

Research Writing Guide

Research Writing

Introduction

Research Writing at CVU

Research writing is often a component of course curriculum. Teachers use several strategies to teach research writing. Sometimes, students are assigned to write a research paper start to finish. Sometimes students work in groups and divide up the work: one taking the introduction and conclusion, others writing main ideas, and all working on finalizing a bibliography and citations. Sometimes students do research and make a presentation rather than write a paper. Making a presentation based on research requires the same organization: question and focus, outline, paragraphs (or slides), transitions, and cited sources.

The purpose of this research-writing model and corresponding guide is to provide one organized process drawing from the many steps and tools teachers use to help students learn to research and write a research paper. Teachers and students use this process start to finish or some incorporate steps of the process into current curriculum. For example, process components such as defining questions; using searches; writing paragraphs, outlines, or bibliographies can all be practiced within other project assignments.

This model is a summary of the research writing process as taught by many at CVU. Grad Challenge projects with research-based papers are expected to follow this process. Practicing these components whenever possible throughout high school will best prepare students for post-secondary life including work and college.

Excellent Resources at CVU

The CVU Library provides a wealth of information about research. This model for research writing is intended to be used in conjunction with the resources provided by our library. The library research how-to page covers finding a topic, searching for information, and bibliography and citation tools. The research writing model presented here was organized by several teachers and focuses on the specifics of the writing process: defining a topic, organizing information, writing in a clear and organized manner, and summarizing. Students are directed to refer to both resources as they learn to research and write.

CVU library Research How-To page: <http://library.cvuhs.org/research>

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Why write a research paper?

Purdue University maintains an up-to-date webpage called Purdue Owl that provides information about research writing and format requirements.

There are two types of research papers, each with a slightly different purpose.

Argumentative research paper: The argumentative research paper consists of an introduction in which the writer clearly introduces the topic and informs his audience exactly which stance he intends to take; this stance is often identified as the *thesis statement*. An important goal of the argumentative research paper is persuasion, which means the topic chosen should be debatable or controversial.

Analytical research paper: The analytical research paper often begins with the student asking a question (a.k.a. a research question) on which he has taken no stance (20 Owl).¹

Research and Grad Challenge, Internships, and Community-based Projects

Community members readily agree to help guide our students in their learning. It is the students' responsibility to show a certain level of interest and knowledge prior to reaching out to professional community members for advice, support, and experience. Proper preparation entails researching a topic and resources and formulating questions. It sets the tone for a worthwhile relationship with a community consultant that benefits both student and community member.

Being able to have confident conversations and ask quality questions of one's community consultant creates an educational that prepares students for future college and jobs. This preparation is the same preparation that students would be wise to undertake prior to participating in a job interview, when determining a major in college, and when presenting a new idea to one's employer.

¹ Purdue University 20Owl On-line Writing Lab, 2015. Retrieved from: <https://owl.english.purdue.edu/owl/resource/658/02/>

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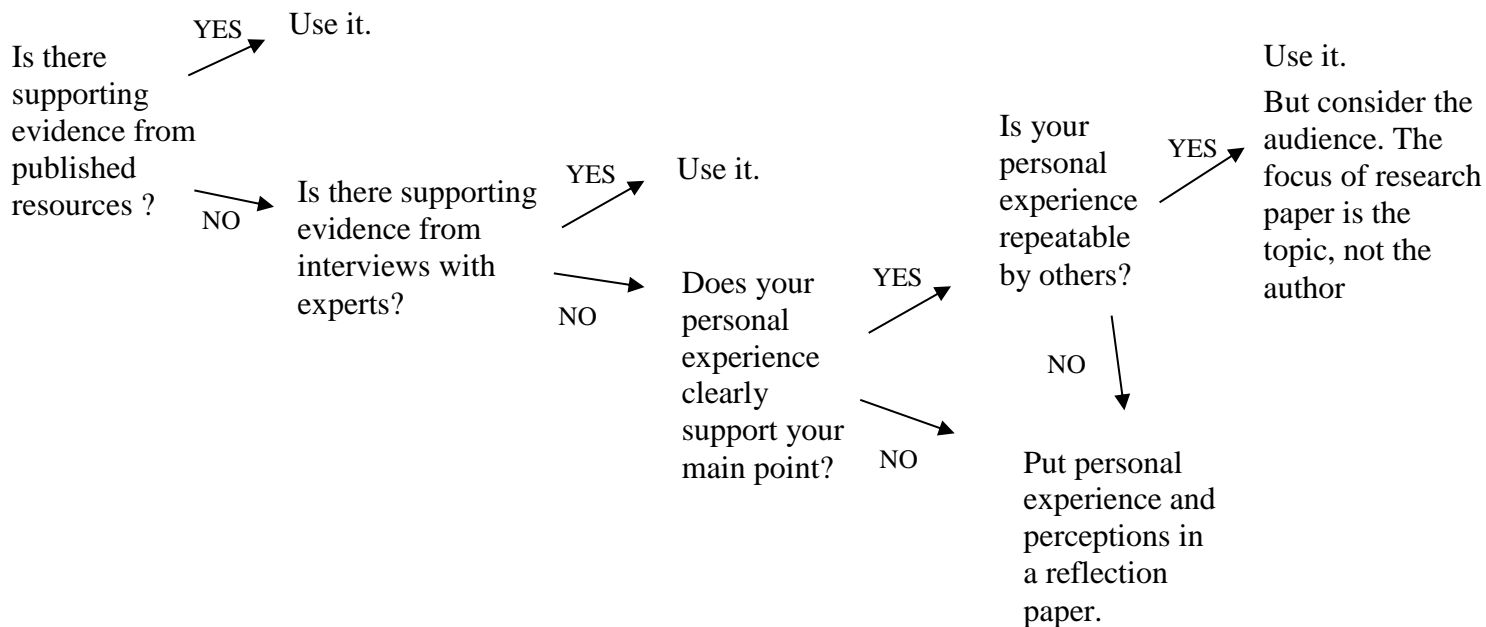
Research Paper vs. Tri-Search Paper

