

## How To: Outlining a Research Paper

*Note for students:* This document was prepared by Dr Amy Stuart for a class in which she requires a research paper related to air quality. I am providing it here to offer you some guidance on preparing a good outline. It is possible that some of the details will not apply to your paper – for instance, your overall organizational structure might not include a “results” section as Dr Stuart suggests for her students. The point here is to understand the overall ideas and methods suggested by Dr Stuart, not the specific sections of the paper.

Outlining is an important step in organizing a paper. When done well, it clearly shows the relationships between ideas in your paper and provides a plan for writing. It also helps you to think about your topic and to reach the level of synthesis and evaluation in learning. Further, it can help you to determine whether you have researched the topic thoroughly. Finally, it can help you to determine whether the paper makes a convincing argument, before you spend time agonizing over grammar, sentence structure, word choice, and transitional sentences (etc.).

Before continuing, I should mention what you should do before serious outlining. Some important activities that are generally done prior to outlining include extensive reading, taking notes on important ideas (with citations), brainstorming and listing ideas, grouping related ideas together, ordering groups from general to specific (abstract to concrete). After you have done a lot of these activities, you are ready to start outlining. (You may need to revisit these activities as you outline, whenever you need to come up with new ideas and material for your writing).

Once you are ready to start outlining, follow the guide below. When you are first learning to outline, it is best to start with a one level outline and increase the detail. Hence, this guide is written to facilitate that.

### A One Level Outline

Start with a one level outline. A common basic one-level outline is shown below:

I Introduction

II Literature review

III Analysis

IV Results

V Discussion

VI Conclusions

Using the above outline as a guide, create a one level outline for your paper by making the topic headings more detailed. For example, instead of “Literature review”, a more detailed heading could be “Literature review on the impacts of community design on air quality.” After providing details, read your outline. Does it flow clearly and provide a structure to build a complete paper around your chosen topic. If not, refine it. When it does, move to a two level outline.

### A Two Level Outline

A two level outline is made up of headings for sections and subsection of a paper. A heading is a short phrase that describes the topic area of the section or subsection represented. A basic, two-level outline with many of the common elements in a research paper is shown below:

## I Introduction

- A. Motivation (*Why this work is important*)
- B. Objectives (*Goals of this paper*) or Thesis Statement
- C. Organizational overview of paper

## II Literature Review

- A. Heading for topic area A
- B. Heading for topic area B
- C. Heading for topic area C
- D. Heading for topic area D

## III Analysis Approach (*What was done.*)

- A. Heading for the description of the scope of the analysis
- B. Heading for methods used for first major task
- C. Heading for methods used for second major task
- D. Heading for methods used for third major task

## IV Results (*What was found*) [Sometimes this is combined as Results and Discussion]

- A. Heading for results of first major task (or Results/Discussion topic area E)
- B. Heading for results of second major task (or Results/Discussion topic area F)
- C. Heading for results of third major task (or Results/Discussion topic area G)

## V Discussion (*How results contribute to knowledge in the field, e.g. compare results to literature*)

- A. Heading for discussion topic E
- B. Heading for discussion topic F
- C. Heading for discussion topic G

## VI Conclusions

- A. Summary of objectives and approach of this paper
- B. Major findings of this paper
- C. Important implications of this paper's findings (*e.g. for policy*)
- D. Needed future work in the field

Parent headings of an outline (e.g. I, II, III, IV, V, VI here) should represent topics that are more general and more important than sublevels under them. Sublevels of an outline (e.g. A, B, C, D here) should be more detailed than the parent heading they are under. Topics at the same level should be the same importance as each other. A good rule of thumb is that the heading phrase should get longer as the outline level is more embedded. Each section or subsection of an outline should be divided into at least 2 parts. It is good practice to use parallel grammatical structures for headings of the same level.

Using the above outline as a guide, increase the level of your previous outline by one. In other words, replace the general topic headings used above with specific heading phrases that are relevant to your paper's topic. (Some description of the meanings of the headings listed above are provided in parentheses). After specifying your headings, read your outline. Does it flow clearly and provide a

structure to build a complete paper around your chosen topic? If not, reorganize the subsections and refine your outline. When it does, move to a three level outline.

### A Three Level Outline

A three level outline is made up of headings for sections, subsection, and paragraphs of a paper. Paragraph headings should provide the topic sentence (or phrase) that all sentences in the paragraph will support. The structure of a three-level outline is shown below:

#### I Introduction

- A. Motivation to study this topic
- B. Objectives or Thesis of this paper
- C. Organizational overview of paper

#### II Literature Review

- A. Heading for topic area A
  - 1. Paragraph topic
  - 2. Paragraph topic
  - 3. Paragraph topic
- B. Heading for topic area B
  - 1. Paragraph topic
  - 2. Paragraph topic
  - 3. Paragraph topic

#### III Analysis Approach

- A. Heading for the description of the scope of the analysis
  - 1. Paragraph topic
  - 2. Paragraph topic
- B. Heading for methods used for first major task
  - 1. Paragraph topic
  - 2. Paragraph topic
- C. Heading for methods used for second major task
  - 1. Paragraph topic
  - 2. Paragraph topic

