CHAPTER ONE

THE PROCESS


NERVOUS YET? DON'T WORRY. WE'RE HERE TO HELP.

IN THIS CHAPTER, WE'LL DISCUSS HOW TO DIVE INTO THAT GIANT MESS OF INFORMATION AND UNSEARTH WHAT YOU NEED TO CREATE SOMETHING COHERENT, STRUCTURED, AND USABLE. RESEARCH (IN THE LIBRARY OR ON THE WEB) IS THE PROCESS OF SEARCHING FOR, SELECTING, EVALUATING, AND USING INFORMATION TO MEET A NEED, ANSWER A QUESTION, OR RESOLVE A PROBLEM.

WE STUDY THE RESEARCH PROCESS MOSTLY FROM A CLASSROOM PERSPECTIVE, BUT YOU CAN APPLY THESE PRINCIPLES ANY TIME YOU NEED TO FIND AND USE INFORMATION, AND WHEN I SAY ANY TIME, I MEAN ANY TIME.

NOT ACCURATE

RESEARCH ISN'T SOMETHING TEACHERS, PROFESSORS, AND LIBRARIANS MAKE YOU DO JUST BECAUSE THEY LIKE SEEING YOU SUFFER... IT'S A SKILL SET WORTH LEARNING. THESE STEPS ARE USEFUL OUTSIDE THE CLASSROOM, IN THE WORKPLACE, AT HOME... EVERYWHERE!

IMAGINE YOUR BOSS NEEDS INFORMATION ON THE COMPETITION'S LATEST INNOVATION. HOW DO YOU GET IT? DOES THAT USED CAR YOU'RE LOOKING AT HAVE A GOOD SAFETY RECORD? WONDERING IF YOUR CHILD MIGHT NEED TO SEE A DOCTOR? HOW DO YOU FIGURE OUT WHAT INFORMATION IS SAFE TO USE?

THINKING CRITICALLY ABOUT INFORMATION CAN HELP IN THE CLASSROOM BUT, JUST AS IMPORTANTLY, ALSO HELP YOU THRIVE IN YOUR LIFE AND CAREER.
So what does it mean when I talk about the research? "Process"? Well, that depends on your preferences, style, purpose, and approach to learning. Some researchers like to just jump into the information and "float around," waiting to see what drifts by. Maybe they'll snag a bit of useful peer-reviewed information here and there, or they'll drift around this pile of unreliable blog posts and try to absorb it all at once. It's a valid learning method, but it's risky, requiring a razor-sharp grasp of what makes different pieces of information reliable (or not).

Angry blogs  Slanted editorials  Sensationalist journalism

Others prefer a more structured path. It's a little more guided and less dangerous...you're less likely to drown in irrelevant information. This is the route that we'll take most of the time.

The first option can be confusing. Even overwhelming. With no research plan, you're working without a safety net, but you may stumble across valuable information that you'd have missed otherwise.

The second option provides a nice clear path, but you might miss some of the cool stuff tucked away in the far corners of the information landscape.

That being said, you'll probably figure out that research can be a messy process. There's not usually a straight line from a question to an answer (at least for academic research questions). You'll make some detours, maybe circle back around and try again, and will definitely have to overcome some obstacles.

You'll also discover some new tools and techniques along the way. Just remember to think ahead, be flexible, and give yourself time to work through the process, and ask librarians for help!
REGARDLESS OF WHAT APPROACH YOU TAKE, YOU’LL BEGIN WITH AN IDEA, A TOPIC.

PICK SOMETHING YOU’RE INTERESTED IN, SOMETHING YOU HAVE A QUESTION ABOUT. IF THE TOPIC IS ASSIGNED OR CHOSEN FOR YOU, APPROACH IT IN A WAY THAT’LL ALLOW YOU TO BE CREATIVE AND FIND THE INTERESTING ASPECTS OF THE TOPIC.

YOU’LL FIND THAT YOUR WORK WILL BE MUCH BETTER IF YOU’RE INTERESTED.

