Effective Conference Posters

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Goals of a poster presentation

- Get your main point(s) across to as many people as possible.
- Stimulate interest and discussion
- Receive feedback on research
- Source of information
- Summary (advertisement) of your work

How to be effective

- Focused on a single message.
- Lets graphs and images tell the story; uses text sparingly.
- Keeps the sequence well-ordered and obvious.
Effective Poster Presentations

- Address questions related to a specific topic:
  - What is it about?
  - Why is this topic important?
  - Why is this topic unique?
  - How does this relate to other topics?
  - What comes next?
Plan the Poster

- Make it easy to understand
- Make it easy to read
- Poster should stand alone
  - Verbal explanations should supply details, not essentials
- Decide on one concept or question
- Determine poster size
  - (UNCP: 3 ft. high by 4 ft. wide)
- Choose poster orientation
  - Portrait
  - Landscape
Overall

- Keep it short and simple
- Remove all non-essential information
- Attract visual attention: use graphics
- Consider having handouts
  - Miniatures of poster
  - Additional details not included in poster
  - Paper that has been published
Poster Layout

- Determine logical sequence for material
- Organize material into sections
  - I have seen sections numbered to make flow obvious
- Typically, use 3 (to 5 columns)
- 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
- Aim for:
  - 40% text
  - 60% graphics
  - 20% empty space
Sketch your layout and flow early in the process.
Content should include:

- Title, Author(s) and affiliation(s)
- Abstract: include *only* if required by the conference
- Introduction: a brief but important overview to secure the viewer’s attention
- Problem: concise statement of the problem
- Materials and Methods: brief description of the processes and procedures
- Results: outcomes, findings, data
- Conclusion & future work: summary, discussion of significance and relevance of results, a few easily remembered key conclusions, possible future research
- References
- Acknowledgments
- Contact Information
  - Web addresses
  - QR code
  - Facebook/Instagram/Twitter
Make it interesting but don’t run on

You want to lure people from a distance

Should be easy to read from 15 feet

If title is too long, shorten it

Don’t reduce the font size
Poster Text

- Left align or justify text
- One and one-half to double space
- Pick one font and stick to it
  - Serif font actually easier to read!
- Use larger/colored font for emphasis
- Use bulleted points rather than paragraphs
  - Keeps poster from becoming too text heavy
  - Try reading your own poster…how long required?
Suggested Font Sizes

- Title: 72 pt
- Authors: 48 pt
- Affiliations: 36 pt
- Section headings: 40 pt
- Text: 32 pt
- Acknowledgements: 20 pt
- One background color to unify poster
- Stick to muted colors
- Avoid red/green combinations
  - Red/green color blindness is common
- Avoid overusing or under-using color
  - Can compete with text and graphics
- Be consistent
- Make large enough for viewing from at least 3 feet away
- Text should support graphics, not vice versa
- Use heavier lines in tables and graphs for easier viewing
No figures should be smaller than 5” x 7”.

All figures should have captions.

Photographs
- At least 300 dpi at final size
- Avoid web captures—they are usually of low resolution

Resolution
- Crop photos to highlight the important feature
- Put a thin outline around photos to help them stand out from the background
Images

- Public Domain images do not require attribution, but it is good practice to attribute anyway.
  - (Usually a work enters the public domain 70 years after the death of creator—but there are exceptions. Some creators designate works to be in the public domain during their lifetime.)

- Creative Commons images permit reproduction as long as proper attribution is given.
  - (Available through Flickr, free stock photos archives)

- Royalty/Subscription images provide high quality images for a single image fee or membership—expensive!
  - Copyright Protected images can be used under the fair use doctrine for educational purposes including as part of a display or presentation at professional symposia. Proper attribution should be given.
Background

- Keep the background in the background
- Avoid full page graphics, even if subdued
Southern Flounder Exhibit Temperature-Dependent Sex Determination

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Introduction
Southern flounder (Paralichthys lethostigma) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger adult sizes than males. Therefore, information on sex determination that might increase the ratio of female flounder is important for aquaculture.

