

CHAPTER 6: INTRODUCTION TO RESEARCH WRITING

***Communication Essentials for College* by Jen Booth, Emily Cramer & Amanda Quibell**

- 6.1 – Introduction to Research Writing
- 6.2 – Developing a Research Topic
- 6.3 – The CRAAP Test and Evaluating Resources
- 6.4 – Popular vs. Scholarly Sources
- 6.5 – Primary and Secondary Sources
- 6.6 – Search Terms
- 6.7 – Internet Searching Tips
- 6.8 – Boolean Operators

Except where otherwise noted, this OER is licensed under CC BY-NC 4.0 (<https://creativecommons.org/licenses/by-nc/4.0/>)

Please visit the web version of *Communication Essentials for College* (<https://ecampusontario.pressbooks.pub/gccomm/>) to access the complete book, interactive activities and ancillary resources.

6.1 - INTRODUCTION TO RESEARCH WRITING

Learning Objectives

- Identify reasons to research writing projects.
- Outline the steps of the research writing process.

Why was the Great Wall of China built? What have scientists learned about the possibility of life on Mars? How does the human brain create, store, and retrieve memories? Who invented the game of hockey, and how has it changed over the years?

You may know the answers to these questions off the top of your head. If you are like most people, however, you find answers to tough questions like these by searching the Internet, visiting the library, or asking others for information. To put it simply, you perform research.

You probably perform research in your everyday life. When your boss, your instructor, or a family member asks you a question that you do not know the answer to, you locate relevant information, analyze your findings, and share your results. Locating, analyzing, and sharing information are key steps in the research process, and in this chapter, you will learn more about each step. By developing your research writing skills, you will prepare yourself to answer any question no matter how challenging.

Reasons for Research

When you perform research, you are essentially trying to solve a mystery—you want to know how something works or why something happened. In other words, you want to

answer a question that you (and other people) have about the world. This is one of the most basic reasons for performing research.

But the research process does not end when you have solved your mystery. Imagine what would happen if a detective collected enough evidence to solve a criminal case, but she never shared her solution with the authorities. Presenting what you have learned from research can be just as important as performing the research. Research results can be presented in a variety of ways, but one of the most popular—and effective—presentation forms is the research paper. A research paper presents an original thesis, or purpose statement, about a topic and develops that thesis with information gathered from a variety of sources.

If you are curious about the possibility of life on Mars, for example, you might choose to research the topic. What will you do, though, when your research is complete? You will need a way to put your thoughts together in a logical, coherent manner. You may want to use the facts you have learned to create a narrative or to support an argument. And you may want to show the results of your research to your friends, your teachers, or even the editors of magazines and journals. Writing a research paper is an ideal way to organize thoughts, craft narratives or make arguments based on research, and share your newfound knowledge with the world.

Exercise 1

Write a paragraph about a time when you used research in your everyday life. Did you look for the cheapest way to travel from Toronto to Vancouver? Did you search for a way to remove gum from the bottom of your shoe? In your paragraph, explain what you wanted to research, how you performed the research, and what you learned as a result.

Research Writing and the Academic Paper

Researching and writing a long paper requires a lot of time, effort, and organization. However, writing a research paper can also be a great opportunity to explore a topic that is particularly interesting to you. The research process allows you to gain expertise

on a topic of your choice, and the writing process helps you remember what you have learned and understand it on a deeper level.

Research Writing at Work

Knowing how to write a good research paper is a valuable skill that will serve you well throughout your career. Whether you are developing a new product, studying the best way to perform a procedure, or learning about challenges and opportunities in your field of employment, you will use research techniques to guide your exploration. You may even need to create a written report of your findings. And because effective communication is essential to any company, employers seek to hire people who can write clearly and professionally.

Writing at Work

Take a few minutes to think about each of the following careers. How might each of these professionals use researching and research writing skills on the job?

- Medical laboratory technician
- Small business owner
- Information technology professional
- Freelance magazine writer

A medical laboratory technician or information technology professional might do research to learn about the latest technological developments in either of these fields. A small business owner might conduct research to learn about the latest trends in his or her industry. A freelance magazine writer may need to research a given topic to write an informed, up-to-date article.

Exercise 2

Think about the job of your dreams. How might you use research writing skills to perform that job? Create a list of ways in which strong researching, organizing, writing, and critical thinking skills could help you succeed at your dream job. How might these skills help you obtain that job?

Steps of the Research Writing Process

How does a research paper grow from a folder of brainstormed notes to a polished final draft? No two projects are identical, but most projects follow a series of six basic steps.

These are the steps in the research writing process:

1. Choose a topic.
2. Plan and schedule time to research and write.
3. Conduct research.
4. Organize research and ideas.
5. Draft your paper.
6. Revise and edit your paper.

Each of these steps will be discussed in more detail later in this chapter. For now, though, we will take a brief look at what each step involves.

Step 1: Choosing a Topic

To narrow the focus of your topic, you may try freewriting exercises, such as brainstorming. You may also need to ask a specific research question—a broad, open-ended question that will guide your research—as well as propose a possible answer, or a working thesis. You may use your research question and your working thesis to create a research proposal. In a research proposal, you present your main research question, any related sub-questions you plan to explore, and your working thesis.

Step 2: Planning and Scheduling

Before you start researching your topic, take time to plan your researching and writing schedule. Research projects can take days, weeks, or even months to complete. Creating a schedule is a good way to ensure that you do not end up being overwhelmed by all the work you have to do as the deadline approaches.

During this step of the process, it is also a good idea to plan the resources and organizational tools you will use to keep yourself on track throughout the project. Flowcharts, calendars, and checklists can all help you stick to your schedule.

Step 3: Conducting Research

When going about your research, you will likely use a variety of sources—anything from books and periodicals to video presentations and in-person interviews.

Your sources will include both primary sources and secondary sources. Primary sources provide firsthand information or raw data. For example, surveys, in-person interviews, and historical documents are primary sources. Secondary sources, such as biographies, literary reviews, or magazine articles, include some analysis or interpretation of the information presented. As you conduct research, you will take detailed, careful notes about your discoveries. You will also evaluate the reliability of each source you find.

Step 4: Organizing Research and the Writer's Ideas

When your research is complete, you will organize your findings and decide which sources to cite in your paper. You will also have an opportunity to evaluate the evidence you have collected and determine whether it supports your thesis, or the focus of your paper. You may decide to adjust your thesis or conduct additional research to ensure that your thesis is well supported.

