direct the reader to a larger body of work or research that they can digest in their own time.

As such, the text within the poster should be short and succinct enough to hold the reader's attention while still conveying the main points of the topic.

As a general rule, the amount of text used on a poster should be between **300** and **500** words.

The two examples below show what **300** words and **500** words might look like.

A 300 Word Poster

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Chart

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Category 1	4.2	2.4	1.9
Category 2	2.5	4.4	1.9
Category 3	3.5	1.8	2.9
Category 4	4.5	2.7	5.0

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Chart

Image

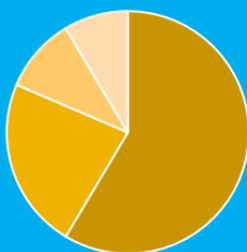
A 500 Word Poster

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Cutting Down the Amount of Text

If, after consideration, there is too much text on a poster, there are a few points that could be considered in order to trim it down.

1. The text on a poster should tell a story of what the work or research is about. If, after a second reading, there are tangents in that story or unnecessary pieces of detail, these could be removed.
2. A poster should not simply be a large-sized version of the actual work being discussed. It should point the reader to the more exhaustive body of work without covering every detail of it.
3. Some posters can be adapted directly from an abstract although, unlike the abstract, it will be supported with graphics and other visual aids.

Styling Text

Text within a poster should be formatted in such a way that it is visually striking but easy to read. It should also be consistent throughout with identical textual styles used in the same contexts.

Graphic designers recommend that all text that performs the same function should be formatted in exactly the same way – for example, all **Headings** should look exactly the same.

There are a few guidelines to follow when formatting the different parts of a poster –

- The **Title** should be big and bold so that people can read it from a distance. For an A1 document, the **Title** should be at least size 96 pts.
- **Main Headings** should be adjusted so that they are the second largest text on the poster. This will help readers clearly identify the various sections of the poster. A font size of around 40 pts is usually recommended.
- The text of the **Introductory Paragraph** can be slightly larger than that of other paragraphs. This highlights the introduction to readers and hopefully draws them in to the poster.
- Most of the text on the poster can be classified as **Body** text. It should be all the same size and should be readable from two metres away. **Body** text should be around 24 pts in size.

The **Title** is the biggest font size on the poster

Main Headings are second biggest font sizes

Text in **Introductory Paragraph** is bigger than other **Body** text

Body text is big enough to be read from two metres away.

When determining which font to use within a poster, it is important to consider that different fonts have different characteristics and different purposes. Some are designed to be quirky and interesting but these fonts are often hard to read from a distance. Others may seem bland but, in reality, they are the easiest to read, especially at a distance.

Typically, the best font to use on a poster would be a **Sans-serif** font like **Arial** or **Helvetica**. A **Sans-serif** font is one that doesn't have little embellishing features called serifs at the end of letter strokes. These serif embellishments on the letters within a font can often make text more difficult to read.



- David Remahl - 2004

Similarly, **Script** fonts, designed to replicate handwriting styles are often completely illegible, especially at a distance. These should be avoided when designing posters.



Use a maximum of **two fonts** when creating a poster. Any more than this is confusing for the reader.