Objective
This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD), and if growth is affected by rearing temperature.

Methods
- Southern flounder broodstock were strip spawned to collect eggs and sperm for in vitro fertilization.
- Hatched larvae were weaned from a natural diet (rotifers/Arietina) to high protein pelleted feed and fed until satiation at least twice daily.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were stocked at equal densities into one of three temperatures 18, 23, or 28°C for 245 days.
- Gonads were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (osogenesis).

Histological Analysis

Temperature Affects Sex Determination

**P < 0.01 and ***P < 0.001 represent significant deviations from a 1:1 male:female sex ratio

Rearing Temperature Affects Growth

Growth Does Not Differ by Sex

Results
- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperature produced 4% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish raised at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no differences in growth existed between sexes.

Conclusions
- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote better growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 (< 1 year) southern flounder.

Acknowledgements
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Easy application of Maggot Debridement Therapy to treat chronic abscesses in laminitic horses

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Introduction
Foot infections are often the cause of laminitis in the chronically laminitic horse, especially those whose immune systems are compromised by Cushing's syndrome or similar conditions. Maggot Debridement Therapy (MDT) can be an effective alternative to surgical debridement (Singer and Merson 2004, Shinton et al. 2007), but unfortunately the procedure is unfamiliar because it is perceived as difficult and expensive. This poster demonstrates how MDT can be applied, and demonstrates the effectiveness of the procedure.

Materials and methods
"PW" was a 19-year-old mare with chronic hoof infections in both front feet. Infections were controlled by the techniques described in the photographs below. Lesions (shown in red) were cleaned from Monarch Labs in Irvine, CA.
After a course of maggots, she was kept covered until healed and kept dry, approximately 6 weeks from start of treatment.

Results
As illustrated by the images here, MDT aided in the removal of the necrotic and infected tissue, and the new healthy tissue was allowed to grow, including the "PW" hoof. The posttreatment pictures and MDT were used to successfully resolve conditions in 15 days.

Conclusions
Maggot Debridement Therapy is an incredibly useful and safe treatment for chronic laminitis in the chronically laminitic horse. The availability of a low-cost, underused method means Maggot Debridement Therapy is more accessible for these animals and can also be applied to the field by veterinarians, hoof-care professionals, or the authors.

Further information
Please visit www.daisyhavenfarm.com for more information. You can reach us at 610-476-1900 or daisyhavenfarm@outlook.com.

Literature cited

http://colingparrington.com/
Variations on the Service Course
Alternative Needs and Ends of Basic Technical Writing Classes

This poster examines the basic technical writing course—A.K.A., Business and Technical Writing, Professional Writing, and/or Technical Writing—from three perspectives:
(1) from the eyes of professional writing scholars defining the field, (2) from the vantage point of university administrators interested in academic standards, and (3) from an expecting workplace eager to recruit the course's undergraduate students. All three stakeholders see the course differently; they ascribe to the course different needs, expectations and desiderands, which, in turn, inspire instructors who design and teach the course to rethink our assignments, standards and content.

Overview:
Gatekeeper of Professional Writing

The service course usually functions as a Professional Writing Program's bread and butter. The course is required for many students from multiple disciplines, so it helps necessitate and legitimate the program in the eyes of university administration (Connors, Adams).

Accreditation organizations for colleges and universities have insisted that English departments develop quantifiable criteria by which to standardize their writing training.

Many writing handbooks and programs include a list of writing habits that they want their graduates to correct and/or master ("The Texas Ten", Lundford). Others set exit writing exams so that a college education from their institution guarantees a certain degree of writing proficiency.

The Academic Equalizer

For professional writing scholars, the service course operates as an introduction to the technical writing profession. Therefore, we who teach the course have a vested interest in that its content covers basic knowledge of our field. Most textbooks we use rely on a certain curriculum—generic forms, research skills, writing style, and design basics (Markel, Woollver). Others expand the formula to include progressive discussions about intercultural communications (Andrews).