Tip

Remember, your working thesis is not set in stone. You can and should change your working thesis throughout the research writing process if the evidence you find does not support your original thesis. Never try to force evidence to fit your argument. For example, your working thesis is “Mars cannot

support life-forms.” Yet, a week into researching your topic, you find an article in the New York Times detailing new findings of bacteria under the Martian surface. Instead of trying to argue that bacteria are not life forms, you might instead alter your thesis to “Mars cannot support complex life-forms.”

Step 5: Drafting Your Paper

Now you are ready to combine your research findings with your critical analysis of the results in a rough draft. You will incorporate source materials into your paper and discuss each source thoughtfully in relation to your thesis or purpose statement.

When you cite your reference sources, it is important to pay close attention to standard conventions for citing sources in order to avoid plagiarism, or the practice of using someone else’s words without acknowledging the source. Later in this chapter, you will learn how to incorporate sources in your paper and avoid some of the most common pitfalls of attributing information.

Step 6: Revising and Editing Your Paper

In the final step of the research writing process, you will revise and polish your paper. You might reorganize your paper’s structure or revise for unity and cohesion, ensuring that each element in your paper flows into the next logically and naturally. You will also make sure that your paper uses an appropriate and consistent tone.

Once you feel confident in the strength of your writing, you will edit your paper for proper spelling, grammar, punctuation, mechanics, and formatting. When you complete this final step, you will have transformed a simple idea or question into a thoroughly researched and well-written paper you can be proud of!

Exercise 3

Review the steps of the research writing process. Then answer the questions on your own sheet of paper.

1. In which steps of the research writing process are you allowed to change your thesis?
2. In step 2, which types of information should you include in your project schedule?
3. What might happen if you eliminated step 4 from the research writing process?

Key Takeaways

- People undertake research projects throughout their academic and professional careers in order to answer specific questions, share their findings with others, increase their understanding of challenging topics, and strengthen their researching, writing, and analytical skills.
- The research writing process generally comprises six steps: choosing a topic, scheduling and planning time for research and writing, conducting research, organizing research and ideas, drafting a paper, and revising and editing the paper.

Attribution & References

Except where otherwise noted, this chapter has been adapted from “11.1 The Purpose of Research Writing (<https://mlpp.pressbooks.pub/writingsuccess/chapter/11-1-the-purpose-of-research-writing/>)” In *Writing For Success* by University of Minnesota Libraries Publishing licensed under CC BY-NC 4.0.

6.2 - DEVELOPING A RESEARCH TOPIC

Learning Objectives

After completing this tutorial, you will be able to:

- identify some goals to keep in mind as you choose a topic,
- choose an approach to further develop, broaden or narrow your topic,
- search for resources to get you started.

The following videos give you information about what to keep in mind at the start of any research assignment.

Research Process Overview:

Watch Developing a research topic – Research process overview on YouTube (1 min) (<https://youtu.be/IOBSTtobR7E>)

Research Process Overview

Research Process Overview (Text version)

Choose which process best describes how to choose a research topic.

1. First decide on your topic, do background research, and finally do in-depth research.

2. Think of several topic ideas, do background research, then choose a topic.
3. Think of several topic ideas, do some background research, choose a topic and form it into a question that can be answered.
4. Think of a topic you know something about, and find some sources to support what you know.

Check your Answer:¹

Goals of Choosing a Topic:

Watch Developing a research topic – Goals on YouTube (1 min) (<https://youtu.be/SPnJQmOxwbQ>)

Goals of Choosing a Research Topic

Goals of Choosing a Research Topic (Text version)

Which of the following should you consider before choosing your topic?

1. Topic meets the assignment requirements.
2. Topic is interesting to me and to my readers.
3. Sources are available on this topic.
4. All of the above.

Check your Answer:²

Brainstorming

Watch Developing a research topic – Brainstorming for ideas on YouTube (1 min) (<https://youtu.be/jbqDjFLFX9A>)

Topic Brainstorming

Topic Brainstorming (Text version)

Brainstorming is a process best done only in your head. True or False?

Check your Answer:³

Watch Developing a research topic – Brainstorming approaches on YouTube (1 min)
(https://youtu.be/Za8D_Mdb2FI)

3 Ways to Approach a Research Topic

3 Ways to Approach a Research Topic (Text version)

Which of the following is true?

1. There are only 3 ways to approach a research topic.
2. These 3 approaches will help me to think about my topic in a new way.
3. I should use all 3 of these approaches in my research essay.

Check your Answer:⁴

Broadening and Narrowing your Topic:

Watch Developing a research topic – Brodening/narrowing on YouTube (1 min)
(<https://youtu.be/1NkeCtk1nrY>)

Narrowing Topics

Narrowing Topics (Text version)

It might be difficult to find sources if your topic is too narrow. True or false?

Check your Answer:⁵

Helpful Resources:

Watch Developing a research topic – Resources on YouTube (1 min) (<https://youtu.be/tMLNbb71z04>)

Overview of Topics

Overview of Topics (Text version)

1. Google and Wikipedia can be helpful when you are getting an overview of topics. True or false?
2. Which of the following is true?
 - a. A topic with a narrow scope is easier to research.
 - b. You may adapt your thesis statement as you find sources during your research.
 - c. Your course description is a good place to find topics for research.
 - d. It is best to finalize your thesis statement before you begin researching.

Check your Answers:⁶

Further Resources:

For further information on this topic:

- The Learning Portal by College Libraries Ontario. The Writing Hub – Choose a Topic.
- Purdue Online Writing Lab (OWL). Invention: Starting the Writing Process.

Contact your Library for help!

Attributions & References

This chapter (text, H5P activities and embedded videos) was adapted from “Developing a Research Topic (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/developing-a-research-topic/>)” In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0. / Adaptations include adjusted formatting, headings, accessibility updates and removal of introductory video. Attributions for this chapter’s videos were noted in a final video, which have been transcribed into text below for consistency and “Credits” video removed.

