San José State University Writing Center
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Introduction Section for Research Papers

Parts of a Research Paper
- Abstract
- Introduction
- Literature Review
- Methodology
- Findings/Results
- Discussion
- Conclusion

The introduction is an important and challenging part of any research paper as it establishes your writing style, the quality of your research, and your credibility as a scholar. It is your first chance to make a good impression on your reader. The introduction gives the reader background and context to convey the importance of your research. It should begin by broadly introducing your topic, then narrowing to your focused research question or hypothesis.

What is the Purpose of an Introduction Section?

The introduction should answer three important questions:
1. What am I writing about?
2. Why is it important?
3. What do I want the reader to know about it?

An introduction should establish the topic with a strong opening that grabs the reader's attention before giving an overview of recent research on your chosen topic. Avoid going too in-depth in the introduction; deep dives into your topic should be saved for the body of the paper. Background and historical context help explain to the reader why your research is important. The type of information you share will vary by discipline. As you reach the end of the introduction, you should begin to establish what you want the reader to know about your topic and research. This may include your *focus and scope*, the *problem statement*, and your specific *research question(s)*, hypotheses, or objectives. Again, the information you choose to share here will vary depending on your discipline. It is always a good idea to check major academic journals within your field for examples of current best practices.

How Does an Introduction Differ from a Literature Review?

While the introduction often includes a brief overview of the important research on your topic, it should not be overly specific when discussing the literature. Instead, it also introduces your research question(s), purpose, objectives, or hypotheses. The literature review, however, critically evaluates the existing research in greater detail, summarizing and synthesizing important articles. The literature review is thorough in discussing subtopics that may be organized chronologically, thematically, or methodologically. The literature review often comes immediately after the introduction. Depending on the academic journal, the two can sometimes

be combined. To learn more about the literature review, take a look at our resource on [How to Write a Literature Review](#).

How Do Introductions Vary Across Disciplines?

The tone, structure, and content of an introduction will vary across disciplines. The best way to find out about introductions in your discipline is to read articles from major academic journals in your field. However, we will briefly discuss introductions for seven broad academic disciplines, noting how tone and content may vary.

Business

As these disciplines fall within the realm of professional and fast-paced environments, it is important to be concise and convey information clearly. In business writing, it is crucial to organize your writing logically, be precise, and write in active voice. Headings and subheadings are often used to make the paper easier to read.

Education

Most educational research papers involve critical analysis of teaching methods and pedagogical theory as they apply to real-life teaching situations. Just like most disciplines, your research problem or thesis statement should be clearly stated.

Engineering

Engineering research papers often involve tools similar to that of business writing. Engineering papers are often highly technical and should include a brief history of the research topic or study being undertaken.

Health and Medicine

This discipline requires clarity, accuracy, and evidence. Introductions for medical research papers should first broadly review relevant background information on the research topic, then narrow to a focused research question(s), thesis statement, and study objective. It is also recommended to keep the tone of medical research paper introductions inviting and engaging, as the remainder of the paper will be highly technical.

Humanities

These types of research papers often allow for more creativity in writing but should still retain a structured academic approach. The question(s) or problem(s) driving your research should be clearly presented within the introduction, often toward the end.

Biology, Chemistry, and Physics

Research papers in these disciplines demand objectivity and impartiality. The introduction should include background information on related experiments, data sets, explanations of technical terms, and a statement about the significance of your study.

Social Sciences

The social sciences rely heavily on existing literature and are often founded on primary and secondary research. Most social sciences also require extensive qualitative data analysis, as well as accuracy and honesty in presenting information. Most social science introductions follow the same structure outlined in this resource.

How Is the Introduction Section Structured?

A good tip is to write the introduction of your research paper last so that you have a clear idea of what you are introducing. When thinking about the overall structure of the introduction section, it is helpful to visualize the introduction as an upside-down triangle.

Start by broadly introducing the topic, then provide general background information, narrowing to specific background research, and finally a focused research question, hypothesis, or thesis statement (general to specific). Perhaps the best way to achieve this is by following the CARS Model outlined below.

The Create a Research Space (CARS) Model

The CARS Model was established by John Swales to describe the process scholars use to give context to their research with three progressive steps. Following these steps will result in a strong introduction that tells the reader why your research is important.

