

Questions that need to be asked in each section of a science paper

### **Abstract**

1. what question are you investigating?
2. what is your hypothesis?
3. what are your results?

### **Introduction**

1. what question/topic are you interested in?
2. why is this question/topic important?
3. what is known already about this question/topic?
4. what is unknown?
5. specifically what question are you testing?
6. what is your hypothesis and what is the data to support it (in other words, how did you come up with this hypothesis?)
7. very briefly, what are the overall results and conclusions from your research?

### **Results**

1. What are the questions that need to be addressed in order to test your hypothesis?  
For example, if you were to test antibiotic sensitivity of an environmental strain of bacteria, you could ask the following questions:
  - is the strain sensitive in liquid media? solid media? or both?
  - how sensitive is the strain to the antibiotic? What's the minimum concentration that will inhibit growth?
  - is the bacteria sensitive to other antibiotics in the same family?
2. taking each question separately, what is the rationale for the experiment? Briefly describe the experiment and the variables.
3. The data should be presented in figures, however in the text you should provide a summary of the data for each experiment.

### **Discussion**

1. what is the problem/question you are studying? Yes, restate it!
2. How have your experiments and results addressed your question? What are your interpretations of your data?
3. Do your results support your hypothesis? What are sources of error that could have affected your results?
4. What are your overall conclusions?
5. How do your conclusions fit into the big picture? In other words, what is the significance of your results/conclusions?
6. What are the remaining questions and what future experiments would you like to do?

### **Methods**

1. Is any of the equipment you used unique? Did you use any equipment in a new/unusual way?
2. What were the concentrations of your solutions?
3. Has someone else already described how to do this experiment in another journal article? Could you cite this source rather than explaining your procedure?
4. What materials did you use? Materials should be mentioned within the description of the

experimental procedure (not as a separate list). Materials that are used everyday (such as pipettes, pipette tips, flasks, etc.) do not need to be mentioned. May need to help students decide which materials should be mentioned in article.

5. Where did you get your materials/reagents? Were they purchased? Did another teacher give them to you? Acknowledge others for giving you materials/reagents.

6. What company manufactures the reagents?

Overall question: Can someone else repeat your experiments with the description you've given?

**\*References**

- did you make sure to properly cite where you obtained your information?