IF THE RESEARCH IS FOR A CLASS, BE SURE YOU KNOW WHAT’S EXPECTED FROM YOU. READ THE DETAILS OF THE ASSIGNMENT, AND ASK YOUR INSTRUCTOR FOR CLARIFICATION IF YOU’RE NOT SURE OF THE ASSIGNMENT’S PURPOSE. THAT PURPOSE WILL GUIDE YOUR RESEARCH.

IF, FOR EXAMPLE, YOU NEED TO WRITE AN ARGUMENT PAPER, YOU’LL HAVE TO FIND INFORMATION ON BOTH SIDES OF AN ISSUE.

AND BE SURE TO PLAN AHEAD. YOU MIGHT THINK YOU CAN GET AWAY WITH PUTTING THINGS OFF UNTIL THE LAST MINUTE, BUT THAT WILL BACKFIRE EVENTUALLY. YOU CAN NEVER ACCOUNT FOR EVERY POSSIBILITY.

WAIT UNTIL THE LAST MINUTE TO DO YOUR RESEARCH, AND EVENTUALLY THAT “LAST MINUTE” WILL BE THE DAY YOUR INTERNET GOES DOWN, OR THE LIBRARY GETS FUMIGATED, OR YOU BECOME THE FIRST FLU CASE OF THE SEASON.

JEEZ, WHAT ARE THE ODDS?
OK, SORRY FOR THE LECTURE. BACK TO THE... UH... LECTURE. SO, LET'S SAY YOU HAVE YOUR TOPIC, AND YOU'RE READY TO START RESEARCHING—

WHOA, HOLD UP. YEAH, THAT'S A TOPIC... A BIG TOPIC. A TOPIC THAT'S BEEN DISCUSSED BY THOUSANDS UPON THOUSANDS OF BOOKS, ARTICLES, WEBSITES, OLD MEN ON PORCHES...

ARE YOU REALLY UP TO SUMMARIZING ALL OF THAT IN TEN PAGES?

The AMERICAN CIVIL WAR!

THAT'S WHAT I THOUGHT. HERE'S WHAT WE'RE GOING TO DO. TAKE THAT TOPIC AND NARROW IT DOWN. CHOOSE ONE ASPECT OF YOUR TOPIC AND ASK A QUESTION ABOUT IT.

HMM... OK. WHO HAD BETTER WEAPONS DURING THE CIVIL WAR?

THAT'S A GOOD START!

YOU'LL NEED TO CLARIFY YOUR QUESTION BY DIGGING A LITTLE DEEPER. COMING UP WITH A MANAGEABLE QUESTION CAN BE TOUGH WHEN YOU DON'T KNOW THE TOPIC WELL. IF THAT'S THE CASE, SPEAK WITH YOUR INSTRUCTOR, A LIBRARIAN, OR START WITH SOME GENERAL INFORMATION ON THE TOPIC.

GO DO THAT. I'LL WAIT HERE.

STILL, THE QUESTION'S VERY BROAD, AND IT'S VAGUE. FIRST OF ALL, WHO IS "WHO"? AND WHAT DO YOU MEAN WHEN YOU SAY "BETTER"? BIGGER, FASTER, MORE... ALL OF THE ABOVE?

(WE'LL TALK ABOUT HOW TO FIND THAT SOON.)
1. How do you prefer to do research? Do you like to just “jump in” and see what information you come across? Or do you prefer to have more structure and develop your research methodically, from the ground up? Describe your normal process for developing a topic and finding information. What could you do to improve your own approach to the research process?

2. When searching online, how do you decide what information to look at and what information to ignore? How do you decide what is good or bad? Do you trust the search engine to provide you with the best information, or do you take steps to ensure that your search is designed to be effective?

3. Tell us about some research you’ve recently done. It doesn’t have to be for academic purposes. Remember, research is about a question you’ve had and the process of answering it. You might have tried to find a good, new sci-fi book to read, or you might not have understood a pop culture reference from your favorite show. It could be anything. How did you attempt to find information to answer the question? Did you find more than one resource to help you? Did those resources disagree or conflict? If so, how did that affect your next steps and eventual answer?