The difference between a research paper and CVU's older tri-search paper is that a research paper limits use of "I" statements and serves the purpose to understand what is known in the topic area. Research paper formats are the expected norm in college. The writer's personal experience is included in a section appropriately called Reflection. A tri-search paper is a vestigial CVU-designed writing format that allows students to incorporate personal experience as evidence into their writing. Recognizing that students are learning from three sources: published work, interviews, and their own experience, the tri-search paper serves the purpose of incorporating it all into one document. This latter style paper is not used commonly other than at CVU.

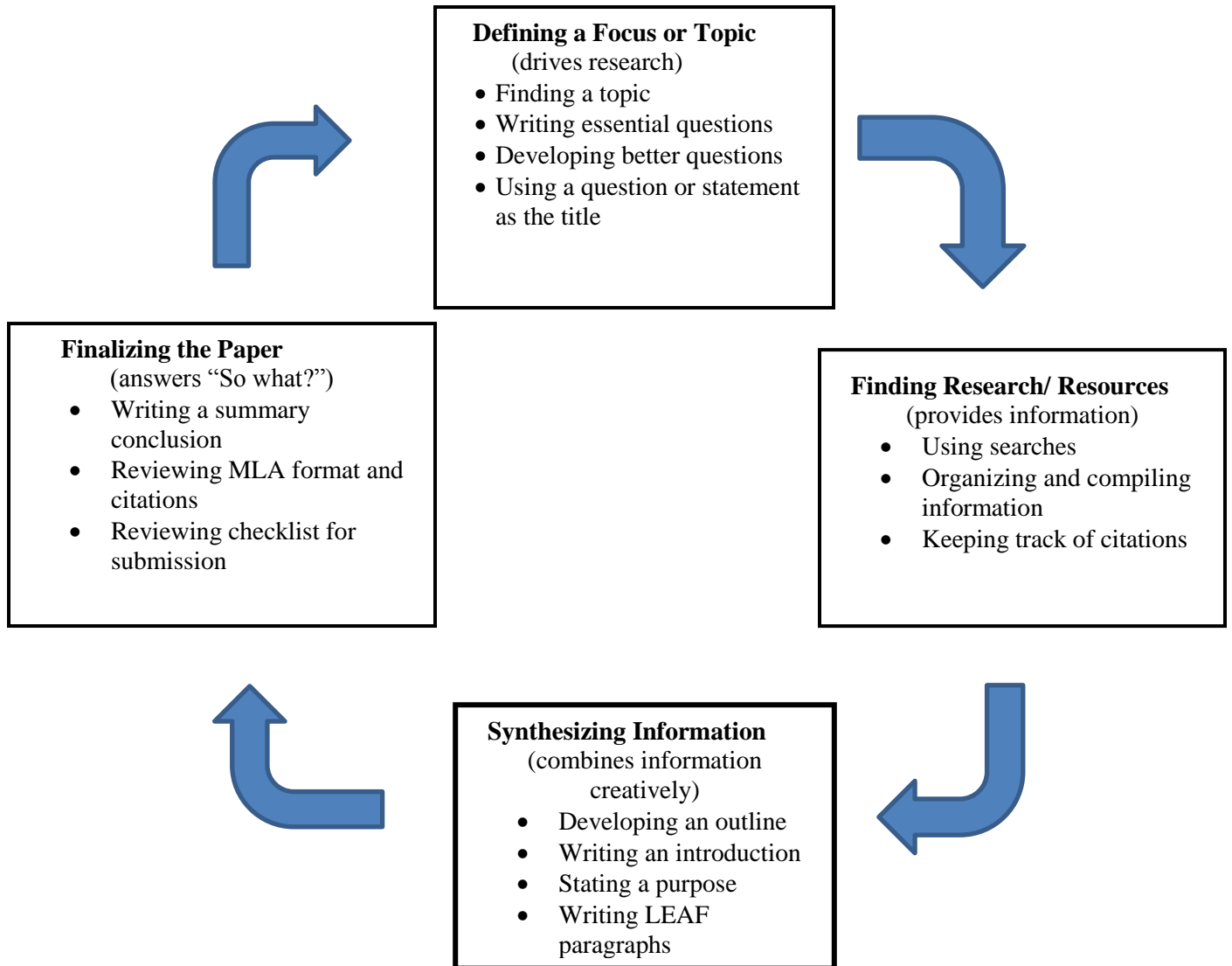
It is not uncommon, however, for an author to judiciously use personal experience in the introduction or conclusion of a paper. Personal experience, "I" statements, can help to bring the subject matter to a personal place where the reader can relate to the author's perspective. In these instances, "I" statements are only used when to specifically support a main point, to give meaning and motivation to crafting an essential question, or to provide reasoning for a research direction.

