

How to make a scientific poster

Manual for master students IM and OML

1. The aim of a scientific poster

The aim of a scientific poster is to shortly and concisely describe one's research and main results as well as to stimulate scientific discussion. A poster is also an interactive way to communicate, through which a researcher can receive feedback on his/her research and generate new contacts during conference meetings. Moreover, overall the summarizing of one's research and findings is very useful in the professional field, where management often only has the time to go through a concise summary when making decisions.

A scientific poster is a large document that can quickly and effectively communicate research. This poster is generally composed of a short title, an introduction to the research questions, an overview of the research approach, the results, some discussion of aforementioned results, a listing of previously published articles that are important to the research, and some brief acknowledgment of the assistance and financial support from others. If all text is kept to a minimum, a person should be able to fully read the poster in only a few minutes. Presenting a poster allows for a more personal interaction with the people who are interested in the research and to reach people who might not be in that specific field of research.

2. The structure of a scientific poster

2.1. Title, authors, author affiliation

A title is relevant; an apt and concise title stimulates people's interest.

An effective title conveys to viewers the issue, the approach, and the system (organism). Make the title catchy in order to reel in potential viewers. Maximum length: max. 1 to 2 lines.

2.2. Introduction/Background

A short introduction to the topic, a few references; a short description of the aim of the study and main research questions.

Get the viewer interested about the issue or questions while using the absolute minimum of background information and definitions. Quickly place the issue in the context of published, primary literature. Provide a description and justification of the general research approach, and give a hint at why the object of study is ideal for such research. Be sure to also give one or more clear research questions. Use a photograph in this section to quickly orient the viewers. Maximum length: max. 100 words.

Don't include an abstract on a poster. If, for some reason, an abstract section must be included on the poster, don't make the abstract long; aim for fewer than 50 words.

2.3. Methods

A precise and short description of used methods and stages of the research; avoid too many details, use figures if possible.

Briefly describe research methods. Consider these guidelines:
Use figures and tables to illustrate the research design, if possible.
Use flowcharts to summarize reaction steps of research procedures.
Include a photograph of the study object.
Mention statistical analyses that were used and how they allowed for the research questions to be addressed. Maximum length: max. 150 words.

2.4. Results

Describe the results from the study shortly, preferably with figures.

In the first paragraph, mention whether the research had an effect (For example, "failure rates were reduced with 90%"); then, in the same paragraph, briefly describe qualitative and descriptive results ("clients indicated to be more satisfied with the delivery, appearance, and functioning of the products"). In the second paragraph, begin presentation of quantitative data analysis that more specifically addresses the research questions. Refer to supporting charts or images, and provide engaging figure legends that can stand on their own; provide tables with legends, too, but opt for figures wherever possible. Maximum length: max. 100 words.

2.5. Discussion/Conclusion/Summary

Discussion of the results in relation to the introduction and the theories described.

Remind the viewer of the research questions and results, and quickly state whether the research questions were answered. Be sure to discuss why the results are conclusive and interesting. Point out both the relevance of the findings to other published work and the relevance to situations in the real world. And be sure to include the future directions for research. Maximum length: max. 150 words.

2.6. References

References of all literature used in the poster.

Follow the standard format for the scientific discipline exactly. Find journal articles that support the theories and findings belonging to the study. Also, if a journal article wasn't read completely (for example, if only the abstract was read) do not cite it. Maximum length: max. 10 citations.

2.7. Acknowledgement

Acknowledgement of all persons and/or companies who have enabled the research.

Thank individuals and organizations for their specific contributions to the project (equipment donation, statistical advice, methodological assistance, comments on earlier versions of the poster, etc.). Mention who has provided funding. Show sincerity, but retain formality. Do not list people's titles. Also include in this section explicit disclosures for any conflicts of interest or conflicts of commitment. Maximum length: max. 40 words.

2.8. Correspondence

The e-mail address or web page through which the researcher can be contacted. Additionally, an URL could be provided where readers can download a PDF version of the poster.

3. Designing a scientific poster

Decide on the message to bring across. Think what is absolutely essential for conveying this message. One of the biggest problems is too much concentration on the methods. Minimize the length of the text, use figures and tables instead. Think how the matters in the poster can be described in a few sentences. Make it easy to read and make it easy to understand. People at a typical conference only have a few minutes per poster. The poster should stand on its own.