4. The next time you research a topic, try keeping track of the resources you locate, regardless of where you find them or what format they take. As you read through each resource, note how your views on the topic change and explain how what you’ve learned will determine your next steps. Show your results to your instructor, a librarian, or even a friend, and get some feedback from them.
NOW THAT YOU'VE HAD TIME TO CHOP AWAY AT THAT QUESTION, WHAT DO YOU HAVE FOR ME?

MY RESEARCH QUESTION IS "HOW DID THE SUPPLY OF WEAPONS AFFECT THE OUTCOME OF THE CIVIL WAR?"

EXCELLENT! STILL A BIT BROAD, BUT GETTING THERE, TRY NARROWING IT DOWN SOME MORE. YOU CAN EVEN SHIFT THE FOCUS OF THE TOPIC IF YOU THINK IT MIGHT LEAD YOU IN A USEFUL DIRECTION.

OH, HOW ABOUT "DI THE UNION'S SYSTEM FOR MANUFACTURING AND SUPPLYING WEAPONS HELP DEFEAT THE CONFEDERACY IN THE CIVIL WAR?"

THAT'S A GREAT QUESTION! NOW, SINCE THIS IS A RESEARCH PAPER, TURN THAT QUESTION INTO A STATEMENT.

"EFFECTIVE WEAPON MANUFACTURING AND DISTRIBUTION HELPED THE UNION DEFEAT THE CONFEDERACY?"

I'M STILL HEARING A QUESTION.

"EFFECTIVE WEAPON MANUFACTURING AND DISTRIBUTION HELPED THE UNION DEFEAT THE CONFEDERACY."

GREAT! THAT'S WHAT WE CALL YOUR "THESIS STATEMENT." YOU'VE TAKEN A STAND ON THE TOPIC, AND NOW IT'S YOUR JOB TO GATHER EVIDENCE TO SEE IF YOU'RE CORRECT.

SOMETIMES YOU'LL FIND EVIDENCE THAT PROVES YOUR THESIS WRONG. DON'T IGNORE THAT EVIDENCE! YOU CAN ADJUST AND REFINE YOUR THESIS AS YOU COLLECT AND ANALYZE A VARIETY OF SOURCES. BE FLEXIBLE AND OPEN TO SURPRISING FINDINGS WHILE STILL LOOKING AT THINGS WITH A CRITICAL EYE. THAT SHOWS YOU'VE GROWN AS A RESEARCHER.
You now have a topic in mind and a strong question to guide your research, but where do you start?

A good place to begin is with some background information. Many libraries have encyclopedias in print or digital formats. Encyclopedias cover lots of topics and provide enough background information to help you identify important keywords, or terms you can use later on in your in-depth searching.

Now, some instructors and librarians might say Google and Wikipedia are completely off-limits, but I disagree.

That does not mean you should just do a quick search with Google, copy the information from the Wikipedia article, and slap your name on the paper. That’s not cool at all.

You’ve been told not to use those resources for two reasons:

#1 The information on open, user-driven websites can sometimes be unreliable.

You’ve probably been using Wikipedia and Google incorrectly for academic purposes... they’re starting points, not the whole shebang.

Google is a great place to begin a search for background information. The "problem" with Google is that it searches through a vast amount of information, and a lot of the information out there is not useful or is just plain wrong. Some of your results will be great, and many will be OK, but tons of them will be utter junk.

You can improve your search results, and we’ll discuss how later in the book, but this is why your instructors might say: "Don’t Google!"

Wikipedia is pretty useful as your first exposure to a topic, but it can be updated and edited by just about anyone. This can be a real problem, especially with controversial subjects. Sometimes people try to promote their own viewpoints on a topic, and the facts get buried under biased opinion.