Step 1: Establish a Territory

This step is used to demonstrate the relevance of a chosen topic and briefly review previous work on your chosen topic. Think of this as stepping into an ongoing academic conversation on your topic and noting the important ideas. This step is often indicated with phrases like, *"In recent years, researchers have become interested in..,"* or *"Recent studies have focused on…"*

Step 2: Establish a Niche

This step involves identifying a gap, limitation, or shortcoming of previous research on your topic. This demonstrates your ability to think critically as a scholar and recognize how your research will contribute to the ongoing academic conversation in your research field. Phrases used to indicate a niche may include, *"However, these studies have failed to address…"* or *"While X has been extensively studied, little research has been conducted on Y…"*

Step 3: Occupy the Niche

The last step involves stepping in to fill the gap, limitation, or shortcoming you identified in the previous step. In an introduction, this will likely include your research question(s) or problem(s), hypotheses or objectives, and a brief overview of your rationale and methodologies. Phrases to indicate this step could include, *"The purpose of this investigation is to..."* or *"My research addresses the following questions…"* It is usually a good idea to include a roadmap at the end of your introduction, stating how the paper is organized and how each section connects to your research question.

Sample of a Quantitative Introduction with Annotations

This first sample involves quantitative data. Quantitative data is measurable (or quantifiable), numerical data that can be counted. Carefully look over the peer-reviewed article introduction below, paying close attention to how the information is organized. What tools does the author use to introduce the reader to their topic? Be sure to notice the author's use of the CARS Model at the bottom of the introduction.

[Broad Introduction to Topic] There are an estimated 1.2–5.5 million snakebites annually around the world, with approximately 20,000–94,000 attributed annual deaths [1]. *[Broad Background Context]* The annual cost burden of snakebites is significant, and worldwide morbidity and mortality represent a neglected global public health problem [1,2]. *[Narrowing the Topic]* In the United States, there are approximately 7,000–10,000 annual emergency department visits from snakebites [3], with 32–60% from venomous species, the majority being pit vipers [3,4], and 5–7 annual fatalities per year [3–5]. *[Indicating Importance of Research]* Individual expenses from antivenom and intensive care unit stays can cost upwards of $153,000 for a single patient [6].

[Specific Background Context] Snakes are poikilothermic animals whose activities, life cycle, and geographic distribution are closely tied to ambient temperature [7,8], and vary as a result of climate change [9]. *[Review of Recent Studies on Focused Topic]* Global climate change's effect on flora and fauna has been scientifically documented [10]. There is at minimum a 99% chance that average global temperatures have significantly increased since 1950 to present times [11], and this global warming or "climate energizing" frequently results in increased extreme weather patterns [12,13].

[Readying to Apply the CARS Model]

[Step 1: Establishing a Territory] These fluctuations of extreme weather (both drought and high precipitation) impact human health through an increase of natural disasters such as

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intense heat waves, droughts, and coastal flooding [14]. Likewise, climate change in North America is associated with changing distribution of venomous species that may lead to increased human morbidity [12,15,16]. *[Step 2: Establishing a Niche]* Climate change has been described as the greatest global threat of the twenty-first century [17], but the effect on snakebites in North America has not been examined.

[Further Specifying the Niche] There is some evidence for increased incidence of snakebites with warming temperatures, however interpretation is limited to Central American meteorological patterns [9], and the current literature on snakebites in the United States provide limited insight into this relationship [3,18]. *[Step 3: Occupying the Niche]* With the recent most severe drought and precipitation seasons ever recorded in California [19], we sought to correlate the relationship of climate trends with snakebite incidence in California over 20 years. *[Stating Research Hypothesis]* The study's primary hypothesis was that the severity of drought would correlate with increased incidence of snakebites and could be predicted by weather patterns.

Source: Phillips C., Lipman G., Gugelmann H, Doering K., & Lung D., "Snakebites and climate change in California, 1997-2017," *Clinical Toxicology*, 2019.

Notice the author's use of general to specific as they guided the reader to their focused research hypothesis. This article uses quantitative data and statistics to provide background information and context, but it also ties in the human experience by mentioning the health impacts and cost of snakebites. Compare this quantitative approach to the qualitative example below, observing any similarities and differences.

Sample of a Qualitative Introduction with Annotations

This next sample involves qualitative data, which is descriptive data involving language, themes, and ideas about the human experience. Many social sciences use this form of data, collected using surveys, interviews, and archival material. Pay close attention to how the order of information changes in this example, as does the overall structure.

