

Search:

Search

## Serendipity

Applying systems thinking to computing, climate and sustainability

Menu

Search:

Search

- [About Steve](#)
- [Moderation Policy](#)
- [Popular Posts](#)
- [Sitemap \(blog contents\)](#)

## How to write a scientific abstract in six easy steps

26. January 2010 · 29 comments · Categories: [humour](#), [research methods](#)

Here's the abstract for a paper (that I haven't written) on how to write an abstract:

### How to Write an Abstract

The first sentence of an abstract should clearly introduce the topic of the paper so that readers can relate it to other work they are familiar with. However, an analysis of abstracts across a range of fields show that few follow this advice, nor do they take the opportunity to summarize previous work in their second sentence. A central issue is the lack of structure in standard advice on abstract writing, so most authors don't realize the third sentence should point out the deficiencies of this existing research. To solve this problem, we describe a technique that structures the entire abstract around a set of six sentences, each of which has a specific role, so that by the end of the first four sentences you have introduced the idea fully. This structure then allows you to use the fifth sentence to elaborate a little on the research, explain how it works, and talk about the various ways that you have applied it, for example to teach generations of new graduate students how to write clearly. This technique is helpful because it clarifies your thinking and leads to a final sentence that summarizes why your research matters.

*[I'm giving my [talk](#) on how to write a thesis to our grad students soon. Can you tell?]*

Update 16 Oct 2011: This page gets lots of hits from people googling for "how to write an abstract". So I should offer a little more constructive help for anyone still puzzling what the above really means. It comes from my standard advice for planning a PhD thesis (but probably works just as well for scientific papers, essays, etc.).

The key trick is to plan your argument in six sentences, and then use these to structure the entire thesis/paper/essay. The six sentences are:

1. **Introduction. In one sentence, what's the topic?** Phrase it in a way that your reader will understand. If you're writing a PhD thesis, your readers are the examiners – assume they are familiar with the general field of research, so you need to tell them specifically what topic your thesis addresses. Same advice works for scientific papers – the readers are the peer reviewers, and eventually others in your field interested in your research, so again they know the background work, but want to know specifically what topic your paper covers.
2. **State the problem you tackle.** What's the key research question? Again, in one sentence. (Note: For a more general essay, I'd adjust this slightly to state the central question that you want to address) Remember, your first sentence introduced the overall topic, so now you can build on that, and focus on one key question within that topic. If you can't summarize your thesis/paper/essay in one key question, then you don't yet understand what you're trying to write about. Keep working at this step until you have a single, concise (and understandable) question.
3. **Summarize (in one sentence) why nobody else has adequately answered the research question yet.** For a PhD thesis, you'll have an entire chapter, covering what's been done previously in the literature. Here you have to boil that down to one sentence. But remember, the trick is *not* to try and cover all the various ways in which people have tried and failed; the trick is to explain that there's this one particular approach that nobody else tried yet (hint: it's the thing that your research does). But here you're phrasing it in such a way that it's clear it's a gap in the literature. So use a phrase such as "previous work has failed to address...". (if you're writing a more general essay, you still need to summarize the source material you're drawing on, so you can pull the same trick – explain in a few words what the general message in the source material is, but expressed in terms of what's missing)
4. **Explain, in one sentence, how you tackled the research question.** What's your big new idea? (Again for a more general essay, you might want to adapt this slightly: what's the new perspective you have adopted? or: What's your overall view on the question you introduced in step 2?)
5. **In one sentence, how did you go about doing the research that follows from your big idea.** Did you run experiments? Build a piece of software? Carry out case studies? This is likely to be the longest sentence, especially if it's a PhD thesis – after all you're probably covering several years worth of research. But don't overdo it – we're still looking for a sentence that you could read aloud without having to stop for breath. Remember, the word 'abstract' means a summary of the main ideas with most of the detail left out. So feel free to omit detail! (For those of you who got this far and are still insisting on writing an essay rather than signing up for a PhD, this sentence is really an elaboration of sentence 4 – explore the consequences of your new perspective).
6. **As a single sentence, what's the key impact of your research?** Here we're not looking for the outcome of an experiment. We're looking for a summary of the implications. What's it all mean? Why should other people care? What can they do with your research. (Essay folks: all the same questions apply: what conclusions did you draw, and why would anyone care about them?)