Even though Wikipedia editors try to make sure edits are as accurate and unbiased as possible, you shouldn’t use it as a direct source.

Instead, use it to guide you to other, more reliable resources. Even Wikipedia says that’s what you should do.*

The world’s banks are secretly controlled by interdimensional aliens!

The next step is to go from a general overview of a topic to a more in-depth look.

Books and e-books are great resources that can provide a lot of information on a topic or a particular aspect of that topic. When searching for background information, you might come across a bibliography, which is a list of books and other resources on a topic. A bibliography that lists resources useful to your research can save you a lot of time, but if you don't find one, don't worry. We can search for books in our library's resources or online.

Your library has something called a catalog, which you can imagine as a giant searchable list of all the library's resources. Sometimes a catalog just lists items that are in your library—physical items sitting on the shelf. But more and more often, catalogs list and provide access to items available online, including e-books, journal articles, dissertations and theses, images, videos, and resources outside your library.

Sometimes you'll see a kind of supercatalog called a discovery service. This helps limit the number of places you have to search in order to find what you're looking for.

Whaddyagot?

Whaddyaneed?
ANOTHER EXCELLENT SOURCE OF INFORMATION: JOURNAL ARTICLES. JOURNALS (IN THIS CASE) AREN'T LITTLE DIARIES CONTAINING SOMEONE'S PRIVATE THOUGHTS. WE'RE TALKING ABOUT ACADEMIC JOURNALS.

NOT ACCURATE

DEAR DIARY: TODAY, I AM TOTALLY TELLING YOU WITH EASILY CROSS-REFERENCES RESEARCH TOPICS!

AN ACADEMIC JOURNAL ARTICLE IS A SHORTER DOCUMENT (IN PRINT OR ONLINE) WRITTEN AND REVIEWED BY PROFESSIONALS IN A SPECIFIC FIELD, LIKE MEDICINE, EDUCATION, OR ENGINEERING. ACADEMIC JOURNALS ARE FULL OF ARTICLES WRITTEN FOR OTHER PROFESSIONALS IN THE FIELD ABOUT RECENT RESEARCH IN THAT PROFESSION.

ASSUMING WE SURVIVE TO WRITE IT, THE ARTICLE ABOUT THIS PROJECT IS GOING TO BE AWESOME.

JOURNAL ARTICLES MAY GO THROUGH AN EXTENSIVE "PEER-REVIEW" PROCESS TO MAKE SURE THEY'RE ACCURATE AND RELIABLE. THEY ALSO PROVIDE A LOT OF INFORMATION ON A VERY SPECIFIC ASPECT OF A TOPIC. COMPARED TO BOOKS, JOURNAL ARTICLES CAN BE VERY FOCUSED ON A NARROW SLIVER OF A TOPIC THAT MIGHT SHED SOME LIGHT ON YOUR OWN QUESTION.

HOW NARROW? HOW ABOUT THE SOCIAL IMPLICATIONS OF SINGING IN BARBERSHOP QUARTETS?*


SO WHERE DO YOU FIND JOURNAL ARTICLES? THERE ARE A FEW PLACES YOU SHOULD LOOK. FIRST OF ALL, YOUR LIBRARY WILL PROBABLY HAVE SOME HARD COPIES OF JOURNALS. YOU CAN EITHER BROWSE THROUGH THEM OR USE SOMETHING CALLED AN INDEX TO FIND A PARTICULAR ARTICLE ON A PARTICULAR TOPIC. A LOT OF THE TIME, YOU CAN'T SEARCH FOR AN ARTICLE TITLE WITHIN A CATALOG; YOU CAN ONLY FIND THE TITLE OF THE JOURNAL ITSELF.

THAT'S CHANGING, BUT I WANTED TO WARN YOU.

USUALLY, THE BETTER OPTION IS TO SEARCH WITHIN SOMETHING CALLED A DATABASE.