When to Use Personal Experience as Evidence to Support the Main Points in the Paper

[insert better pictograph – Peter]



Elements of Research Writing



Research Writing

Defining a Focus/Topic

Finding a Topic

It is much easier to write about something that you are interested in than it is to write about something that has been assigned. Usually there is some flexibility in all research assignments to decide on the particular aspect or angle that is interesting to you.

Often teachers provide ideas for research assignments. Think creatively about what is interesting to you. Before deciding, you may want to explore topics on line.

Write a list of topics that are interesting to you. In the right-hand column, write specific parts of that topic area that is interesting.

Examples of topic area and particular aspects of a topic area

Topic	Brainstorm interesting aspects of that topic area
Urban Planning	Cities and pollution Park designs Architecture How to encourage biking in cities
Parkour	How to train Competitions Status as a recognized sport History and development Common injuries Business model for bringing it to schools and communities
Veterinary medicine	Training/education Large animal vs. small animal Typical day for a vet Career choices Specific procedures and techniques Innovative techniques (non-traditional)

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Cooking/culinary arts	Using local foods Creating simple menus for young adults Kitchen design How to prepare fish How to become a chef
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Research Writing

Defining a Focus/Topic

Focus

The most effective way to create direction for your research is to start with a great question or thesis statement. Often students label their topic with a noun such as Law, or Animal Care, or Using an Electron Microscope. This topic title can be so broad it is overwhelming and when it is time to write the paper, can feel daunting.

Writing a great question or presenting a point of view in a thesis statement gives clear direction to the research and eventual outline and research paper.

Writing Essential Questions

What are research questions?

Research questions are clear, focused, concise, complex, and arguable questions around which you center your research. The questions should be about a topic that you, the writer, are genuinely interested in.

Why is a research question essential to the research process?

Research questions help writers focus their research by providing a path through the research and writing process. The specificity of a well-developed research question helps to avoid the “all about” paper and work toward supporting a specific and arguable thesis/purpose.

When designing a learning experience, it is important to begin by asking essential questions that will be answered as a result of this project.

Examples:

- What is the best process for building a guitar?
- What are the critical differences between the education system here and in Ghana?
- What are the intended benefits of an extended yoga practice?
- What comprises strategic planning behind a candidates' campaign?

These questions drive your research and help you design your learning experience.

Steps for Developing Research Essential Questions

- **Choose an interesting general topic.** Your topic might be scuba diving. Choose something that is interesting, has information, and you can gain knowledge about. You can't write everything about scuba diving, so which aspects will you focus on?
- **Start asking questions.** Taking into consideration the breadth of any topic, start asking open-ended questions that will yield more information, such as those questions that start with “why” or “how.” For example, “How does one go about becoming certified to scuba dive?” or “Why are certain equipment and training necessary for scuba diving safety?”
- **Do some preliminary research on the general topic.** Then do a few quick searches on the topic to narrow the focus. What else is interesting about scuba diving? You might be fascinated by the places in the world where scuba diving is reputedly amazing. Or you may be interested in jobs that require scuba certification. Or you may come upon a fascinating article that poses questions about environmental impact of scuba diving on coral reefs. These searches can help focus attention and interest.

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- **Consider your audience.** What level or depth of inquiry would work for this audience? Most school papers are read by an academic audience so think about how to capture their interest.
- **Evaluate your questions.** Are your questions clear? Do they ask one thing or more than one thing? Are they specific but not too narrow or too broad?
- **Narrow down and formulate your essential questions.** There is always more to learn, more to know. One paper is not going to cover an entire topic. For example, cake decorating could cover tools, history, traditions, cultural difference, science of baking, discovery of fondant, science of food coloring, impact of changing cultural perceptions on cake design, cost analysis for catering...etc. One paper will not and should not try to cover it all. Pick your essential questions carefully.

Now improve those questions.....

Developing Better Questions

The quality of the question determines the direction and quality of the research. Some questions are simple and straight-forward while others are more in-depth and require more information to answer it. Develop essential questions so they will yield more focused research and results.

Developed Questions might:

- **examine the context**
- **assess the consequences or impact**
- **compare two conditions or states**
-

Below are examples of simple questions and their more developed counterparts.