#### IV Results

- A. Heading for results of first major task
  - 1. Paragraph topic
  - 2. Paragraph topic
- B. Heading for results of second major task
  - 1. Paragraph topic

2. Paragraph topic

V Discussion

A. Heading for discussion Topic E

1. Paragraph topic

2. Paragraph topic

B. Heading for discussion Topic F

1. Paragraph topic

2. Paragraph topic

VI Conclusions

A. Summary of objectives and approach of this paper

B. Major findings of this paper

C. Important implications of this paper's findings

D. Needed future work in the field

Some subheadings are paragraphs themselves, hence no subheadings for paragraphs are needed. This is shown above for the Introduction and Conclusion sections.

Using the above outline as a guide, increase the level of your previous outline by one. After specifying your paragraph topic sentences, read through your outline. Does it flow clearly and provide a structure to build a complete paper around your chosen topic? If not, reorganize your paragraphs (and subsections, if needed). When it does, move to a detailed four level outline.

A Four Level Outline

In addition to the headings above, a detailed four level outline includes the statements that support the topic sentence of each paragraph, with citations to the source of the information for each statement that needs a citation. The structure of a (primarily) four-level outline is shown below:

I Introduction

A. Motivation

a. supporting sentence or statement (citation)

b. supporting sentence or statement (citation)

c. supporting sentence or statement (citation)

B. Objectives or Thesis of this paper

: (Same structure as above)

C. Organizational overview of paper

: (Same structure as above)

II Literature Review

A. Heading for topic area A

1. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)
2. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)
3. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)

B. Heading for topic area B

: (Same structure as above)

III Analysis Approach

A. Heading for the description of the scope of the analysis

1. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)

2. Paragraph topic  
: (Same structure as above)

B. Heading for methods used for first major task

1. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)

2. Paragraph topic  
: (Same structure as above)

C. Heading for methods used for second major task

1. Paragraph topic
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)

2. Paragraph topic

: (Same structure as above)

#### IV Results

##### A. Heading for results of first major task

###### 1. Paragraph topic

a. supporting sentence or statement (citation)

b. supporting sentence or statement (citation)

c. supporting sentence or statement (citation)

###### 2. Paragraph topic

: (Same structure as above)

##### B. Heading for results of second major task

###### 1. Paragraph topic

a. supporting sentence or statement (citation)

b. supporting sentence or statement (citation)

c. supporting sentence or statement (citation)

###### 2. Paragraph topic

: (Same structure as above)

#### V Discussion

##### A. Heading for discussion Topic E

###### 1. Heading for discussion subtopic

###### a. Paragraph topic

i. supporting sentence or statement (citation)

ii. supporting sentence or statement (citation)

iii. supporting sentence or statement (citation)

###### b. Paragraph topic

i. supporting sentence or statement (citation)

ii. supporting sentence or statement (citation)

iii. supporting sentence or statement (citation)

###### 2. Heading for discussion subtopic

: (Same structure as above)

##### B. Heading for discussion Topic F

###### 1. Paragraph topic

a. supporting sentence or statement (citation)

b. supporting sentence or statement (citation)

c. supporting sentence or statement (citation)

###### 2. Paragraph topic

: (Same structure as above)

## VI Conclusions

- A. Summary of objectives and approach of this paper
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)
- B. Major findings of this paper
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)
- C. Important implications of this paper's findings
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)
- D. Needed future work in the field
  - a. supporting sentence or statement (citation)
  - b. supporting sentence or statement (citation)
  - c. supporting sentence or statement (citation)

In a detailed outline, each statement or sentence should have its own line. Supporting statements should not be paragraphs themselves. If supporting paragraphs are needed, an additional level of subheadings can be used, as demonstrated in the Discussion section above. As a general rule, each paragraph should include supporting statements from at least two reference sources. In that way, you can help ensure that you are synthesizing information and contributing intellectually to the topic, not just restating information from your references.

Remember that headings of an outline that are at a higher level (less embedded) should represent topics that are more general and more important than sublevels under them. Sublevels of an outline should be more detailed than the parent heading they are under. Topics at the same level should be the same importance as each other. A good rule of thumb is that the heading phrase should get longer as the outline level is more embedded. Each section, subsection, or paragraph of a detailed outline should be divided into at least 2 parts.

Using the above outline as a guide, increase the level of your previous outline by one. After specifying your supporting statements for each paragraph (with citations), read your outline. Does it flow clearly and provide the structure of a complete paper on your chosen topic that meets the objectives (or thesis) set forward in the introduction? If not, reorganize the sentences, paragraphs, or subsections to refine your outline. When it does, you are ready to write your paper.

### Writing your paper from a detailed outline

Once you have a detailed outline, you have all the content and organizational structure necessary for a good paper. Much of the hard work is done. Now you can write, focusing on sentence flow, transition sentences, and grammar. If you find that you want to reorganize content, go back to your outline and test out the new organizational idea there first.

Happy Writing!