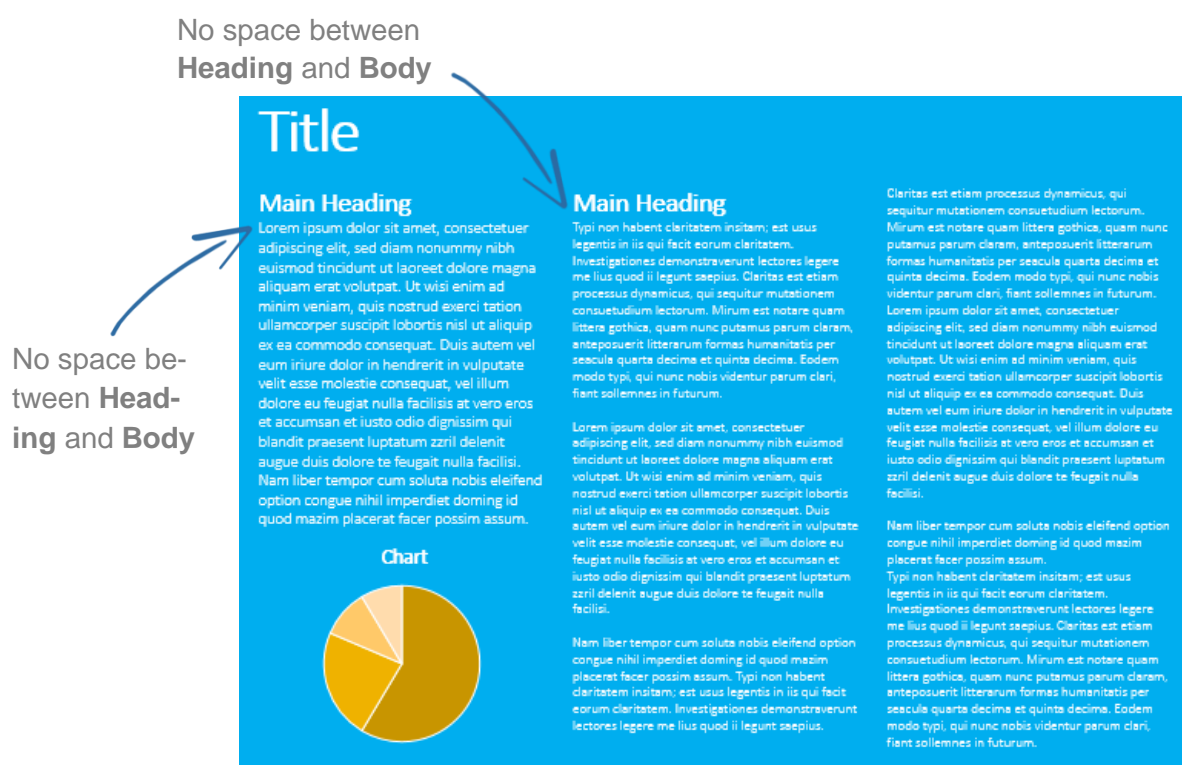
As a final, general rule, avoid using *italics*, underlining and CAPITAL LETTERS in a poster. **Bold** styling is fine as it can draw attention to important elements.

Grouping Sections of Text

In any poster presentation, text which belongs together should be kept together. To put this another way, it should be perfectly clear which **Heading** fits with which paragraph and so on.

Depending on how a poster is structured, it can be hard for a reader to pick out how sections in the poster flow from one to another. Grouping **Headings** with the correct blocks of text gives the reader an opportunity to pick up on the organisation of the poster with greater ease.

As a general rule, **Headings** should not have lots of space between them and the paragraph to which they belong. This might be good practice in a word processed document but such a document is much easier to read as it naturally flows from top to bottom. That is not necessarily the case in a poster so spacing should not be left between the **Heading** and the **Body** text.



Graphics

The **Graphics** within a poster are what separates it from something like an abstract. They represent something that would take much longer to describe in words. In addition, a good visual element should be striking and grab the audience's attention immediately, even from a great distance away.

A **Graphic** within a poster might be an **Image**, a **Chart** or a **Table** but, irrespective of the type, it should only be included if it really supports the content being covered.

Images

Images or **Pictures** should be carefully considered before being included within a poster presentation. It's now much easier than ever to find **Images** to support content, simply by using popular internet search engines. Copyright legislation now allows for the use of any media content found online provided that it is **Sufficiently Acknowledged, Fair, Non-Commercial** and used as **Illustration for Instruction** (see Section 32 of the [Copyright and Rights in Performances Regulations, 2014](#)).

That said, it's often not as simple as just copying and pasting an image directly into a poster presentation.

Posters will often be printed out at A1 or A0 size so it is important to consider how the image will look when printed out and stretched out to a much larger size.



This picture looks fine on the screen.

It may, however, look more blurry when printed out.

It will also look extremely grainy when blown up to A1 or A0 size.

Images on a computer are made up of little coloured squares called **Pixels**. The image's quality (also called the **Resolution**) is determined by how many **Pixels** actually make up the picture. A factor many consumers consider when buying modern digital cameras is the camera's **Megapixel** value. Using a **12 Megapixel** camera to take a photograph will produce an image that contains twelve million **Pixels**. A **12 Megapixel** image can be stretch right up to 16 inches by 24 inches without degrading the image.

It's important to consider these kinds of values when looking for appropriate images to include in a poster. When looking at an image on an internet search engine, there will often be a size value (in **Pixels**) displayed. The larger the size, the better but, as a general rule, images should probably be at least **1600 Pixels** by **1200 Pixels**. This usually denotes an image that can be printed out at a size of 4 inches by 6 inches.