Initial Questions often ask what or how (process)		Developed Questions might: <ul style="list-style-type: none"> • examine the context • assess the consequences or impact • compare two conditions or states
How do you build a guitar?		<ul style="list-style-type: none"> ➤ What is the impact of using different woods in guitar construction? ➤ How does the shape impact the tone? ➤ Which type of strings works with different guitar styles? ➤ What impacted the development of different types of guitar music? ➤ How does guitar shapes impact style of playing? ➤ Have tools changed the way guitars are built?

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<p>What is ballroom dancing?</p>		<ul style="list-style-type: none"> ➤ How is ballroom dancing a reflection of culture? ➤ Which fitness and strength training actions help ballroom dancers? ➤ What is the impact of music development of ballroom dancing?
<p>What do they do in a microscopy lab</p>		<ul style="list-style-type: none"> ➤ What is the relationship between a microscopy lab and the hospital? ➤ How has the process for viewing slides changed over time? ➤ What is the impact of an electron microscope on the work of a hospital-based pathology lab? ➤ How does one prepare slides? ➤ What are the funding sources (financial model) for private vs. university microscopy imaging centers?
<p>What does a surgeon do?</p>		<ul style="list-style-type: none"> ➤ Which training is most effective: fellowships, coursework, on-line learning, or hands-on mentoring? ➤ How have surgical techniques changed in the last several decades? ➤ What is the impact of the internet on the day-to-day life of a surgeon? ➤ How have improvements in surgery impacted patients, both positive and negative?
<p>Why do people live in cities?</p>		<ul style="list-style-type: none"> ➤ How can cities be designed to increase livability? ➤ What is the impact of urban planning on healthy lifestyles? ➤ What are elements of a city that create its character? ➤ How is urban planning helping to solve

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<p>What is required for cross-fit workout?</p>		<p>some of the world's current issues?</p> <ul style="list-style-type: none"> ➤ What increases the positive impact of fitness training? ➤ What is the benefit of pairing different exercises together in a training program? ➤ How does one tailor cross-fit training for the individual?
<p>What is 52 Kids Foundation? (substitute: Boys & Girls Club, King Street Youth, any non-profit organization)</p>		<ul style="list-style-type: none"> ➤ What is the impact of community organizations on the well-being of children? ➤ How has the strategic actions of (name of organization) made a difference? ➤ How has funding or support from x impacted the types of programs and services offered? ➤ Why does x organization define their target audience as _____?

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Defining a Focus/Topic

Using a Question or Statement as the Title of the Paper

The title of the research paper should engage the reader to want to turn the first page and read the paper. It should also set a reasonable expectation of the content of the paper. Writing a title that includes a question can work to that effect. The writer may use one of the essential questions or an overriding question to establish the title.

The title of the research paper could also be a statement. The purpose of the title remains the same: in essence, it is what authentically markets the paper to the reader. A title such as, “Things Your Grandpa Never Did,” while peaking interest, gives the reader absolutely no idea what the research paper is about.

If your title does not engage the reader, why would the reader turn the page?

Samples:

Using a Question as the Title	Using a Statement as a Title
Can Urban Planning Create Better Living Conditions?	Using Urban Planning to Create Better Living Conditions
Should Parkour Jump Its Way Into the Olympics?	Parkour is the Next Olympic Sport
Is Acupuncture an Effective Health Care Practice for Animals?	Substituting Acupuncture for Traditional Veterinary Medical Techniques
Buddhism: How Does Meditation Impact One's Physical Well-being?	Buddhist Meditation Impacts One's Well - Being

Titles and Capitalization

The punctuation in titles follows particular rules. All words are capitalized except articles, pronouns, and small words. However, in short titles of three words or less, all words are capitalized.

The examples above show proper capitalization. For more information, see MLA format guidelines or the CVU Library website.

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Finding Research and Resources

Using searches

The CVU Library website has a very informative page on how to search for information.

<http://library.cvuhs.org/research>. This webpage includes information to help you plan your search, evaluate the resources, use databases, and link to bibliography resources.

It is important in your search for information to go beyond using google and Wikipedia.

Wikipedia is an open-source encyclopedia. The brilliance behind it is that it is open to everyone and therefore is made up of information that everyone knows. The challenge to its validity is that not everyone has accurate information and therefore some contributions may be posted before their truth is checked. Wikipedia may have information that is helpful but should only be used to direct you to more sources.

For example, if you are researching information about acupuncture and its effective use in veterinary medicine, you could look up acupuncture in Wikipedia which will lead you to other publications and resources.

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Finding Research and Resources

Organizing and Compiling Information

It is difficult to keep research organized. As you read articles and look for published resources, some will support your learning, while others may prove to be irrelevant (even though they may be interesting), poorly written, or not a valid resource (a blog, for example). In your initial phase of finding information, it is important to keep track of what has value to your research, where you found it, and to jot down a few notes so you can relocate it and refer to it when you need it. How do you keep track of all of your resources while you are learning, searching, and not yet sure of what your organizing thesis, questions, or paper outline may be.

Two methods of organizing information about resources and quotations are provided (See Format #1 and Format #2 for Resource Tracking forms.)