References & attribution from this section’s videos:

Canadian money is pretty, by Rick. Used under a Creative Commons Attribution 2.0 Generic (CC by 2.0) available at <https://flick.kr/p/jYGnx>

Ice Hockey, by Jalan’s Place. Used under a Creative Commons Attribution 2.0 Generic Non-Commerical (CC BY-NC 2.0) license. Available at <https://flic.kr/p/pEEFbt>

Lightbulb!, by Matt Wynn. Used under a Creative Commons Attribution 2.0 Generic (CC by 2.0) available at <https://flick.kr/p/81DJrf>

Laurence Ferlinghetti’s lecture notes, by Shawn. Used under a Creative Commons Attribution 2.0 Generic Non-Commerical (CC BY-NC 2.0) license. Available at <https://flic.kr/p/pTYjza>

More questions than answers, by Tom Waterhouse. Creative Commons Attribution 2.0 Generic Non-Commerical (CC BY-NC 2.0) license. Available at <https://flic.kr/p/b6WaSP>

Osos Polares by Zombmax. Used under a Creative Commons Attribution No-derivs 2.0 C BY-ND 2.0) license. Available at <https://flic.kr/p/8VXosw>

Question by Steven Lilley. Used under a Creative Commons Attribution 2.0 Share alike Generic (CC BY-SA 2.0) license. Available at <https://flic.kr/p/7KFqnJ>

Shakespeare by Joe Campbell. Used under a Creative Commons Attribution 2.0 Share alike Generic (CC BY-SA 2.0) license.. Available at <https://flic.kr/p/5TNnP1>

Student with pen, by CollegeDegrees360. Used under a Creative Commons Attribution 2.0 Share-Alike Generic (CC BY-SA 2.0) license. Available at <https://flic.kr/p/cEJmqQ>

Trump Tower by Matthew Robey. Used under a Creative Commons Attribution 2.0 Generic (CC BY 2.0) license. Available at <https://flic.kr/p/oj7tX9>

US Army Africa photo used under a Creative Commons Attribution 2.0 Generic (CC BY 2.0) license. Available at <https://flic.kr/p/RmU6Gw>

Wildfire State Farm. Used under a Creative Commons Attribution 2.0 Generic (CC BY 2.0) license. Available at <https://flic.kr/p/jMTCMW>

Notes

1. #3 is correct. Taking the time to think through your options and formulate a question that interests you will help you succeed at your assignment.
2. 4. All of the above
3. False. It's good to write things down when you brainstorm.
4. #2 is correct! These are 3 of the common ways to focus a topic.
5. True.
6. 1. True, 2. b & c

6.3 - THE CRAAP TEST AND EVALUATING RESOURCES

Learning Objectives

After completing this tutorial you will be able to:

- identify key components to evaluating information,
- apply the CRAAP test as an evaluation tool.

Introduction

This chapter will outline some key concepts to consider when analyzing internet sources. This knowledge will help you do better research for assignments and in daily life.

Watch Evaluating internet sources and fake news with nLibraries on YouTube (8 mins) (<https://youtu.be/fh9vDmIzznI>)

The importance of evaluating sources:

Watch Why is this important on YouTube (1 min) (<https://www.youtube.com/watch?v=7jZVj-ijx1Y>)

Evaluating Sources I

Evaluating Sources I (Text version)

Knowing how to evaluate information is only useful for school assignments. True or false?

Check your Answer: ¹

Consider the source:

Watch Consider the source on YouTube (1 min) (<https://www.youtube.com/watch?v=hrCOMRAseSM>)

Evaluating Sources II

Evaluating Sources II (Text version)

Where can you look to find author information for a website:

1. About
2. Information
3. All of the above
4. None of the above

Check your Answer: ²

Motivation & Bias:

Watch Motivation/bias on YouTube (2 mins) (<https://www.youtube.com/watch?v=HBkFMKjoMP0>)

Evaluating Sources III

Evaluating Sources III (Text version)

Shortening the URL to find the homepage of the site that you're viewing might also give you information about any groups or organizations that this information is aligned with. True or false?

Check your Answer: ³

Check the evidence:

Watch Evidence on YouTube (1 min) (<https://www.youtube.com/watch?v=KYeCP9nTK1c>)

Evaluating Sources IV

Evaluating Sources IV (Text version)

The more verifiable evidence that a site uses, the more likely that the information that site is trying to convey is accurate. True or false?

Check your Answer: ⁴

Timeliness:

Watch Timeliness on YouTube (1 min) (https://www.youtube.com/watch?v=pvAMuqI_h40)

Evaluating Sources IV

Evaluating Sources IV

Which of the following is important when evaluating a source from the web:

1. The author or creator
2. The date posted
3. Supporting evidence
4. All of the above
5. None of the above

Check your Answer: ⁵

The CRAAP/RADAR Test:

Watch Evaluating sources: CRAAP/RADAR on YouTube (1 min) (<https://youtu.be/hd5zhcZrQ3A>)

Evaluating Sources VI

Evaluating Sources VI (Text version)

Which of the following is NOT part of the CRAAP test?

1. Currency
2. Relevance
3. Authority
4. Aptitude
5. Purpose

Check your Answer: ⁶

What makes news “fake”?

Watch Fake news on YouTube (2 mins) (<https://www.youtube.com/watch?v=92DdYk5nRBM>)

Evaluating Resources VII

Evaluating Resources VII (Text version)

You can trust the headline to represent the content of an online news source. True or false?

Check your Answer: ⁷

Conclusion: be a skeptic!

Watch Summary on YouTube (1 min) (<https://www.youtube.com/watch?v=NcyaTEmJqhE>)

Evaluating Sources IX

Evaluating Sources IX (Text version)

Fill in the missing words

Evaluating your sources helps you construct stronger (a) _____ and make better (b) _____.

Check your Answer: ⁸

Questions?

Contact your college's library!

Attribution & References

This chapter (text, H5P activities and embedded videos) was adapted from “The CRAAP Test and Evaluating Resources (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/evaluating-information-sources/>)” In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0. / Adaptations include accessibility updates. Attributions for this chapter’s videos were noted in a final video, which have been transcribed into text below for consistency and “Credits” video removed.

References & Credits from videos in this section:

Except for screenshots or otherwise indicated, photographs are used under an Unsplash.com license.

Slide 2: Wei, H. (Photographer). [Untitled image of thinking person] [Photograph].

Retrieved from <https://unsplash.com/@herlifeinpixels?photo=aso6SYJZGps>

Slide 6: Lark, B. (Photographer). [Untitled image of person holding calendar]

[Photograph]. Retrieved from <https://unsplash.com/search/calendar?photo=BRBjShcA8D4>

Slide 9: Silas, J. (Photographer). [Untitled image of book with magnifying glass and pen] [Photograph]. Retrieved from

https://unsplash.com/@joaosilas?photo=I_LgQ8JZFGE

Slide 10: Simcoe, J. (Photographer). [Untitled image of book with magnifying glass and pen] [Photograph]. Retrieved from <https://unsplash.com/search/ask-more-questions?photo=GxnyOLTxCr8>

Blakeslee, S. (2010). *Evaluating information – Applying the CRAAP test*.
http://www.csuchico.edu/lins/handouts/eval_websites.pdf

International Federation of Library Associations. (2017). *How to spot fake news*.