3.1. Poster layout

- Typically, use 3 to 5 columns when using a horizontal orientation and 2 columns when using a vertical orientation;
- The width of text boxes should be approximately 40 characters (which is, on average, 11 words per line);
- Arrange material vertically from top left corner to bottom right corner. This makes it easier for people to read, without having to move back and forth;
- Determine a logical sequence for the material;
- Organize material into sections;
- Wherever possible, use lists of sentences, rather than blocks of text;
- Arrange material into columns (e.g. text might be in the first and third column, figures can be situated in the second column) (see Figure 1). The size of the column might be about 40-60 characters.

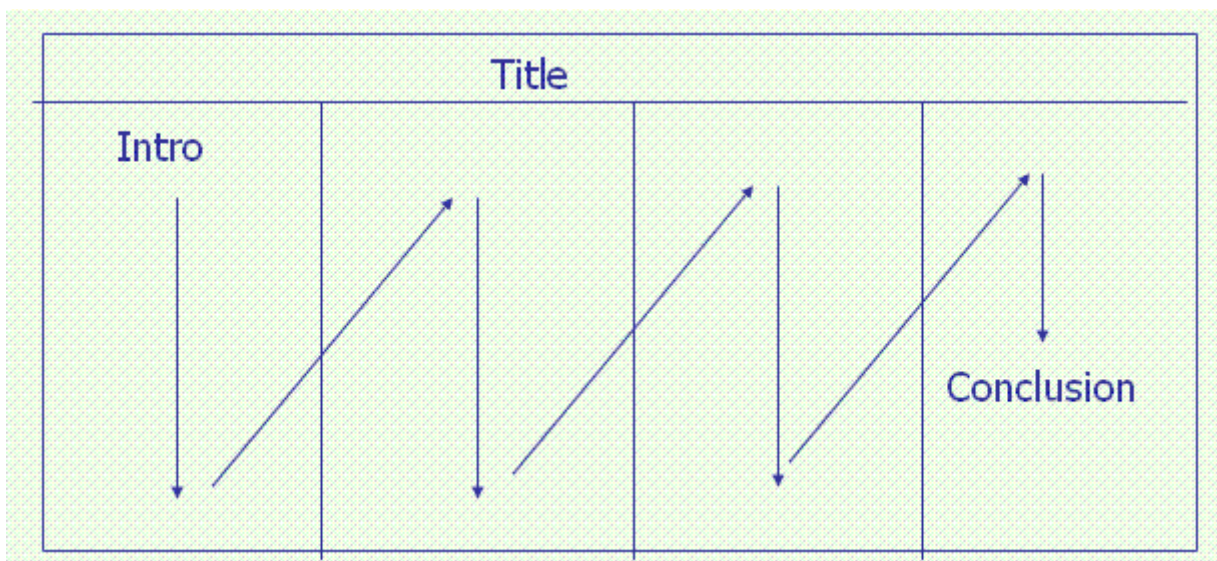


Figure 1. Example of a poster layout

Some additional tips for formatting:

- Left align text;
- Double space;

- Pick one font and stick to it;
- Use larger/colored font for emphasis;
- Use a sans serif font (for example, Helvetica) for title and headings and a serif font (for example, Palatino) for body text (serif fonts are much easier to read at smaller font sizes).
- Recommended font sizes:
 - Title: 96 pt
 - Authors: 72 pt
 - Affiliations: 36-48 pt
 - Section headings: 36 pt
 - Text: 24 pt
 - Acknowledgements: 18 pt

3.2. Using graphs

Visual additions such as graphs help attract and inform viewers much more effectively than text alone

- Use short, informative graph titles to help leading the viewer more effortlessly through your poster;
- Most graphing software programs automatically add a key. If possible, you should delete the key and directly label the different elements in the graph. Because interpreting keys is sometimes very difficult, you should make your graphs as easy to read as possible;
- Y-axis labels aligned horizontally are much easier to read and should be used wherever space allows;
- All graphs should have axis labels formatted in sentence case. Do not use title case or all caps;
- Never use colored backgrounds, grid lines, or boxes in your graphs. If your graphing program provides these by default, delete them;
- Never display two-dimensional data in 3-D. Three-dimensional graphs may look good, but they obscure the true difference among bar heights;
- Make sure that details on graphs (and photographs) can be comfortably viewed from a distance of up to 2 meters away. A common mistake is to assume that figure axis numbers, labels, and figure legends are somehow exempt from font-size guidelines. On the contrary, most viewers will read only your figures.
- If you include a photograph, add a thin gray or black border to make the photograph more visually appealing. Just remember not to overpower the image with an overly thick line. Choose a line color that is subtly pleasing but barely noticeable to the viewer.