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Finding Research and Resources

Keeping track of citations

Research is conducted by many people throughout the world. We all learn from one another and share research. To do this effectively, many disciplines have agreed to document research using a common formatting style. There are two organizations with guidelines on how to format research papers for publication and, therefore, share them with others. Research papers use either MLA format (Modern Language Association) or APA format (American Psychological Association). While either format can be used, authors are usually directed by the discipline on which to use. MLA is used widely for research in humanities and science. APA format is used in research with psychology. They are very similar in guidelines, although when submitting something for publication, publishers are very particular about details.

CVU uses MLA format. CVU Library page provides a link to an MLA guide. Purdue OWL is another reference, although more extensive:

<https://owl.english.purdue.edu/owl/resource/747/01/>.

There are two types of bibliographies.

A **bibliography** includes *all* resources that the author reviewed regardless of whether or not the author has cited information from that resource in the research paper. The purpose of this type of bibliography is to give the reader an idea of the extent to which you have researched the topic. There are many who believe that even if you don't actually cite a resource, you have used it in developing your thinking.

The more common type of bibliography, the **Work Cited Bibliography or Work Cited**, is a list of resources that the author actually uses in the paper and has cited them. Having read them (or attended a conference or interviewed someone) is not enough to include something in the bibliography; the author actually has to refer to something from this resource in the paper with a citation. *CVU uses a Work Cited bibliography.*

It is easier to keep track of citations and resources for a bibliography if you do so as you go along. In the end, you may find that some of the resources were not particularly helpful and therefore, would not be included in the Works Cited bibliography. However, it is more likely that you will use information from your research and when finalizing your paper, will be faced with the task of relocating a resource that you are quoting because you need information for a complete and valid citation.

To avoid missing citations, it is helpful to be organized as you proceed with your project. Having a running page, that is easily accessible on-line, that builds with bibliography resources will be helpful when you include the correct citations in your paper.

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Put author, date, title, link, and simple summary.

A note about google docs

If there are multiple readers or contributors, using a site that can be shared with others is helpful. If Advisors or faculty are assessing your work or giving feedback, they need ready access to review progress.

A Note about Plagiarism

Another reason to be organized when researching a topic is to make certain to avoid plagiarism. Plagiarism is a very serious offense in which the writer implies that the words or ideas are his/her own. Being well-organized in your note-taking helps to keep quotes in quotations with citations.

For example, if you jot down notes from an article or book and later use those notes when you are writing your final paper, you must provide a citation of where you got this. If you read several resources and conduct an interview and summarize your thinking in your own words, you needn't provide a citation. "In your own words" is a tricky phrase because it is hard to believe we are writing something that hasn't been written before. Similarly, changing one or two words in a sentence does not make it your own words. Whenever there is doubt, cite the original source.

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Format 1: Resource Tracking Sources

This is a simple format that uses the Essential Question outline as the organizing structure for keeping track of sources. You could also organize this format according to main points in your paper.

Example:

Essential Research Question #1: *What are the important elements of urban planning?*

Identify Sources: Provide titles and authors and paste links. Write a short summary of what information this source provides for your topic (50 words max.) Numbering these makes it easy for referencing in your notes or drafts.

1. Ellis, Cliff. "History of Cities and City Planning." *Art of the Net*. Art on the Net, n.d. Web. 4 Nov. 2014 <<http://www.art.net/~hopkins/Don/simcity/manual/history.html>>

This gives a basic overview of the structure of cities. Good breakdown of three important elements: networks, buildings, and open spaces. Provides good outline for reasoning behind growth of cities.

Essential Research Question #2: What is the impact of urban planning/pollution on health?

2. "Urban Planning Could Cut Air Pollution Woes." Environmental Research web. IOP Publishing, 22 July 2010. Web. 4 Nov. 2014. [Note: need web address. Retrieved from:<http://environmentalresearchweb.org/cws/article/news/43274>.

This article makes connections to the impact of urban planning on environmental issues. This is an overview of a research into the effects of air pollution (caused by cars and exhaust) and cardio-vascular diseases. QUOTE: "Working with urban planners, Brauer argues that encouraging people to get out of their cars, and designing transport systems that separate cars from walking areas and cycle routes, can make a huge difference."

Article talks about ways to reduce air pollution in cities. Focuses on cycling instead of driving. Developed an app to map out city cycle routes with fewer hills, roads, and traffic.

Format 2: Resource Tracking Form

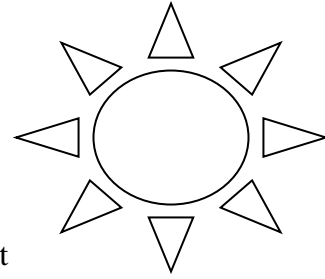
First step is general search for 20 resources. Pick top five that address your essential questions For selected resources, write formatted citation.

Research Writing

Synthesizing Information (actual writing part)

Developing an outline:

- Aids in the process of writing
- Helps you organize your ideas
- Presents your material in a logical form
- Shows the relationships among ideas in your writing
- Helps you see transitions from one main point to the next
- Defines boundaries and groups



Using your completed research tracking document complete the outline below before you begin writing. Consider the best order for presenting your essential questions and your findings for each. Do your essential questions flow from general to specific or abstract to concrete or have other patterns in them?