<https://www.ifla.org/publications/node/11174>

International Federation of Library Associations. (2017). *How to spot fake news*.

<https://www.ifla.org/publications/node/11174>

Manadlios, J. (2013). RADAR: An approach for helping students evaluate internet sources. *Journal of Information Science*, 39(4), 470-478. doi: 10.1177/016555151347889

Notes

1. False
2. 3. If author information is not clearly stated elsewhere, check the "about" or "information" pages of a website may provide additional clues.
3. True. Shortening the url to find the homepage of a site is a helpful way to trace back the source.
4. True. The more evidence to support a claim, the better!
5. 4. All of the criteria listed are important for evaluating internet resources.
6. Aptitude is not part of the CRAAP test.
7. False. You should always read beyond the headline.
8. (a) arguments (b) decisions.

6.4 - POPULAR VS. SCHOLARLY SOURCES

Learning Objectives

By the end of this tutorial, you should be able to:

- articulate the differences between popular and scholarly periodicals,
- use these differences to help identify whether or not an article is popular or scholarly when doing a research assignment for class.

What is a Periodical?:

Watch Part one: What is a periodical? on YouTube (3 mins) (<https://youtu.be/g4T5OXIvsKc>)

Popular vs. Scholarly # 1

Popular vs. Scholarly # 1 (Text version)

Which of the following is NOT an example of a periodical?

1. The Toronto Star
2. Anne of Green Gables
3. Maclean's Magazine

4. The Canadian Journal of Criminology and Criminal Justice

Check your Answer:¹

Popular vs. Scholarly Periodicals:

Watch Part two: Popular VS. scholarly periodicals on YouTube (2 mins) (<https://youtu.be/fqyllHyUf2k>)

Popular vs. Scholarly # 2

Popular vs. Scholarly # 2 (Text version)

Scholarly periodicals are ...

1. Written by journalists, use common language, and do not rely on advertising dollars.
2. Written by scholars, use complex language, and do not rely on advertising dollars.
3. Written by freelance writers, use complex language, and rely on advertising dollars.

Check your Answer:²

Finding Scholarly Articles:

Watch Part three: Finding scholarly articles on YouTube (4 mins) (<https://youtu.be/eijYwcIx64o>)

Popular vs. Scholarly # 3

Popular vs. Scholarly # 3 (Text version)

This type of periodical article can often be found in publications with one or more of these words in its title: Journal, Research, Review or Studies?

- a. Scholarly article
- b. Popular article

Check your Answer:³

Questions?

Contact your library for help!

Attributions & References

This chapter (text, H5P activities and embedded videos) was reused from “Popular vs. Scholarly Sources (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/popular-vs-scholarly-sources/>)” In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0.

Notes

1. b. *Anne of Green Gables* is a book, not a periodical.
2. b.
3. a.

6.5 - PRIMARY AND SECONDARY SOURCES

Learning Objectives

After completing this tutorial, you will be able to:

- distinguish between primary and secondary sources,
- use each type of source appropriately in your research.

Introduction:

Watch Primary and secondary sources with nLibraries on YouTube (5 mins)
(<https://www.youtube.com/watch?v=Ba8oqb4nCrQ>)

Primary Sources: What are they?

Watch Primary vs. secondary sources: Primary sources defined on YouTube (1 min)
(<https://youtu.be/bMIR5wMro6o>)

Primary and Secondary Sources I

Primary and Secondary Sources I (Text version)

Which of the following are characteristics of primary sources?

- a. Created by direct witnesses
- b. Original documents
- c. Analyze the work of others
- d. Both A & C
- e. Both A & B

Check your Answer:¹

Primary Source Examples:

Watch Primary vs. secondary sources: Primary source examples on YouTube (1 min)
(<https://youtu.be/3dXRSn3LMZI>)

Primary and Secondary Sources II

Primary and Secondary Sources III (Text version)

For a news item to be considered a primary source, it should be written at the time an event is occurring. True or false?

Check your Answer:²

When to use Primary Sources:

Watch Primary vs. secondary sources: When to use primary sources on YouTube (1 min)
(<https://youtu.be/pAy7G4Wn3vY>)

Primary and Secondary Sources III

Primary and Secondary Sources III (Text version)

Primary sources are useful for which of the following purposes?

1. evidence for theories
2. provide perspectives on topics
3. focal point for discussion
4. all of the above

Check your Answer:³

Secondary Sources: What are they?

Watch Primary vs. secondary sources: Secondary sources defined on YouTube (1 min)
(<https://youtu.be/JZH9zAbbqgA>)

Primary and Secondary Sources IV

Primary and Secondary Sources IV (Text version)

Which of the following are characteristics of secondary sources?

- a. They analyze primary sources.
- b. They are a step removed from what they are describing.
- c. They are usually published works.
- d. All of the above.

Check your Answer:⁴

Secondary Source Examples:

Watch Primary vs. secondary sources: Examples on YouTube (1 min) (<https://youtu.be/oxpIuaxIFzM>)

Primary and Secondary Sources V

Primary and Secondary Sources V (Text version)

Which of the following would NOT be considered a secondary source for a paper on Lake Erie yellow perch populations?

- Raw numeric data containing yellow perch counts from Ontario's Ministry of Fisheries and Natural Resources.
- Journal article titled, "Estimating the size of historical yellow perch runs in Lake Erie" by Chad Meenings and Robert Lackey.
- The Encyclopedia of Great Lakes Fish* edited by Davis Allorman.
- All of the above.

Check your Answer:⁵

When to use Secondary Sources:

Watch Primary vs. secondary sources: When should you use secondary sources on YouTube (1 min) (<https://youtu.be/7r0c9EigaJk>)

Primary and Secondary Sources VI

Primary and Secondary Sources VI (Text version)

Secondary sources are good places to find raw, unanalyzed data. True or false?

Check your Answer:⁶

Primary and Secondary Sources Compared:

Watch Primary and secondary sources compared on YouTube (1 min) (https://youtu.be/4FbxjQ0rp_w)

Primary and Secondary Sources VII

Primary and Secondary Sources VII (Text version)

Which of the following would be considered a secondary source (check all that apply)?