The students still view the projects as critical, even though they were provided actual clients...the clients seemed to share this perspective. (Blakeslee, 2001, p. 179)

However, the formula has its disadvantages.

1. Some instructors consider teaching the courses inferior work (Staples).
2. Many students feel that the assignments are contrived; they often produce facsimiles of model documents rather than their own thoughtful drafts (Blakeslee, Spinuzzi).
3. Removed from the actual workplace context, generic forms often lose their meaning (Craig). These environments are difficult to replicate—even when local businesses participate in classroom activities.
4. When students find their own topics, they find it difficult to judge its suitability.

Implications

Instructors can teach how historical and social events shaped written genres.

We should be able to explain not just what the habits associated with a common professional genre are, but also why those habits have historically built up and why they have evolved differently (from others)" (Spinuzzi, 1996, p. 303).

For example, discuss how formal reports evolved from flowery narratives meant to relay the lab experience in the low-tech 17th century (Shapin) into regimented IMRAD patterns (Swales, Gross) that regulate the 20th century marketplace of scientific ideas.

That way, instructors give new dimension to the writing process beyond generic forms and content. and they open space for students to revise genre for their ends. And, we firm up our discipline by remembering past.

Preparation for the "Real World"

Natural, applied and social science departments often depend upon English departments to train their students to write as professionals in the workforce. Further, employers themselves have strong opinions about the writing skills their prospective employees need.

What gets taught in our programs is a concern not only of the multiple perspectives within academic, but of professional organizations representing practitioners, of industry managers, of vocational advocates for university "reform" within and outside of academic. (Savage, 2005, p. 6)

Our service course usually contains the following major assignments: proposal, progress reports, final reports, instructions, and job materials (Markel and Wilson). We usually justify requiring these five documents because they crop up in most workplaces.

However, employers and practitioners have different standards for these deliverables than instructors.

[When asked to critique menus, professional] engineers and students gave more positive comments than negative (62% positive for each group), as compared to professors (33%). (Amore & Bramer, 2005, p. 137)

And their daily routines enlist mostly informal and visual documents.

Implications

Given the differences between how practitioners critique technical writing versus how scholars teach it, we should consider developing our own standards of technical style that accommodate both stakeholders.

Constrast offers possibilities for stylistic standards. For example, he recommends relaxes rules regarding whether or not to punctuate bulleted lists and he promotes bending the subject/verb and referent/antecedent agreement rules on some key nouns such as "media," "home" and "data."

Readers do not care about...word forms in the root language. They match subject and verbs based on the notion of the subject...they know...that the notion of data is singular, roughly equivalent to dataset. (2004, p. 266)

Some Forms of Writing are Very Common in Most Companies

![](chart.png)

Source: The National Commission on Writing

Implications

If mirroring actual professional writing legitimizes the sequence, then we might readjust our focus to emphasize email (as remodeled letters), memos, and other correspondence over technical or formal reports. We might also keep an eye on emerging genre such as white papers and disciplinary blogs.
The Effects of Gravity on the Cori Cycle
Molly C. Musselwhite, Tiffany R. Scott, Candace Langston, Alex Mitchell

Abstract
Since the beginning of manned space flight NASA has extensively studied the effects of microgravity on humans. One such physiological process is the Cori Cycle. The Cori Cycle occurs as pyruvate is converted to lactate during anaerobic glycolysis. This process produces Adenosine triphosphate (ATP), which is used by muscle cells as an energy source for muscular contraction during intense muscular activity. We focused on the reaction between Pyruvate and Nicotinamide adenine dinucleotide (NAD) in the presence of lactate dehydrogenase (LDH) to form Lactate and NAD+. In order to monitor the reaction rate, we measured the rate change in absorbance as NADH was consumed using a UV spectrophotometer. Raw measurements were made on NASA’s microgravity research aircraft as part of their Reduced Gravity Education Flight Program. The flight data was then compared to measurements made in the laboratory at 1g (ground truth). Our results show there is a decrease in the reaction rate during microgravity when compared to ground truth data. At this time, we believe that the dominant effect on the process is a result of reduced convective flow within the fluid samples while in 0g. We present the findings of our investigation, as well as future plans.