Charts

When making **Charts** for a poster, careful consideration should be given as to how the **Charts** are formatted. The default formatting for **Charts** created in **Microsoft Office** products like **Excel** and **PowerPoint** is rarely suitable for use in a poster.

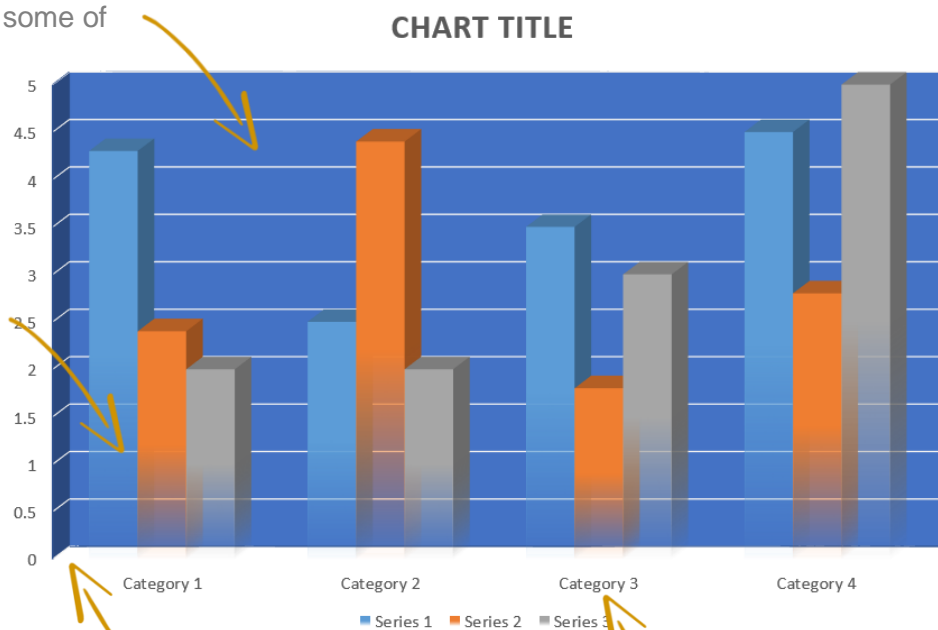
With 3D **Chart** layouts, it can be difficult to distinguish between the different areas of data. Similarly, backgrounds placed behind the **Charts** can make the variations in the **Chart** itself seem less stark and identifiable.

The outlines or axis of a **Chart** for a poster should typically be made bolder than the default setting. Colours used within the graphic should naturally contrast and be identifiable even from some distance away.