- a. Hamlet by Shakespeare
- b. Article titled “Hamlet’s dramatic arras” by Rebecca Olson
- c. Article titled “Communication in the 21st Century: The Blog” by Mark Kellen
- d. Transcripts of published blogs
- e. A documentary on theories of changing owl migratory patterns.
- f. Data describing population numbers of the spotted owl.

Check your Answer:⁷

Primary and Secondary Sources: The Importance of Context

Watch Primary vs. secondary sources: Context on YouTube (1 min) (<https://youtu.be/lkFFajTXjus>)

Primary and Secondary Sources VIII

Primary and Secondary Sources VIII (Text version)

If a source is considered primary for one research project, it will be considered primary for all other research projects. True or false?

Check your Answer: ⁸

Primary and Secondary Sources: Review

Watch Primary vs. secondary sources: Review on YouTube (1 min) (<https://youtu.be/qCZRMXMs4QE>)

Primary and Secondary Sources IX

Primary and Secondary Sources IX

Which type of source usually is viewed as analysis or interpretation?

- a. Primary
- b. Secondary
- c. Neither

Check your Answer: ⁹

Questions:

Contact your library for support.

Attributions & References

- Content originally created by Jen Klaudinyi for CLIP, modified by Jaclyn Chambers Page for Niagara College Libraries.
- This chapter (text, H5P activities and embedded videos) was adapted from “Primary and Secondary Sources (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/primary-and-secondary-sources/>)” In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0. Adaptations include updates for improved accessibility. Attributions noted for this chapter’s videos were noted in a final video, which have been transcribed into text below for consistency and “Credits” video removed.

Attributions from videos in this section:

- Images used in videos were used under Unsplash license

Notes

1. e.
2. True.
3. d. Primary sources can be used as focal points for discussions, evidence for theories, and/or to gain perspective on a topic.
4. d.
5. a.
6. False. Raw, unanalyzed data is a primary source.
7. b, c, & e are all secondary sources.
8. False. A source's classification as primary or secondary can change depending on the topic that

you're studying.

9. b. Secondary sources usually interpret or analyze primary sources.

6.6 - SEARCH TERMS

Learning Objectives

After completing this tutorial, you will be able to:

- describe why creating good search terms is important,
- identify different strategies for creating effective search terms.

Introduction

Watch Generating search terms – Introduction on YouTube (1 min) (<https://youtu.be/PNDB95UVvwg>)

How Effective Search Terms Help

Watch Generating search terms – How can this help me? on YouTube (1 min) (<https://youtu.be/eJoC0-HWBBk>)

Generating Search Terms I

Generating Search Terms I (Text version)

What are the advantages of having effective search terms?

1. They improve my search results
2. They help me explore my topic
3. They make my project more interesting
4. All of these answers are correct.

Check your Answer: ¹

The Research Process

Watch Generating search terms – The searching process on YouTube (1 min)
(<https://youtu.be/8f7sUYXYmnk>)

Generating Search Terms II

Generating Search Terms II (Text version)

Once I have chosen my topic, I should not change it while I'm searching for sources. True or false?

Check your Answer: ²

Identify Main Ideas

Watch Generating search terms – Identify main ideas on YouTube (1 min)
(https://youtu.be/pR0t_puJWVA)

Generating Search Terms III

Generating Search Terms III (Text version)

After you have written a topic sentence/question, which of the following should you do FIRST when brainstorming search terms?

1. Search your library website to find results.
2. Pick out the words from your topic sentence/question that represent the main ideas.
3. Search the internet to find results.
4. Formulate your thesis.

Check your Answer: ³

Brainstorming Search Words

Watch Generating search terms – Brainstorming on YouTube (1 min) (<https://youtu.be/SdUIGkZtIRk>)

Generating Search Terms IV

Generating Search Terms IV (Text version)

What is one reason why brainstorming search terms is important?

1. Articles on the same topic always use the same terms.
2. You can't use the same terms to search library databases that you use to search the internet.
3. Authors with different viewpoints will use different terms to describe the same topic.
4. None of these are correct.

Check your Answer: ⁴

Synonyms and Related Words

Watch Generating search terms – Summary of related ideas on YouTube (1 min)
(<https://youtu.be/ngiLRd-d4fo>)

Generating Search Terms V

Generating Search Terms V (Text version)

Brainstorming search terms...

1. tells me everything I need to know about my topic.
2. answers my research question.
3. is a waste of time.
4. gives me helpful starting points for further searching.

Check your Answer:⁵

Questions?

Contact your library.

For further information on this topic:

- The Learning Portal by College Libraries Ontario. The Writing Hub – Choose a Topic (<https://tlp-lpa.ca/research/choose-a-topic>).

Attribution & References

This chapter (text, H5P activities and embedded videos) was adapted from “Generating

Search Terms (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/generating-search-terms/>)" In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0. Adaptations include updates for improved accessibility. Attributions noted for this chapter's videos were noted in a final video, which have been transcribed into text below for consistency and "Credits" video removed.

References & Credits used in videos on this page.

- Horse rider photo by Priscilla Du Preez on Unsplash available at: <https://unsplash.com/photos/544ZtqLDJ98>
- Wrench photo by Matt Artz on Unsplash. Available at <https://unplash.com/photos/lt2GzPIOAmc>
- Transcription by The drawing is signed, 'Electrical World, N.Y.' [Public domain], via Wikimedia Commons. Available at: https://upload.wikimedia.org/wikipedia/commons/b/b0/Transcription_using_cylinder_photograph.png
- The difference between a hurricane a cyclone and a typhoon, by allispossible.org.uk. Used under a Creative Commons Attribution Non-Commerical 2.0 Generic license (CCB-NC 2.0). Cropped from original. Available at <https://flic.kr/p/hvoJdg>
- More questions than answers, by Tom Waterhouse. Used under a Creative commons Attribution Non-Commerical 2.0 Generic license (CC by-NC 2.0). Available at <https://flic.kr/p/b6WaSP>

Notes

1. d. Effective search terms will give you all of these advantages.
2. False. Searching may lead you to discover new things about your topic. Feel free to change and adapt your topic as you search.
3. b. You should start listing words that represent the main ideas in your research topic/question.
4. c. Authors may use different terms to talk about the same subject, so it's important to have a list of similar words to try.
5. d. Brainstorming search words will save you time and help you research more successfully.

6.7 - INTERNET SEARCHING TIPS

Learning Objectives

- apply advanced search techniques to find appropriate internet resources,
- develop strategies to search the internet efficiently.