The abstract I started with summarizes my approach to abstract writing as an abstract. But I suspect I might have been trying to be too clever. So here's a simpler one:

(1) In widgetology, it's long been understood that you have to glomp the widgets before you can squiffle them. (2) But there is still no known general method to determine when they've been sufficiently glomped. (3) The literature describes several specialist techniques that measure how wizzled or how whomped the widgets have become during glomping, but all of these involve slowing down the glomping, and thus risking a fracturing of the widgets. (4) In this thesis, we introduce a new glomping technique, which we call googa-glomping, that allows direct measurement of whiffalization, a superior metric for assessing squiffle-readiness. (5) We describe a series of experiments on each of the five major types of widget, and show that in each case, googa-glomping runs faster than

competing techniques, and produces glomped widgets that are perfect for squiffing. (6) We expect this new approach to dramatically reduce the cost of squiffled widgets without any loss of quality, and hence make mass production viable.

Share this:



## 29 Comments



1. [steve](#)  
[January 26, 2010 at 2:20 pm](#)

Pro tip (step #7): Now break up some of those long sentences into shorter ones.



2. Jon  
[January 26, 2010 at 2:34 pm](#)

Genius!

3. Pingback: [buzz](#)



4. Jorge  
[January 26, 2010 at 5:38 pm](#)

Genius indeed!

But specifically for thesis abstracts —shouldn't they be a bit longer than six sentences?

*[Why? – sme]*



5. Paul Baer  
[January 30, 2010 at 12:32 am](#)

Excellent – I've tweeted it to my massive crew of 46 followers :^)

Now if I could just figure out where to store it in my own system so I could find it when I'm actually trying to write an abstract (or teach a student how to do so!)

–Paul



6. Fabio Silva  
[February 3, 2010 at 2:59 pm](#)

Hi Steve,

very good. how do you compare your six sentences with the structure of Context, Objective, Methods, Limitations, Results, Conclusions of the structured abstract approach?

Fabio



7. [Emily](#)  
[October 15, 2011 at 6:46 pm](#)

I am in middle and I need steps to write an abstract for my Science fair project. My science teacher told me to write notes and I did, but then I lost them and don't know how to make an abstract. Can you make this paragraph into a series of steps?



8.

[Emily](#)  
[October 15, 2011 at 6:49 pm](#)

But I am sorry if only teachers can only post stuff on here. I just found this on google.

*[No, no restrictions; I just moderate the discussion to prevent spam etc. – Steve]*



9.

[Steve](#)  
[October 16, 2011 at 10:22 pm](#)

For Emily: I've added a whole load of explanation. Hope that helps.



10.

[Nick Barnes](#)  
[October 17, 2011 at 5:39 am](#)

Awesome example abstract. I'm definitely going to buy shares in your Googa Glomping Enterprises.



11.

[tipmaster](#)  
[February 21, 2012 at 10:18 pm](#)

I actually am presenting research at a conference and I need to submit my abstract in like 2 weeks, problem is I've never done a professional abstract, so I appreciate the help...



12.

[mateo](#)  
[February 23, 2012 at 8:39 am](#)

very helpful – emailed to myself for future reference.



13.

[Mita](#)  
[April 10, 2012 at 11:34 am](#)

I couldn't focus on the abstract as I was laughing so much! Brilliant! Steve...it's implied that you split up the sentences 😊



14.

[Sara](#)  
[June 2, 2012 at 1:18 pm](#)

Wow, this was incredibly helpful for someone with little science background. Bookmarked! Thanks so much!



15.

[sme](#)  
[October 4, 2012 at 4:23 pm](#)

Here's how to read an abstract:  
[http://www.huffingtonpost.com/noah-gray/abstract-science\\_b\\_1923214.html](http://www.huffingtonpost.com/noah-gray/abstract-science_b_1923214.html)



16.

[April](#)  
[November 10, 2013 at 1:29 pm](#)

thank you people who wrote this



17. Kisses from Sweden  
[December 16, 2013 at 7:25 pm](#)

Person who wrote this: I love you so much! A couple of hours ago, I didn't even know where to begin. Now, instead of having begun writing an abstract that would no doubt have turned into an overdetailed, confusing mess, I've somehow managed to produce a decent half-page abstract for a ~150 pp. report. Thank you!!



18. [abhijitparmar](#) Abhijit Parmar  
[December 30, 2013 at 10:30 pm](#)

Thank you so much Steve, you rocks, really awesome. well i am scientist without PhD, but this article motivates me to do PhD.



19. Dr. Rafiq  
[December 31, 2013 at 10:29 pm](#)

Excellent piece of information, brilliantly highlights the nuances of writing an excellent abstract. Very useful especially to non-native english speaking researchers/ writers



20. Max Leighton  
[January 4, 2014 at 11:56 am](#)

THANK YOU!

21. Pingback: [How to write an Abstract for a Conference » The Conference Mentor](#)



22. Ze  
[January 26, 2014 at 12:16 pm](#)

Thank you. Im going to use this format to teach my students to write an abstract!



