



Michigan Society  
for Medical Research

# BioFocus

A Newsletter Exploring Science & Biomedical Research Issues For School Educators

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## Our Mission

The Michigan Society for Medical Research (MISMR) is a nonprofit educational organization that supports biomedical research and testing and the judicious use of animals in research, education and testing in the interests of human and animal welfare. Established in 1981, MISMR is made up of the state's leading research universities, teaching hospitals, pharmaceutical companies, voluntary health organizations and hundreds of scientists, educators and students who understand and support the importance of animal research and testing in advancing health care and treatment.

## MISMR Educational Projects & Activities

### ANNUAL ESSAY CONTEST

Every year MISMR sponsors an essay contest open to all Michigan high school students. Students from well over 500 schools in the state have annually participated in the contest to address the benefits of biomedical research. Prizes are awarded.

### SPEAKERS BUREAU

MISMR volunteers visit K-12 schools and civic community groups throughout Michigan each year to educate the public about biomedical research and to dispel commonly held myths.

### ANNUAL SYMPOSIUM

MISMR's popular annual meetings have often proved to be "standing room only", typically attracting local and national educators and researchers with interactive training workshops and presentations promoting biomedical research.

## BioFocus

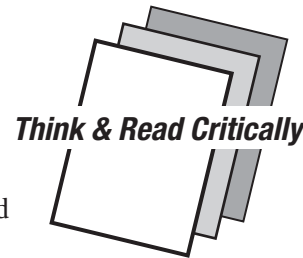
BioFocus is published by the Michigan Society for Medical Research. Please send your questions, comments, and suggestions to:

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## How to Write a Critical Analysis Paper

By Shirley Wroblewski, BS, LVT, LATG

In order to write a critical analysis paper, you should learn two things: (1) how to think critically and (2) how to read critically. Critical thinking is defined as the "intellectually disciplined process of actively analyzing and evaluating information gathered from experience, observation, or communication as a guide to belief and action", according to the National Council for Excellence in Critical Thinking Instruction (Scriven, p1). In layman's terms, this means gathering available information regarding a topic, interpreting the relevancy of the sources, and processing the information into an intelligent way of thinking about it.



**Critical writing is not just about acquiring data, memorizing facts, or reiterating what someone else thinks, but is a learned skill that involves active participation by the individual to understand the topic well enough to write a balanced and well communicated paper.**

Why don't we think critically naturally? Because we have our own internal biases we tend to rely on partial information and are too busy to take the time to fully develop this necessary life skill. The ability to think critically is a skill that is required for everyone, because problem solving is needed throughout life. Essays and papers that you will write during your academic career will require you to perform the task of first thinking critically about a specific topic before you begin to write about it.

Getting started on your critical analysis paper requires choosing a topic that is of interest to you. By reading your first paragraph, the reader will be able to determine right away your enthusiasm and knowledge of the topic. Even if you are required to write about a particular topic, there may be an angle that may be more relevant to your own experiences. For example, under the heading of biomedical research there are several subtopics that you can explore. You may write about a family member or friend who has been helped because of a particular scientific discovery, or the laws and regulations regarding animal research or recent medical advances that seem intriguing to you. As you start your research, another entirely different idea may present itself to you.

As Deborah Knott, Director of University of Toronto, New College Writing Center states, "critical writing depends on critical reading." In other words, there is a certain way to process information you read in order to complete an essay or paper. When you begin to research a particular topic, you should skim through sources the first time around to get a feeling for the overall content. Then go back and reread the article, several times, to pick out details relevant to your subject matter. The key point is not to read for just information, but to look for unique ways of thinking in regard to your topic. Remember, you are not writing a book report. Instead, you are evaluating the information and making sure it accounts for the conclusions it contains. Afterwards, you are required to make your own judgments and create your own arguments based on the information that you have read.

Research your topic by going to the library and using a variety of sources. Do not rely solely on the Internet for your references. In addition, only use Internet sources that are reputable. As you critically read each article, ask yourself the following questions:

- Why am I writing this down?
- What is especially interesting about this particular information?
- Can I see any relationship between this information and what I have already written down and learned? (Penchenik, p126)

The last question is especially important because writing an essay should enable you to delve deeply into a topic and develop a scholarly aptitude about it. It is best to take short notes on note cards because then you can make certain that you are not copying down entire sentences from your sources and that it is your ideas that you are conveying, not a plagiarized copy of what you have read. Next, sort these cards out according to the ideas on them and begin the first draft of your paper. Your first draft should be written on a pad of paper and **not** with the computer. In these days of the Internet, you may be tempted to copy and paste all kinds of sentences from various sources into a document and call it your own. Unfortunately this is not only

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**We Want To Hear From You!**

We want to include your stories, comments or questions relating to animals in your classroom in upcoming editions of *BioFocus*. Please email your stories to: [mismr@umich.edu](mailto:mismr@umich.edu)

**How to Write...** *Continued from front*

unethical, but it is preventing any kind of critical thought process from happening and will hinder the proper development of your topic. Besides, your readers will recognize this. You must be able to understand the concepts that you are discussing and realize that there are several ways an issue can be viewed in regards to the subject that you are writing about. If you only present a portion of the story it will not create an effective argument for your conclusions.

The flow of your entire paper or essay is important. Your introductory paragraph should set the stage for what follows. Use a catchy first line to grab the reader’s attention and keep the reader in mind as you continue to write so you don’t lose them with unnecessary details or missing information that they might need in order to understand your position on the topic you have chosen. Each paragraph should contain a specific point of your argument and should transition to the next point. Every paragraph should follow this particular pattern:

- The topic sentence should come at or near the beginning.
- The succeeding sentences should explain, establish or develop the statement made in the topic sentence.
- The final sentence should either emphasize the thought of the topic sentence or state some important consequence (Strunk, p17).

In your final paragraph you should sum up your overall conclusions. This paragraph should not contain any new or additional information. It should simply restate the ideas or arguments that have already been presented in your paper. Be sure that you leave your readers with a concluding sentence that makes an impact and signals the end of your paper.

An important part of any writing assignment is the editing process. Once you have your initial draft on paper, then if it is not legible to someone else, you should type your paper on the computer before you edit it. Never rely on spell check alone because it will not catch homonyms like “whether” and “weather”, “to”, “two” and “too”, and sentences in general that don’t combine into an intelligent argument and paragraphs that don’t flow well. You also should have at least two other people proofread your paper for grammatical errors. Be sure to include someone that has no expertise in the area that your topic is covering. Editing is an integral part in the writing process and usually, due to poor planning, a step that many people tend to skip. Avoid this mistake because the reader will not take your arguments seriously if you use improper words throughout the body of your paper. How your paper reads is as important as what your paper says.

To properly finish your paper you must create a bibliography in order to:

- Give credit to all authors and sources that you have used in your research.
- Provide information in case someone would like to delve further into your topic.

All bibliographies should be double-spaced and arranged alphabetically by author, or if no author is disclosed, by title. The standard formats for documenting sources of information in research papers can be found in:

- *MLA Handbook for Writers of Research Papers*, Chapter 11, by Joseph Gibaldi
- <http://www.aresearchguide.com/sampleworks.html>

In conclusion, you should create your own library of books on how to write well, including all of those referenced in the bibliography of this article (see sidebar to the left). *The Elements of Style* by William Strunk is a very short (50 pages), straightforward book that summarizes the rules of grammar and the elementary principles of composition that I referred to earlier, in relation to the flow of your paragraphs. If you follow the important advice in this book and the critical thinking skills that have been outlined in this article, you will be able to write a grammatically correct and thoroughly convincing paper that will impress even the strictest professor.



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