Unsuitable Default Chart Layout and Styling

Background colour makes it difficult to see some of the bars

Bars may look stylish but are harder to distinguish between



No visible axis

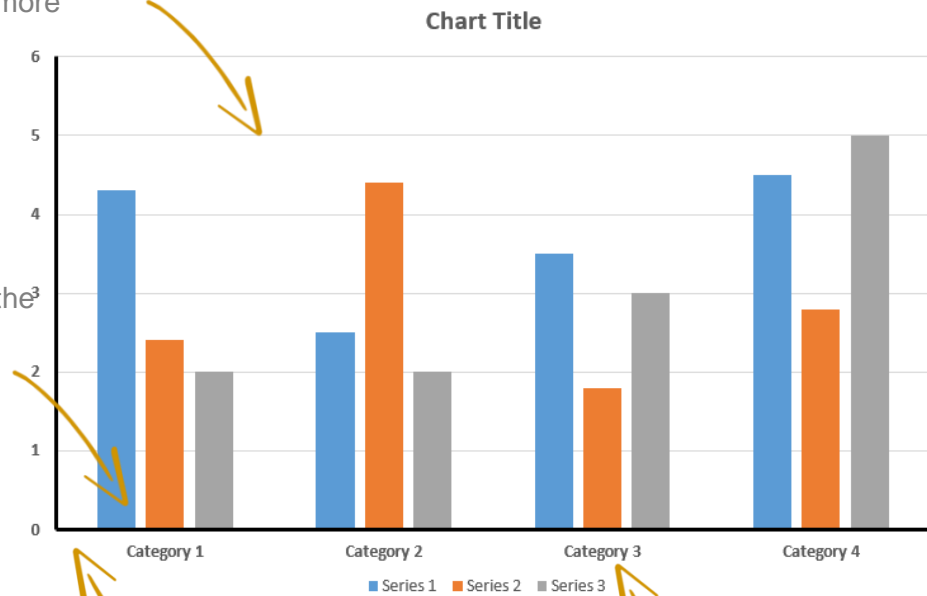
Axis labels are hard to read



Suitable Defined Chart Layout and Styling

No background colour.
Bars stand out more clearly

Easy to distinguish between the sets of data



Axis clearly marked with bold line

Axis labels in bold stand out better

Poster Layout

A good academic poster will be laid out in sections that form a logical order. The reading of an academic poster should flow naturally from one section to the next rather than appearing to jump randomly between sections.

Often the best way to set out an academic poster is to organise it in columns. These columns can be all the same size (also known as **Symmetric**) or of different sizes (**Asymmetric**) but either way the reader will know that they should read down through the columns as they would in a newspaper – from top to bottom within each column and from left to right across each column.

An example of a Symmetric poster and how it flows



A layout like the one shown above clearly conveys the sequence of the poster to the audience because the information has been organised within a design grid.

Tools like **Microsoft PowerPoint** or **Publisher**, which are typically used to design posters, will often have a **Gridline** view available, typically in a **View** menu. **Gridlines** allow designers to see that the elements of a poster are being brought together with precision and in such a way that they are conducive to reading.

The examples below show some possible layouts that might be used when designing a poster.

Symmetric Landscape Layout -

Title, authors and contact details

Introduction
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Chart



Results
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Chart



Category	Value
Category 1	4
Category 2	2
Category 3	3
Category 4	5

Discussion
Claritas est etiam processus dynamicus, qui sequitur mutationem consuetudinum lectionum. Mirum est notare quam littera gothica, quam nunc putamus parum claram, anteposuerit litterarum formas humanitatis per secula quarta decima et quinta decima. Eodem modo typi, qui nunc nobis videntur parum clari, fiant sollemnes in futuro.

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Asymmetric Landscape Layout -


Title, authors and contact details

Introduction
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Symmetric Portrait Layout -


Title, authors and contact details

Introduction
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Asymmetric Portrait Layout -

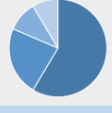
Title, authors and contact details

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Colour Schemes

When choosing colours for a poster, a maximum of two to three colours will give the best overall result. Using too many colours will make the poster look chaotic while having almost no colour variation will make the whole poster seem bland.

Contrast

The most important rule when considering any colour use is to ensure that maximum **Contrast** is achieved. Dark text on a dark background will simply lead to the poster being unreadable. Text should **Contrast** with background elements so that it can be viewed without any trouble, especially at a distance.

Little or no use of contrasting colours -



The black text on this dark background is almost unreadable

Good use of contrasting colours -



Here, the black text is contrasted against a light background making it very easy to read

Similar problems can arise when using a textured background or when using an image as a background. Subtle variations throughout a background like this can make some text stand out very well and other pieces completely illegible.

Rather than using textured backgrounds or images, it's often better to use a plain, pastille coloured background. These lighter colours will provide an optimal background contrast for black text.

Here, an image of a galaxy has been used to form the background of a poster



Text at the darker edges is legible but that's not the case in the brighter centre of the poster

Choosing a Colour Scheme

When choosing colour schemes for a poster, consider all of the various elements of the poster and how they come together. If an image has been used in the poster, then the colours within it could be used within the other elements of the poster. If red is an important colour, the headings could be changed so that they also appear in red.

The example below shows how the colours used in an image within a poster might form the basis for a colour scheme to be used throughout the whole poster.

The main colours used in the image are red, green, yellow and light blue

The red colour is also used in each heading

The red colour from the image is replicated as a background for the title

The two charts make use of red, green, yellow and light blue

Title, authors and contact details

Introduction
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Methods
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Chart

Chart

Category	Value
Category 1	4
Category 2	2
Category 3	3
Category 4	5

Final Steps

Poster printing can be expensive so all posters should be thoroughly proof-read before they are produced.

- Check all typing including the **Title** and **Heading**.
- Check the data being displayed in any **Graphics**.
- Ensure that all referencing is correct and that any **Graphics** taken from another source have been properly accredited.

When ready to print, remember that large scale posters can be printed at the **Computer Desk** in the McClay Library and there is charge for this service depending on the size of the poster. For more information, contact posters@qub.ac.uk.