Methods
For the purpose of our experiment, a pure LDH enzyme was obtained through dialysis. In order to conduct the experiment, 2.8 ml of a 2.1 M sodium phosphate buffer was placed in a syringe. To this was added 0.005 ml of a 30 mM sodium pyruvate solution and 0.005 ml of LDH enzyme. The last component, 1000 ul of a 0.6 M NADH solution, was added, quickly mixed, and the absorbance spectrum at 340 nm was acquired. UV radiation at 340 nm was used since NADH absorbs strongly at this wavelength. Over time we observed a decrease in the absorbance as NADH is removed from the solution. In this manner we indirectly characterized the conversion rate of pyruvate to lactate.

Results
- Ground truth data was collected postflight by using the same procedures and hardware that was used during flight.
- The initial slope was taken from a 5th order polynomial, which visually provided the best fit for the initial rate changes in the data. While analyzing the data, absolute numbers were not considered as important as the initial slopes and trends calculated from absorbance data.
- Figure 2 (a) shows the absorbance as a function of time for four representative runs from the ground truth samples. The average rate change in absorbance for ground truth data was 0.99 s^-1.
- Figure 2 (b) shows the absorbance as a function of time for six microgravity measurements made during flight. The average rate change in absorbance for microgravity samples was 0.99 s^-1.
- Figure 2 (c) and Figure 2 (d) are plotted together in Figure 2 (e), which clearly shows the difference in initial absorbance rate, or a difference in activity, between the two measurements.

Discussion
Comparing ground truth and microgravity results, figure 2 (b) clearly depicts a change in the rate of reaction between ground truth and microgravity measurements, the rate is approximately 50% lower in microgravity (0.99 s^-1) than it is in 1g (0.99 s^-1). This means that the rate at which NADH was consumed is lower in the microgravity data. Therefore, the overall process of pyruvate converted to lactate is slower in 0g.

We believe that the primary mechanism resulting in the difference in reaction rates in our experiments is not a change in the chemical reaction itself but rather the granulostatic effects on the convective flow within the fluid solution. During 0g, due to the lack of granulostatic force, the convective forces are removed and the only fluid movement is due to the massaging done after NADH is injected and diffused. While the experiments conducted during 1g were also massaged, they were also subject to granulostatic forces which assisted in moving the fluid and helped to enhance the mixing process.

We have concluded that the decreased reaction rate is primarily a result of the absence of gravity driven convection during 0g. In the absence of convection, a reaction is solely dependent on passive diffusion. Thus, the rate of mixing is decreased which could result in the overall rate of reaction being reduced.

While our initial assessment is encouraging, we will continue to examine the system to better understand the fluid flow properties within our reaction chamber. Also, we plan to complete further calculations to obtain the activity of our solutions.

Outlook
As part of NASA's Reduced Gravity program, our team has also developed an outreach program directed at the youth of North Carolina (and beyond). Our goal is to get kids interested in science. We do this by recording an educational demonstration, performed in 0g. During this year's experiment, we observed a stunning water balloon in zero gravity. Unfortunately, the experiment did not show the results we had hoped.

NASA’s Microgravity University
The microgravity university offered by NASA is a highly competitive program provides select undergraduate students the opportunity to fly experiments on their "G" aircraft. Selected students will be flown over the Gulf of Mexico in a parabolic flight pattern, performing 30-60 parabolas. A unique feature of the program is that the experiment conducted is the student’s own research. Only about 20 teams per year are selected from across the country.
Title, formatted in sentence case (Not Title Case and NOT ALL CAPS), that hints at an interesting issue and/or methodology, doesn’t spill onto a third line (ideally), and isn’t hot pink

Colin Purrington
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Introduction
Your reader was mildly unimpressed by the title, but you have quickly written two sentences to back them into reading more. So, describe exactly what your interesting question is and why it really needs to be addressed. Sensitivity back please information will dawn these to walk away.

Typography research has shown that the text is easier to read.

