



A Research Strategy

Step 1: Brainstorm

Pick a topic, or use the topic assigned in class, and brainstorm lists of related keywords. Do this Week 1.

Example: Research an application of a field in biology.

Brainstorm of fields: molecular biology, genetics, microbiology, biochemistry, ecology, zoology,

Brainstorm of applications in microbiology: food, medicine, environmental, pathological, genetic

Step 2: Preliminary library research

Using your topic as a keyword, search the library's databases for general information. Take notes on interesting facts and possibly useful resources. Use secondary sources, like textbooks and newspapers, to learn more about your topic. Finish this during Week 2.

Step 3: Free-write

Jot down everything you already know, have thoughts or ideas about, or want to know about your topic. Write unrestrainedly, but re-read what you've written and pick out key words, ideas and question that comprise subtopics. Finish this Week 2.

Example: Food--sterilization, nutrient cycles, bacterially produced foods, pathenogens, industry,

Step 4: Focused research

Using your topic and the subtopics as keywords, take a deeper look at the sources that seemed most promising. If you have found books on these topics, skim them. Answer questions that came up in the free-write. Keep organized notes, either on cards or in a notebook. Make sure to collect the information from each source that you will need to cite that source, whether you end up using it or not. This can be done throughout Week 3.

If the topic and subtopics are still too broad, repeat steps 1-4.

Step 5: Outline

Create a working outline based on your notes from this research. This outline can be revised as you answer more of your questions and narrow your topic even more. Remember that this is a process, and anything you start with can be changed. You should have a working outline by Week 4. See the example below.

Step 7: Major Research

Use the topics in the outline as keywords and organize your notes around the outline. Writing facts on note-cards allows you to physically move and cluster evidence under ideas. Continue to make revisions to your outline as necessary. This can be carried out through Weeks 5 and 6.



Working outline	Revised outline
<ul style="list-style-type: none">I. Introduction~ an overview of the paperII. History of Microbiology and food<ul style="list-style-type: none">a. Pre-historyb. Major eventsIII. Current industries<ul style="list-style-type: none">a. Food processing<ul style="list-style-type: none">1. Alcohol2. Bread3. Yoghurtb. Food sterilization<ul style="list-style-type: none">1. Canning2. Aseptic techniquec. Pathogens in Food<ul style="list-style-type: none">1. Meat industry2. Fruit and Vegetable contamination3. PreventionIV. Future of food microb.V. Conclusion~ Wrap it all up	<ul style="list-style-type: none">I. Introduction~ an overview of the paper~ use statistic to hook readersII. History of Microbiology and food<ul style="list-style-type: none">a. Pre-historyb. Major eventsc. Important scientists/ contributors<ul style="list-style-type: none">i. Pasteurii. NapoleonIII. Current industries<ul style="list-style-type: none">a. Food processing<ul style="list-style-type: none">i. Alcoholii. Dairyiii. Miscellaneous<ul style="list-style-type: none">1. meats2. pickles3. tea/coffeeb. Food sterilization<ul style="list-style-type: none">i. Sterilizationii. Pasteurizationiii. Sanitizationc. Pathogens in Food<ul style="list-style-type: none">i. Meat industryii. Fruit and Vegetable contaminationiii. PreventionIV. Cutting edge research<ul style="list-style-type: none">a. New technology for processed foodsV. Conclusion~ Wrap it all up

Step 7: Writing the Paper

Using the most current outline, write a rough draft of the introduction and conclusion, topic sentences for the paragraphs, and transitions between paragraphs. This provides the framework for the paper. Then add, using your own words, the facts that fit under each topic sentence. This fleshes out the paper. Spend week 7 writing up the draft.

Step 8: Revise

Re-read the paper, checking for consistency, logical flow of ideas, sufficient supporting evidence, and correct formatting, citation and grammar. Remember that the process is still flexible, and you can add or delete entire paragraphs, move sections, or do more research if support is lacking in areas. This can be done during weeks 8 and 9 on a schedule where the paper is due week 10.