Photograph with a border



Photograph without a border



- Use caution when incorporating graphics that were found on the Internet. Most Web images have 72 dots per inch of resolution, but printing at that resolution looks terrible, and the graphic will be a huge turnoff to prospective viewers. If you have access to a digital camera, use it to get a high-quality photograph of your objects of study.
- Institutional logos are great on departmental letterhead and college athletic caps, but the logos are less effective on posters. If you must add a logo, use a small version of the logo at the bottom of the poster in the acknowledgments section. An exception to this advice is when meeting organizers require you to include a meeting or society logo at the top of the poster.
- If you are attaching higher-resolution (for example, 1200-dpi) images or photographs directly onto your 300-dpi poster, choose matte finishes for illustrations whenever possible to minimize glare, because some of your viewers will be standing to the side of your posters at crowded poster sessions.

3.3. Making a poster using Microsoft Power Point

- a) Start PowerPoint: Make a New presentation – a blank one.
- b) Choose the size of your poster: File>Page setup > Slides sized for > Custom.
Width: 84.1 cm, Height: 118.9 cm (for A1 sized posters). Choose Portrait.
- c) Adding text: In order to add text, the text needs a "container" – a Text Box. Make a text box by clicking on the Text Box tool or selecting Text Box under the Insert menu.
- d) Adding images: Add images with Insert/Picture>From File

Template files for scientific posters can be found on the Internet by conducting a search for "poster template" and then adding the program name (such as Microsoft Office PowerPoint). You can download an example of a [PowerPoint template](#) available that is designed for a 36 inch × 56 inch

poster but that can be easily modified for other sizes. Other templates (including tutorials) are also available from the [TU/e](#) (in TU/e house style) and [online](#). To get started, just replace the "dummy" text and graphics with your content. In these templates, page dimensions, column number, column width, and font size are all preformatted to produce a poster that is legible from a distance of one to two meters. Template are mostly designed to retain white space, which is critical for a poster's readability. Invariably, the layout of the posters needs to be changed to accommodate the requirements belonging to your topic. Try to keep the word count low to increase the likelihood that viewers will actually read the poster. This will be difficult if you attempt to fully document everything you have done, but posters with too many words will likely cause viewers to look at only the figures or, worse, to avoid the poster altogether.

3.4. Avoiding common mistakes

- Too much information
 - The number-one mistake is to make a poster too long. Densely packed, high-word-count posters are basically manuscripts pasted onto a wall. Posters with approximately 500 words are ideal. If you feel that your research warrants an exception to this advice, ask someone, "What text, figure, or table can I delete or modify?"
- Titles with incorrect case
 - Format the title by using sentence case. Do not use title case or all caps.
- Incorrect formatting
 - Do not add bullets or otherwise punctuate section headers. The use of a larger font size for headers, coupled with a simple bold format, is sufficient for demarcating sections.
 - Avoid blocks of text longer than 10 sentences.
 - When using acronyms and numbers within the text, scale down the font size by a couple of points so that the size of the acronyms and numbers doesn't overpower the lowercase text, which they would do if left at the default font size.
 - Don't trust the TAB key to insert the correct amount of space when indenting a paragraph (the default tab space is usually too big). Set the tab space manually by using the ruler in the document.
- Incorrect use of color
 - Approximately 8% of males and 0.5% of females have some degree of color-vision deficiency. Because there are so many different kinds of these deficiencies, it is sometimes hard to remember which colors and color combinations are "safe." In general, avoid using red and green together, and opt to use symbols and patterns instead of colors wherever possible.
- Creating the poster in multiple operating environments
 - Complete the entire poster in one single software environment. Switching between a PC and an Apple Macintosh computer or even between two PC's can invite disaster down the road, sometimes in the form of lost image files, garbled graph axes, or printing problems.

4. To conclude

The trick to producing a great poster is to embrace the rough draft process, asking several people to review a draft of the poster at forehand. Rough drafts are especially crucial in deciding whether you need to cut or add text or resize figures or fonts.

Sources:

http://www.helsinki.fi/behav/tiedepaiva/2008/Making_a_scientific_poster5.07.pdf

<http://office.microsoft.com/en-us/help/HA100308481033.aspx>

Further tutorials and poster templates:

http://www.bandwidthonline.org/howdoi/effective_poster.asp

Poster templates in TU/e house style:

http://w3.tue.nl/en/services/cec/corporate_identity/resources_in_housestyle/scientific_posters/

Poster printservice:

http://w3.tue.nl/nl/diensten/diz/logistics/printservice/reproshop_en_dictatenverkoop/

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