Introduction

Watch Internet searching tips: Introduction on YouTube (1 min) (https://youtu.be/xhxsUT_RH7M)

Google Basics

Watch Internet searching tips: Google basics on YouTube (1 min) (https://youtu.be/fApyg_ODNVg)

Google Search Basics

Google Search Basics (Text version)

Which of the following is NOT true about Google searching:

- a. Punctuation is generally ignored
- b. Spelling matters
- c. AND is assumed between search terms
- d. Capitalization doesn't matter

Check your Answer: ¹

Search Strategies

Watch Internet searching tips: Search strategies on YouTube (1 min) (<https://youtu.be/HqrrqX7Rdg4>)

Search Strategies I

Search Strategies I (Text version)

True or false? It's better to not be too specific when you're searching the web.

Check your Answer: ²

Watch Internet searching tips: More strategies on YouTube (1 min) (<https://youtu.be/pcWAFD82Y9U>)

Search Strategies II

Search Strategies II (Text version)

True or false? Putting quotation marks around a phrase will INCREASE the overall number of your search results.

Check your Answer: ³

Watch Internet searching tips: Even more search strategies on YouTube (1 min) (<https://youtu.be/vmuM7phwDhk>)

Search Strategies III

Search Strategies III (Text version)

What should you add to your search to eliminate words from your search results:

- a. – (minus)
- b. & (ampersand)
- c. % (percent)
- d. None of these

Check your Answer: ⁴

Google Advanced Search Features

Watch Internet searching tips: Google advanced on YouTube (1 min) (<https://youtu.be/JNHmGcF9SAM>)

Search Strategies IV

Search Strategies IV (Text version)

Which of the following is NOT a filter in Google advanced search:

- a. last updated date
- b. font
- c. file type
- d. language

Check your Answer: ⁵

Other Search Engines to Try

Watch Internet searching tips: Other search engines on YouTube (1 min)
(<https://youtu.be/485aC0ozWE0>)

Search Strategies V

Search Strategies V (Text version)

True or false? Duckduckgo doesn't track you when you search.

Check your Answer: ⁶

Review

- Use advanced options
- Be specific!

- Try different search engines!

Questions?

Contact your library.

Attributions & References

This chapter (text, H5P activities and embedded videos) was adapted from “Internet Searching (<https://ecampusontario.pressbooks.pub/ncinfoskills/chapter/internet-searching-tips/>)” In *Niagara College Libraries + Learning Commons Information Skills Online Handbook* by Jackie Chambers Page and Siscoe Boschman, licensed under CC BY 4.0. Adaptations include updates for improved accessibility. Attributions for this chapter’s videos were noted in two videos (References & Credits), which have been transcribed into text below for consistency and videos removed.

References & Credits from videos in this section:

Google. (2017). How to search on Google. <https://support.google.com/websearch/answer/134479?hl=en>

Google. (2017). Refine web searches. <https://support.google.com/websearch/answer/2466433>

Except for screenshots or otherwise indicated, photographs used in videos are used under Unsplash license.

Slide 10: Simcoe, J. (Photographer). [Untitled image of book with magnifying glass and pen] [Photograph]. <https://unsplash.com/search/ask-more-questions?photo=GxnyOLTxCr8>

Notes

1. b. spelling is automatically corrected
2. False. You should try to be as specific as possible for best results.
3. False. The overall of number of your search results will decrease.
4. a. A minus sign will removed unwanted words or phrases from your search results.

5. b. You cannot limit by font.
6. True. Duckduckgo doesn't track you when you search.

6.8 - BOOLEAN OPERATORS

Learning Objectives

This chapter shows you how to

- apply Boolean operators (and, or, not) to help you narrow your search results

Boolean Operators – And, Or, & Not

Databases and search engines use Boolean logic. Named after mathematician George Boole (1815-1864), Boolean logic is the key to successful database searching. By using the Boolean operators **AND**, **OR**, and **NOT** (sometimes expressed as **AND NOT**) between search words, a researcher can focus or broaden a search query to create sets of results. The operators are normally expressed in uppercase letters so as not to confuse them with the words used as non-operators.

When you see a simple search box and type in words, the search engine generally inserts the **AND** operator between every word. By using an advanced search option, you are encouraged to think about the way you want to focus your search.

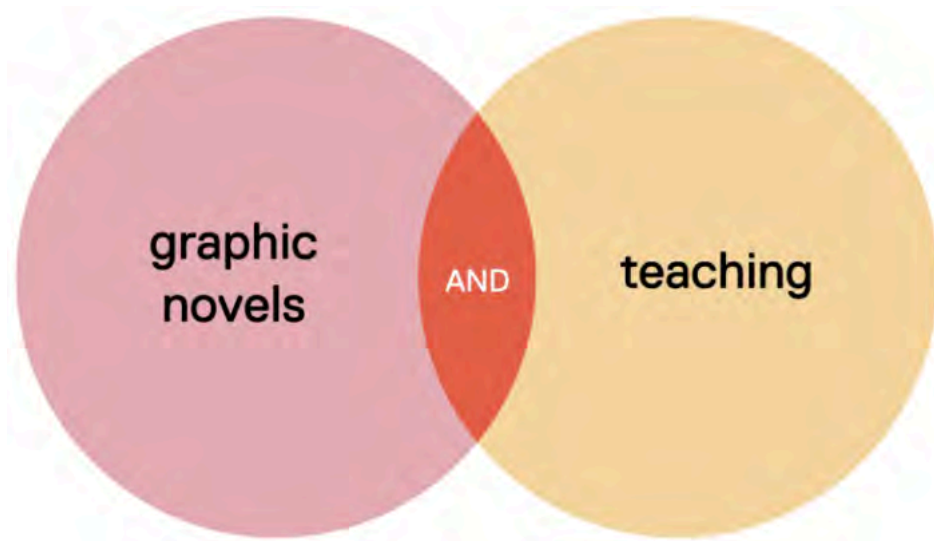
Watch Chapter 8 Video 3 about Boolean searches on YouTube (3 mins)
(<https://www.youtube.com/watch?v=lro7vTLiwn4>)

The And Operator

The operator **AND** is used to **narrow** or **focus** a search by finding a subset of results containing all of the keywords or search terms. For simplicity, the example depicted by the Venn diagram that follows contains only two key concepts and no synonyms or

related terms. On the left, the pinkish-coloured circle labelled *graphic novels* represents the hits (articles, books etcetera in the database) that contain the words *graphic novels*. A second, yellowish-coloured circle on the right, represents all of the hits that contain the word *teaching*. The two sets of searches overlap since a small number of the hits contain both *graphic novels AND teaching*. This subset is shown in the diagram in the orange portion where the two circles or sets overlap. It is labelled *AND* because it represents the portion of the hits from the two concepts that contain both the first AND the second concept. The AND operator is the most commonly used Boolean operator.