Materials and methods
For people really into the gruesome details of what you’ve been up to, go ahead. And visual. Use a photograph, drawing, or flow chart if possible. Supplemented with only a broad overview of your procedure.

Results
The overall layout in this area should be visually appealing, with clear text on how a reader should read through the component. You may want a large step with fewer graphs. Or you have questions on text and will not have enough graphs on sight. Be sure to separate figures from other figures by providing use of white spaces. When figures are too crowded, trim. You need to have the graphs to read free and which legend goes with which figure. Captions just look bad. Too bad. The big thing to remember is that a Results section on a paper does not need to look like a Results section on a manuscript; that is, feel free to be creative.

If you add small drawings or insets to your figures, do so—these textual cues can be processed as in creating viewers. Use colored arrows or callouts to focus attention on important parts of graphs. You can even put test information next to arrows to tell your readers what to look at in the interesting part of the hypothesis. For example, you may want to show how one part of a figure applies to another.

Figures are preferred but tables are sometimes unavoidable, like that. If you must include these, go to great effort to make it look professional. Look at a respected journal and emulate the layout, line types, line densities, text alignment, etc. A table looks best taken in first composed within Microsoft Word and inserted as an Object. Use colored text or draw over to direct attention to important parts of the table.

Paragraph format is fine, but we have bullet lists of results:
- 9 out of 11 tested individuals survived
- Brainstem tests were last
- Conserved core completely intact, on average, data ran without errors

This template results section is way too wordy. Increase your visuals.

Acknowledgments
We thank L. Cane for laboratory assistance, Mary loan for seeds, and Fred's Inside for greenhouses. Funding for this project was provided by the Department of Fishes (If you want to annotate with many logos, send them down so that they can fit inside this area without overlapping text too much. Note that people's logos are scaled. Their titles are fixed).

Conclusions
Conclusion should not be mere summaries of your results—wouldn't be honest. You want to guide the reader through what you have concluded from the results, and you need to make the first several sentences understandable on their own and interesting. Hence, many conference attendees will start reading this section first. If you don't tell them they'll wait. These first few sentences should refer back explicitly to the building issues mentioned in the introduction. (If you do have a running joke in the introduction, go back and fix it.)

A good conclusion will also echo any other your conclusions fit into the literature on the topic. E.g., how exactly does your research add to what is already published on this topic? It's important to be humble and gracious in this section, as reviewers of previous literature may be in the literature, and further assume they are credible and influential. You can also draw upon less formal types of content such as conversations you have had with others and important people (i.e., personal communication).

Finally, you want to tell readers who have added this long section to the back, and who should do it. E.g., are you discussing the next logical step, or should another discipline follow up on your exciting result? It's OK to put a bit of personality into this section because reviewers expect personal input to be personal, and if you're not actually thinking through that to convey your enthusiasm, your paper should be doing that for you.

If you have a graphical way to express the next iteration of your hypothesis, all the better. It's fine. For example, you might make a graph of hypothetical data that shows an expected result in a future experiment. That's something you can't see it in a textual manuscript, but it's vastly that for a paper.

If you're curious, this paper has 1729 words (just look in File Properties to get this statistic). Aims for 100 words. If you are above 1000 words, your paper will be reviewed.

Further information
More tips can be found on "Designing conference posters," at http://colinpurrington.com/tips/academic-posterdesign. Note that the URL should be crisp of any automatic hyperlink formatting (right-click, then "remove hyperlink").

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References

- Advice on designing scientific posters
  - Colin Purrington, Department of Biology, Swarthmore College, PA
    - http://www.swarthmore.edu/NatSci/cpurrin1/posteradvice.htm

- Design of Scientific Posters
  - http://www.writing.engr.psu.edu/posters.html

- Poster Design Tips
  - http://clt.lse.ac.uk/workshops-and-courses/Courseresources/Poster-Design-Tips.php

- Effective Poster Design
  - http://www.soe.uoguelph.ca/webfiles/agalvez/poster/

- NC State has a very good site
  - http://www.ncsu.edu/project/posters/