I. Introduction

A. Possible hook (a quotation, statistic, etc.):

B. Thesis & Organizer: This is the overall purpose of your research paper and the essential questions that you will be answering. (The essential questions do not need to be written as questions in the introduction.)

C. Thesis:

D. Organizer:

II. Body Paragraphs

A. 1st Essential Research

Question: _____

i. Supporting Evidence: List the types of sources you will be using here (facts, statistics, studies, testimonials, quotations, etc.)

ii. Analysis: Write a few sentences about the significance of this evidence. How does it support your main point or answer your essential question?

B. 2nd Essential Research Question: _____

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- i. Supporting Evidence:** List the types of sources you will be using here (facts, statistics, studies, testimonials, quotations, etc.)
- ii. Analysis:** Write a few sentences about the significance of this evidence. How does it support your main point or answer your essential question?

C. 3rd Essential Research Question: _____

- i. Supporting Evidence:** List the types of sources you will be using here (facts, statistics, studies, testimonials, quotations, etc.)
- ii. Analysis:** Write a few sentences about the significance of this evidence. How does it support your main point or answer your essential question?

D. 4th Essential Research Question: _____

- i. Supporting Evidence:** List the types of sources you will be using here (facts, statistics, studies, testimonials, quotations, etc.)
- ii. Analysis:** Write a few sentences about the significance of this evidence. How does it support your main point or answer your essential question?

III. Conclusion. In this final paragraph you will restate and extend your purpose.

What is the significance of your research? Jot down 3-5 ideas that could possibly be used in your conclusion. Think about the importance, power, or impact of your topic. Consider what new questions this research leads to.

IV. Work Cited Bibliography

Use organizing tools to track resources and citations. (See Finding Research/Resources section.)

Research Writing

Synthesizing Information (actual writing part)

Writing an Introduction

An effective initial paragraph:

- engages the reader (this is the hook)
- connects to the essential questions or thesis (this is the purpose of the paper)
- sets an expectation about what the paper will cover (this is the outline for the paper)

The Hook

Engaging the reader may be accomplished by using a hook. A hook can be a *descriptive statement* that uses descriptive language to bring the reader to a place to imagine the setting or the issue. Writers use descriptions of sights, sounds, smells, memories, etc. to do this. A hook could also be in the form of a *question*. This engages the reader to ponder exactly what the writer is wondering. The hook can also be a *provocative statement or data point* that sets up the dilemma being addressed.

Example of a hook (descriptive statement):

“At the Brookfield Zoo in Chicago, Illinois, a family of camels lives happily in their exhibit, but before Dr. Barbara Royal, an Alternative Medicine Veterinarian, began treatment, none of the camels were able to stand.”

Example of a hook (question):

“What is parkour? Is it a sport, a hobby, an art, or even a philosophy?”

Example of a hook (provocative statement or data point):

“City dwellers account for half of the world’s population, and the attraction toward city life isn’t expected to die down. The Massachusetts Institution of Technology predicts that two-thirds of the population will live in cities by 2050 (Karagianis).”

Essential Questions or Thesis

This is the purpose of your research or paper. This is either the questions you will be answering or the thesis or statement that you will be arguing. It is not necessary to actually write the words “the purpose of this paper...” While not wrong, you may simply eliminate those words as unnecessary and simply state your topic questions or statement.

Example:

“As the world continues to expand and create new cities, our health becomes more compromised.”

Example:

“The parkour community has differing opinions on how to best classify parkour. With such a split in the community it is hard to tell where the sport will and where it should go.”

An Expectations for What the Paper Covers

This is in essence the outline of your paper or the broad main points.

Example:

“In order to understand the relationship between urban planning and health one must know the science behind urban planning, the important history, and the solution to the current problem within cities today.”

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Example:

“To help come to a decision, the history, the type of training, and how the sport [parkour] is expanding will be explored.”

Example:

“To understand the medical impacts of acupuncture and how it can replace traditional medical techniques, it is essential to understand how pain is perceived by the body, how acupuncture is performed, and how acupuncture effectively treats pain.”

Samples of complete introductory paragraphs, including a hook, the questions or thesis (purpose), and the outline of the paper.

Sample Paper #1: Using Urban Planning to Create Better Living Conditions²

City dwellers account for half of the world’s population, and the attraction toward city life isn’t expected to die down. The Massachusetts Institution of Technology predicts that two-thirds of the population will live in cities by 2050 (Karagianis). This means that not only are more people flocking to cities to find more opportunities and wealth, but also new cities are being built all over the world. Many developing countries are rushing to build the next big cities in Africa, but the need for speed might create a slippery slope that brings in sickness to these young urban areas. Michael Brauer, a professor at The University of British Columbia in Vancouver said, “Urban and transportation needs to become smarter designing cities for people, not just for cars,” (Ravilious). He explains further how disease can be traced to the lack of urban planning throughout cities all over the world. As the world continues to expand and create new cities, our health becomes more compromised. With the help of smart and environmentally aware urban planning, this global wide issue can be resolved. In order to understand the relationship between urban planning and health one must know the science behind urban planning, the important history, and the solution to the current problem within cities today.