[Broad Introduction to Topic] Indigenous peoples make up over 5% of the world's population, their territories comprise at least 20% of the land area of the planet, and these lands host an estimated 80% of the world's biodiversity (Stevens 2014). *[Narrowing of the Topic]* The relationships between indigenous land tenure and biological diversity is a challenging area of research, but several studies suggest that indigenous peoples' place-based values, institutions, and practices help promote biodiversity. *[Indicating Importance of*

Research and Step 1: Establishing a Territory] Indigenous lands often support higher native and rare species richness (Redford and Stearman 1993, Peres 1994, Arcese et al. 2014) and lower rates of deforestation (Nolte et al. 2013, Ceddia et al. 2015). *[Step 2: Establishing a Niche]* However, beyond a handful of studies looking at biodiversity and land use change, few researchers have looked at the broader ecological outcomes of indigenous land tenure.

[Specific Background Context] Indigenous peoples in Wisconsin manage forestlands and wildlife by merging professional standards of forestry and wildlife practice with their own culturally specific traditional ecological knowledge and land-based values. Although commercial and ecological forestry best-practices are utilized in tribal forestry programs, indigenous communities' own knowledge systems and values have a strong influence. This has often led to distinct forest and wildlife management goals, institutions, and practices (Trosper 2007, Dockry 2012, Reo and Whyte 2012). Indigenous forestry in the United States and Canada has several unique aspects (Bengston 2004). *[Introducing Case Study]* The Cherokee Nation of Oklahoma, for example, plants a diverse suite of culturally significant tree species and favors nonchemical methods of land clearing that promote the growth of food and medicinal plants while protecting harvesters' health (Carroll 2015).

[Introducing Secondary Case Study] Anishnaabe of Shoal Lake in Northwestern Ontario use succession management via landscape burning and timber harvest to promote biodiversity and support local livelihoods (Berkes and Davidson-Hunt 2006). Indigenous forestry outside North America includes managing sacred forest groves that promote bird diversity in Tibet (Brandt et al. 2013) and agri-forestry practices by Yoruba in Nigeria that integrate cash crops and trees, limiting soil erosion and increasing soil fertility (Warren and Pinkston 1998).

Indigenous Nations and nonindigenous forest and wildlife managers generally profess similar goals typically centered around sustaining resource values and yields, biological diversity, and ecosystem productivity despite some differences. *[Occupying the Niche]* Do these shared goals lead to similar outcomes on the lands managed by these two groups? Here, we explore that question within the specific context of northern Wisconsin where a mix of private industrial, private nonindustrial, and county, state, and national public forestlands surround four major "Indian reservations," i.e., lands under jurisdiction of Indigenous Nations in the U.S. (Fig. 1A).

[Stating Research Focus and Objectives] This study thus fits within existing literature concerning the foundations and outcomes of indigenous forest and wildlife management. Our focus here, however, is to quantify the ecological outcomes of forest and wildlife management and links between the two. *[Stating Research Question]* That is, have the land-based values and practices of indigenous peoples in Wisconsin led to significantly different ecological

> conditions on their forestlands relative to neighboring lands? ***[Brief Roadmap]*** In the discussion, we return to the question of how differences in values and goals contribute to the differences in outcomes we document.
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> Source: Waller, D., and Reo, N., "First stewards: ecological outcomes of forest and wildlife stewardship by indigenous peoples of Wisconsin, USA," *Ecology and Society*, 2018.

How did this example differ from the previous one? What writing tools did the author use, and were they effective? Rather than an inverted triangle structure, which moves from general to specific, this author opted for an hourglass structure, moving from broad, to specific, then back to broad. While this introduction still follows the CARS Model, Step 3 is separated from Steps 1 and 2 with case studies and background information.

Activity: Investigate Introductions in Your Discipline

Navigate to the SJSU Library Homepage (https://library.sjsu.edu/) and sign into your account. Click "Journals" and enter the name of a major journal in your discipline. For example, if you study aerospace engineering, you might search for *Progress in Aerospace Sciences.* Open your selected journal, and input key terms that interest you to identify three related research articles.

Examine the introductions, noting the similarities and differences. How are the introductions organized, and what information do they convey? Are the introductions long or short?

Next, find one more reputable journal within your discipline, repeating the same process to find three more articles. Do they follow the same structure as the previous journal? If not, what is different? These observations will further guide you in writing strong introductions that adhere to the standards of your academic discipline.

To take it a step further, find author guidelines for your selected journals to ensure that your research paper will have what it takes to get published should you choose.

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