Example Venn diagram using the AND operator: **graphic novels AND teaching**

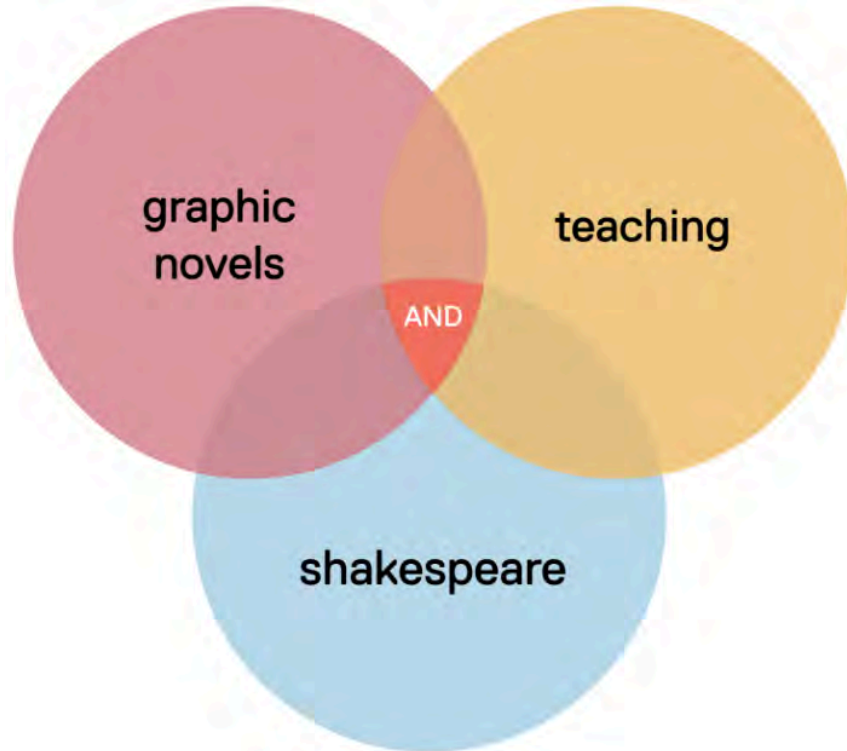


“graphic novels AND teaching” by Aaron Tucker & Paul Chafe is licensed under CC BY 4.0

If you decide that you still have too many results when you searched for only two concepts, you can refine your search by adding a third distinct concept. This will narrow your results considerably because it is more precise. The following Venn diagram demonstrates what happens when you modify the search used in the previous example by adding a third keyword: Shakespeare. [Note that most databases allow both upper and lower case when searching for proper names.]

In this example the set of hits dealing with Shakespeare are represented by the blue-coloured circle shown beneath the pinkish circle representing *graphic novels* and the yellowish circle representing *teaching*. All three circles overlap to some extent since one, two, or all three keywords may be applied to the same articles, books etcetera in the database. In this example, the small, almost triangular-shaped orange patch labelled *AND* in the centre of the diagram represents the relatively small subset of hits that contain all three concepts: *graphic novels AND teaching AND shakespeare*.

Example of a Venn diagram using the AND operator and three distinct concepts:
graphic novels AND teaching AND shakespeare



“graphic novels AND teaching AND shakespeare” by Aaron Tucker & Paul Chafe, is licensed under CC BY 4.0

The OR Operator

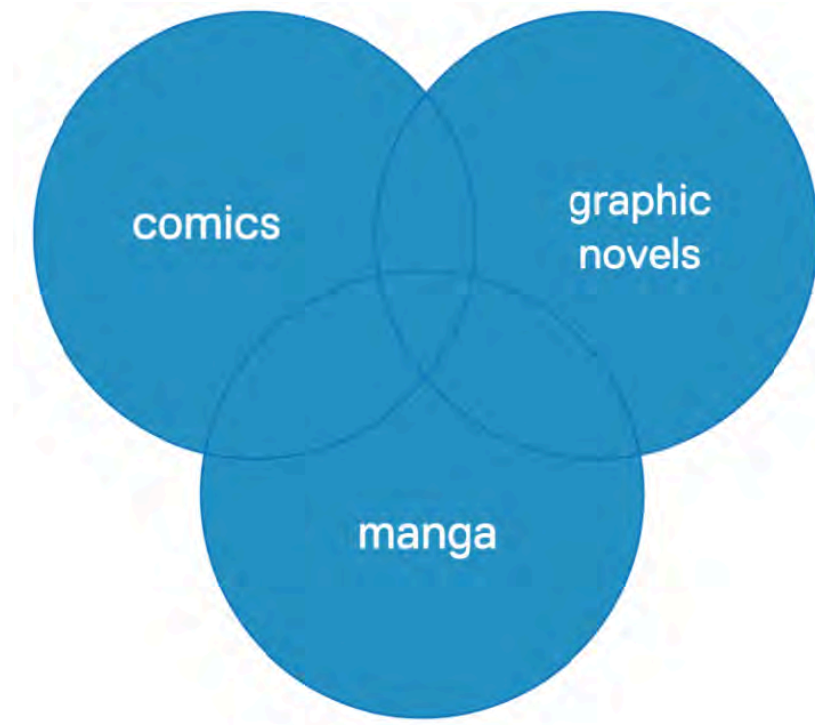
The operator OR is used to **broaden a search** by combining two or more variables into one set. The operator OR is used to combine synonyms and variant spellings (e.g. theatre OR theater) of a word into one search. Any one of the search terms must be present. More than one can be present.

A Venn diagram (also known as a set diagram) can visually display how a database’s search engine handles search terms and the Boolean operators. Each term is searched separately and all of the relevant hits (articles, books etcetera identified in the database as containing that term) are grouped into separate sets, one set per term as represented by each circle. In the diagram that follows, three different related terms are being searched: *comics* shown by the circle in the upper left, *graphic novels* shown by the circle in the upper right, with *manga* shown by the circle at the bottom of the diagram. Some of the hits also contain one or both of the other search terms and this is represented by the overlapping of the circles. In the example, since the OR operator is

being used, the search finds all of the hits containing any of terms and combines them all into one large pool of results. Because all of the results in all three sets are included, they are all represented using the same blue colour.