Sample Paper #2: Can Parkour Jump Its Way Into the Olympics?³

What is parkour? Is it a sport, a hobby, an art, or even a philosophy? Parkour can be best defined as moving from point A to point B in the most efficient way possible. People use running, jumping, rolling, climbing, and acrobatics to accomplish this goal. The parkour community has several differing opinions on how best to classify parkour. Some people like Sam Sanders, a writer for NPR who is very connected to the parkour community, think it is a self challenge: “Me, I’m a short guy, 5 foot 6,” Sanders said. “If there was someone technically as apt as me, but they happen to be 6 foot 3, they’re gonna get up a higher wall. And if I gauge my worth on being able to get up the highest wall, I’m never gonna feel like I’m good for anything.” (Sanders). Some of the younger community members like Paul Krastsios would love to see parkour as a competition. He stated. “It makes sense. It’s not hard. You just set up a course, you can do it, like whoever does the fastest,” (Sanders). With

¹ Excerpt taken from student paper, “Using Urban Planning to Create Better Living Conditions,” 2014. [need student name and permission to use]

² Excerpt taken from student paper, “Can Parkour Jump Its Way Into the Olympics?” 2014. [need student name Ben Logenbach and permission to use]

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such a split community, it is hard to tell where the sport will and where it should go. And then the very controversial questions: Should parkour become an Olympic event? To help come to a decision, the history, the type of training, and how the sport is expanding will be explored.

Sample Paper #3: Substituting Acupuncture for Traditional Veterinary Medical Techniques

At the Brookfield Zoo in Chicago, Illinois, a family of camels lives happily in their exhibit, but before Dr. Barbara Royal, an Alternative Medicine Veterinarian, began treatment none of the camels were able to stand. Camels are known for getting arthritis as they age, which can often lead to extreme pain and the inability to walk, but immediately after Dr. Royal began treatment, the camels stood up, and have remained healthy since. It is easy to guess that extensive and expensive surgery and rugs were used to treat the camels, but Dr. Royal's only treatment was acupuncture, an alternative medical technique ("Claws"). Alternative medicine can be defined as "medical and therapeutic techniques, practices, and beliefs that have not been proven by scientific method," are not taught in medical school, and are rarely covered by healthcare (Blaser). Acupuncture is one of the most well-known, yet least understood alternative medical techniques. It is stereotypically thought of as a man lying on a table with thousands of giant needles randomly stabbed into him. With this picture, in mind, it is hard to imagine that acupuncture can reduce pain, inflammation, and nausea, as well as improve many other aspects of health. Fortunately, a normal acupuncture treatment consists of only twenty to thirty needles. However taking the maximum dose of Advil every four to six hours may still seem like a better option, so why do patients choose acupuncture? To understand the medical impacts of acupuncture and how it can replace traditional medical techniques, it is essential to understand how pain is perceived by the body, how acupuncture is performed, and how acupuncture effectively treats pain.

Research Writing

Synthesizing Information (actual writing part)

Stating a Purpose

The purpose statement is often embedded in the introduction (see previous section Writing an Introduction). It is not necessary to write the words, “The purpose of this paper or project is...” Rather, the author should use the essential questions or proposed thesis to state the purpose of the research.

The assertions connected to the thesis are the main body paragraphs. This sets up the outline of the paper.

Add visual examples of sample intros with arrows and highlighting pointing out what is where.

Sample #1 (purpose statement highlighted in red)

Despite popular rumors to the contrary, there is not merely one way to solve the popular toy called the Rubik’s Cube. According to Scott Vaughan, Professor of Mathematics at Florida’s Miami-Dade College, there are “approximately forty-three quintillion permutations [or positions]” (Gaming),” with many of these permutations leading to solutions. With so many possibilities for the solution of the cubed toy, learning to solve the puzzle can be an arduous task, even for a person who is skilled with many types of math equations and algorithms. **For its simplistic design, ease of use, and consideration paid to the time it will take the user to solve the puzzle, Keith Gorman’s *Third Solution* is the best choice for beginning Rubik’s gamers.**

Sample #2

The nervous system, including both the brain and the periphery, is composed of two types of cells known as neurons and glial cells (Abbott). **Within each of these cells is tau, a cell component that is being studied by leading researchers because of its proposed link to degenerative neurological disorders like dementia and Alzheimer’s.** My research with Dr. Link at the University of Vermont Medical Center focused on tau in neurons. A neuron consists of three main parts: the cell body, the dendrites and the axon (Appendix, 1). The dendrites are tree-like extensions that receive input from other cells. The single axon transmits signals to other neurons or muscle cells, and the gap found between an axon of one neuron and the dendrite of another is known as a synapse (Abbott). It is on the edge of this gap that tau resides, and it is because of the small space that tau has the ability to grow and distort, leading to the aforementioned disorders. When tau is removed and pressurized, essentially removing any chance of its growth, neurons stay contained and disorders are kept dormant.