23. jamesshaffer85  
[November 14, 2014 at 9:53 am](#)

Awesome! I've been looking for tips to write an abstract rather long. I've seen some nice samples here <http://place4papers.com/samples> but it's one of those rare cases when it's better to read guidelines than to see an example.



24. Florina  
[November 27, 2014 at 4:53 pm](#)

Thank you for writing this! Incredibly helpful, especially the explanations of the individual steps.



25. Veronica Flynn  
[January 5, 2015 at 9:28 pm](#)

Thank you very much for this now I can write my own



26. [Benjamin Bellanger](#)  
January 11, 2015 at 8:42 am

You've just summered a master degree lecture in few lines. Clear and sharp. Tks



27. [lekile](#)  
January 26, 2015 at 9:59 am

Thanks great post.



28. [alma](#)  
February 13, 2015 at 5:02 am

I am writting an abstract limited to 300 words only ,for my presentation about” nurses, care cost effective.but dont know how to construct... any help?



29. [manuelahummel](#)  
February 23, 2015 at 4:31 pm

Thanks! Best guideline I came across so far. Super helpful! 😊



30. [Camille](#)  
March 1, 2015 at 8:41 am

A+. Helped me write my first abstract. thanks!



31. [Dr. Usha K](#)  
July 5, 2015 at 7:47 am

Thank you very much! I am confident now. Super tips!!!!!!!

### Join the discussion:

Enter your comment here...

### Fresh Serendipity:

- [Who first coined the term “Greenhouse Effect”?](#) August 18, 2015
- [Climate Modeling Begins with ABC](#) May 28, 2015
- [The Karlskrona Manifesto on Sustainability Design](#) May 17, 2015
- [Detecting Crap on the Internet](#) October 27, 2014
- [Constructive and External Validity for Climate Modeling](#) August 26, 2014
- [From Computational Thinking to Systems Thinking](#) June 6, 2014
- [TEDx talk: Should we trust climate models?](#) May 23, 2014
- [Skills needed for a successful PhD](#) April 7, 2014
- [Climate Model Bake-Off](#) March 5, 2014
- [Weather balloons vs. climate balloons](#) February 21, 2014
- [Climate Model vs. Satellite Data](#) February 14, 2014
- [What Does the New IPCC Report Say About Climate Change?](#) October 8, 2013
- [The Climate as a System, part 5: clouds](#) September 3, 2013
- [The Climate as a System, part 4: earth system feedbacks](#) September 2, 2013
- [The Climate as a System, part 3: greenhouse gases](#) August 27, 2013

### Recent Tweets


**Steve Easterbrook**  
 @SMEasterbrook 3h

I just signed the Leap Manifesto: A Canada that runs on only renewable power  
[leapmanifesto.org](http://leapmanifesto.org)  
 Show Summary


**David Golumbia**  
 @dgolumbia 6h

wow! @jathansadowski & @claudiakincaid team up in @guardian w/stunning piece on Uber's (anti-)governance ambitions  
[theguardian.com/technology/2015...](http://theguardian.com/technology/2015...)  
 Retweeted by Steve Easterbrook  
 Show Summary


**Steve Easterbrook**  
 @SMEasterbrook 6h

Big typo in this article: "the three main party leaders" should read "the three male party leaders" [cbc.ca/news/politics/...](http://cbc.ca/news/politics/...)  
[@ElizabethMay](#)  
 Show Summary

### Archives:

Select Month ▼

### Topics

Select Category ▼

### Blogroll

- [A Few Things Ill-Considered](#)
- [All Models Are Wrong](#)
- [Alternative Energy Action Network](#)
- [Azimuth](#)
- [Capital Climate](#)
- [Climate Charts and Graphs](#)
- [Climate Denial Crock of the Week](#)
- [Climate Lab Book](#)
- [ClimateProgress](#)
- [Crock of the Week](#)
- [Deltoid](#)
- [DeSmogBlog](#)
- [Global Warming Art](#)
- [Greenfyre's](#)
- [Gristmill](#)
- <http://www.ecoequity.org/>
- [James Empty Blog](#)
- [Left as an Exercise](#)
- [Mind of Dan](#)
- [Monbiot.com](#)
- [More Grumbine Science](#)
- [Only in it for the Gold](#)
- [People and Place](#)
- [RealClimate](#)
- [Significant Figures](#)
- [The Cost of Energy](#)
- [The Frog that Jumped Out](#)
- [The Intersection](#)
- [The Way Things Break](#)
- [Yale Climate Forum](#)

### Meta

- [Log in](#)
- [Entries RSS](#)
- [Comments RSS](#)
- [WordPress.org](#)