To reiterate, by broadening a search using the OR operator, the results of a search can be much larger and more comprehensive than a set of results from a search that does not make use of related terms, synonyms, and, variant spellings joined with the OR operator.

Example Venn diagram using the OR operator: comics OR graphic novels OR manga



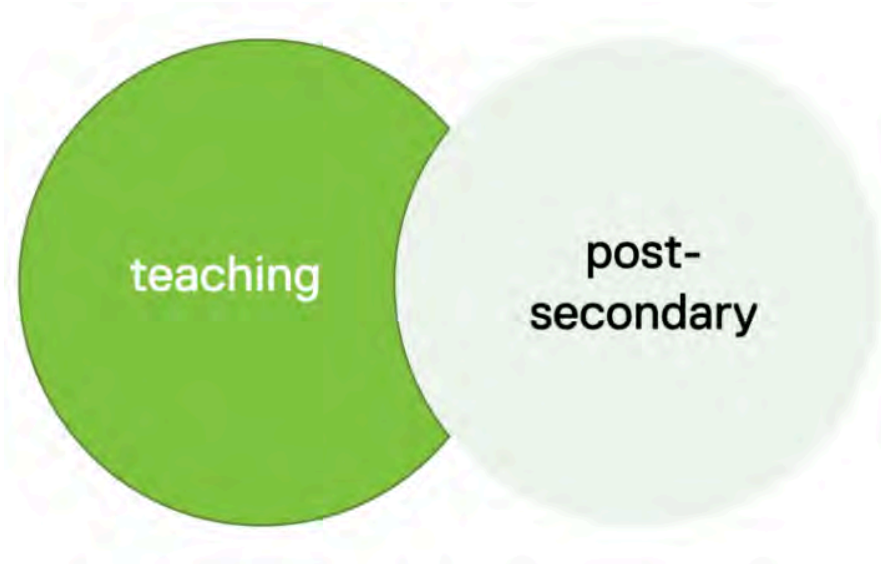
“comics OR graphic novels OR manga” by Aaron Tucker & Paul Chafe, is licensed under CC BY 4.0

The NOT Operator

The operator NOT is used when you want to search for the first term and to exclude items that contain the second term. Teaching is a very broad term that is often qualified by broad levels such as primary, elementary, intermediate, secondary, higher, or, post-secondary. While you may want to specify a level that you want to look for by trying a search such as *teaching AND secondary*, you could decide to qualify or narrow the search by excluding a level that you are not interested in by using the *NOT* operator. The following Venn diagram illustrates the concept *teaching* as shown by the circle in green on the left. The concept *post-secondary* is shown by the light grey-coloured circle on the

right.. While there is some overlap with both concepts shared by some articles and books, when you use the *NOT* operator in the example of *teaching NOT post-secondary*, you exclude those hits that had both *teaching AND post-secondary* (not shown). That is why the desired set on teaching resembles a circle with a piece removed. [Remember that the *NOT* operator is sometimes called *ANDNOT*. The Help information in a database will give you directions if you can simply use *NOT* or have to use *ANDNOT* as your Boolean operator.]

Example of a Venn diagram using the NOT operator: teaching NOT post-secondary



“teaching NOT post-secondary” by Aaron Tucker & Paul Chafe, is licensed under CC BY 4.0

Your Turn!

Activity

Revise your key concepts using AND and OR Boolean operators. Nest synonyms within parentheses.

The following is a sample search result for an article in an online journal:

Example

How graphic novels support reading comprehension strategy development in children

by Brenna, Beverley

Literacy, 07/2013, Volume 47, Issue 2

... The primary research questions related to children's applications of metacognitive reading comprehension strategies as well as the potential for graphic novels to support the students...

Journal Article: Full Text Online

More Information

Related Articles

- The first element is the **title of the article**, "How graphic novels ... in children"
- The second element is the **name of the author** in inverted order (last name, first name)
- The third element is the **source**, in this case a journal called *Literacy*. More specifically, it is volume 47, issue 2, of the journal that was published in July 2013. When you cite a source like this, you must include some or possibly all of the information about the source, depending upon the requirements of the citation style that you are using in your paper (MLA, APA, Chicago).
- The fourth element is a **brief excerpt** from the content of the text, such as part of the abstract or a summary of what the article is about.
- The fifth element tells you the **type of source**, in this case a journal article that is available in full text online.
- If you have a More information element, it may show you more information about the resource, including page numbers, DOI (Digital Object Identifier—like a URL that is unique for this article, but more permanent), and keywords used to describe the content of the article.

The next sample search result is for a book published in electronic format:

Example

Graphic novels and comics in the classroom: essays on the educational power of sequential art

by Syma, Carrye Kay; Weiner, Robert G; Smith, Robert V; More...

2013

1. I. Significance of graphic novels and comics: then and now. Using comics to teach the language arts in the 1940s and 1950s / Carol L...

eBook: Full Text Online

- The first element is the **title of the book**, including both the title proper, and following the colon, the subtitle of the book.
- The second element is a complete **list of authors or creators** displayed by last name, first name and middle initial, with individual creators separated by semi-colons. The presence of the *More* option indicates that one or more names are omitted from the display. (Note that it is unclear what roles these creators played. Are they editors, contributing editors, authors of a part of the book, or illustrators? Viewing the cover image or possibly the title page and table of contents may be necessary to clarify the roles of the named creators. It may not be necessary to name all of them depending on your chosen citation style.)
- The third element is the **year of publication**, 2013.
- The fourth element is a **note about the book** that in this case contains the beginnings of the list of contents, starting with part 1.
- The fifth element tells you the **format** i.e. this is an ebook that is available in full-text online.

In order to cite this work properly, you may need more information than what is shown. For example, the name of the publisher is required by most citation styles. If your search engine includes a citation tool, you may find suggested ways to cite this work. Remember that the suggested citation may contain errors and you should carefully verify the information that it provides.

Attributions & References

Except where otherwise noted, this chapter is adapted from “Chapter 8: Gathering Research and Establishing Evidence (<https://pressbooks.library.ryerson.ca/writehere/chapter/chapter-overview-4/>)” In *Write Here, Right Now: An Interactive Introduction to Academic Writing and Research* by Aaron Tucker and Paul Chafe, Ryerson University, licensed under CC BY 4.0. The section on Boolean Operators has been condensed & reused in this text, adaptations include small updates for accessibility and CC licensing.