Sample #3

Graphic Design is all around us; not only in advertisements or in newspapers, but on the streets, in our homes, and on our clothes. Every logo, every magazine, and every sign has been carefully thought out by graphic designers. They choose shapes, colors, and fonts to communicate a meaning. Take for example, a stop sign. It has been designed to draw attention, not only by the bright red color, but the unique shape and the large bold font. Options like these for designers are infinite. While some focus

Research Writing

solely on print, such as stationary or magazines, others choose web design, a relatively new form of design all together. Computers have brought design to a new medium, and it is expanding every day. **Because of these myriad possibilities, a successful graphic designer must learn the history of the craft, the many different styles and mediums in which design happens, and then choose how and why they want to display a given design.**

Using “I” statements in the Introduction

The general rule is to use first person pronouns with caution. The topic of the paper is the focus, not the author. In the following two examples, eliminating use of “I” does not alter the meaning or impact of the statement. Information about personal experiences may be included in a reflection section.

Example:

“When I was working with Dr. Metcalf in the animal sciences lab....”

Becomes:

“Dr. Metcalf at the Animal Sciences Lab at [place] stated....”

Example:

“I wanted to understand better the process for building a guitar, the impact of using different materials, and how the styles have evolved over time.”

Becomes:

“Different decisions impact the style, sound, and structure of an instrument. In order to best understand the choices, a guitar maker must learn about the process of building a guitar, the impact of using different materials, and how the styles have evolved over time.”

For more information about using “I” statements, see the summary of responses from college writing centers.

Tips for Writing Introductions

- Avoid using “I” or “my”
- Avoid using the phrase “the purpose of this project...”
- Avoid using “my essential questions are...”
- Essential questions can be written as questions or statements and they form the outline of the paper.

Research Writing

Synthesizing Information (actual writing part)

Writing LEAF paragraphs

A structure for writing paragraphs (remembered with the acronym LEAF) provides for smooth reading and transitions from one main point to the next. Structure allows for the reader to understand the main points and how they are supported by evidence. It also provides a logical paragraph construction sequence to analyze the meaning of the supporting evidence, importance or lack thereof. And essential to easy-to-follow reading, paragraphs finish with either a summary statement or a transition to the next paragraph.

LEAF stands for:

L is Lead.	This is the essential question or main point. What are you answering or asserting?
E is evidence	Evidence is found in many sources and is what is most commonly cited in research papers. Evidence can be found in published work, interviews, conference presentations, videos, and any valid source of information (see CRAAP test on CVU library research web page for determining valid sources of information: http://library.cvuhs.org/research). What supports or disagrees with your main point? What answers the question?
A is analysis	Why is this evidence significant? How does this evidence matter? This sentence is about the impact of the evidence. Does it support the main point or disagree with it? Easiest way for students to address this is to ask: what jumped out from the evidence that supported my assertion? Why is this evidence relevant? How does that relevancy support the assertion? [[Michelle will give me material for LEAF. Write it down as “I chose this because.... And then write a sentence without using “I chose this because...”]
F is Finisher	This sentence is a summary statement. It is a little tricky to write without reiterating. It can also be a bridge or connector to the next paragraph, a transition to the next main point.

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This format is designed to help organize paragraphs.

L is Lead. This is the essential question or main point.

E is evidence What supports or disagrees with your main point? What answers the question?

A is analysis Why is this evidence significant? How does this evidence matter?

F is Finisher This sentence is a summary statement, a bridge or connector to the next paragraph, or a transition to the next main point.

Research Writing

Finalizing the Paper (answers “So what?”)

Writing a summary conclusion

The function of a conclusion is to reiterate thesis and the main points that were made in the paper. Often the summary looks similar to the introduction in that it contains the thesis or questions, the main points, and leads the reader to a summary conclusion. Sometimes the author gives one last thought that resonates with the reader.

As in the introduction, “I” statements should be used carefully. If using the first-person voice adds meaning to the summary, then use it. In most cases, however, your personal experience as a writer is not the focus of the paper and therefore should be reserved for the reflection section, if there is one.

A summary conclusion may define the impact of learning. Given what we know now, what is the expected impact of that learning. What might come about as a result of answering these questions.

A summary conclusion may also end with a new question. Once the author summarizes the main points, this may lead to asking another question. This is evidence of innovative thinking. Innovation happens when we creatively consider new possibilities based on what we know or what we think to be true or accepted as true. Changing perspective, considering another possibility is evidence of innovation. Only then are we truly adding to the collective knowledge and wisdom of our time.

Research Writing

Finalizing the Paper

Reviewing MLA format and citations

This is a tedious part of writing a research paper, one that no one ever leaves enough time for. Before submitting a final paper, the author must review for:

- Spelling
- Punctuation
- Grammar
- Paragraph structure
- Organization
- Format of title page
- Citations
- Work cited bibliography is complete

Reviewing checklist for submission

Research Writing

Assessment rubrics for research writing