A LIBRARY DATABASE IS A BIG ONLINE WAREHOUSE FULL OF JOURNAL ARTICLES. THEY'RE EASY TO SEARCH AND WORK JUST LIKE A CATALOG, EXCEPT THEY'RE FULL OF INFORMATION ABOUT ARTICLES INSTEAD OF BOOKS. MUCH OF THE TIME, YOU CAN DOWNLOAD AN ENTIRE ARTICLE AND NOT WORRY ABOUT FINDING THE JOURNAL ON THE SHELF.

OHH, I HAVEN'T READ THIS ONE YET!
WITH THE ACADEMIC JOURNAL ARTICLES AND BOOKS FOUND THROUGH THE LIBRARY, YOU KNOW THAT, MOST OF THE TIME, YOU'RE GETTING SOME HIGH-QUALITY RESOURCES. STILL, SOMETHING IRRELEVANT CAN SLIP PAST EVERY ONCE IN A WHILE.

WHEN YOU USE GENERAL RESOURCES THAT YOU FIND ON THE INTERNET, THE LIKELIHOOD OF STUMBLING ON TO UNSUITABLE RESOURCES IS EVEN GREATER, AND SOMETIMES THE IRRELEVANT STUFF IS WHAT GETS PUSHED AT YOU FIRST.

AGAIN, I DON'T MEAN TO IMPLY THAT ALL INFORMATION FOUND ON THE OPEN WEB IS BAD. YOU JUST HAVE TO BE GOOD AT FigURING OUT WHAT IS APPROPRIATE FOR YOUR NEEDS. PROFESSIONAL RESEARCHERS CAN JUST AS EASILY TWEET OR BLOG THEIR OWN OPINIONS AND RESEARCH AS YOU CAN. INFORMATION DOES NOT HAVE TO BE FOUND IN A BOOK OR A FANCY ACADEMIC JOURNAL TO BE VALID AND USEFUL.

MY LATEST RESEARCH CONCLUSIVELY PROVES THAT ELBOW PATCHES ON TWEED JACKETS WORN BY PROFESSORS SIGNIFICANTLY IMPROVE STUDENT ENGAGEMENT, ATTENTION, AND SUCCESS IN THE ACADEMIC CLASS... WAIT, 140-CHARACTER LIMIT... OK... GOT THAT TWEED, Y'ALL!!!!!

"SNAP!"

GUESS WHO JUST DEVELOPED A SWEET PIEZOELECTRIC ROBOTIC ENDSCOPE FOR COLONOSCOPY PROCEDURES? THIS GIRL!

TO ARM YOURSELF AGAINST THE ON-SLAUGHT OF IRRELEVANT, INACCURATE, AND SOMETIMES INSIDIOUS INFORMATION ONLINE, YOU'LL WANT TO KEEP A FEW THINGS IN MIND.

WHO CREATED IT?
- IS IT UP-TO-DATE? DOES IT HELP YOU ANSWER YOUR RESEARCH QUESTION, OR IS IT OFF-TOPIC?
- WHAT IS THERE TO BACK UP THE AUTHOR’S CONCLUSIONS?
- WHY WAS IT WRITTEN, AND WHO WAS IT WRITTEN FOR?
- WAS IT PEER-REVIEWED?

YOU NEED TO KNOW WHO IS RESPONSIBLE FOR THAT INFORMATION.

ALL INFORMATION IS NOT CREATED EQUAL, YOU HAVE TO PUT IN SOME EFFORT TO ENSURE THAT YOUR RESEARCH IS GUIDED BY THE BEST, MOST RELIABLE, AND RELEVANT INFORMATION AVAILABLE.

THESE QUESTIONS ARE VERY IMPORTANT TO YOUR RESEARCH, AS WE'LL SOON SEE.

WHO? WHAT? WHY?
Since we just discussed what defines good, reliable information, we should go ahead and touch on citation. Citation is a method used to identify the resources that an author has used to perform their research.

You're going to base your work on research other people have already done. This shows that you know what related work has been done in the past and that your work builds on it. You'll find books, journal articles, and other resources; synthesize and analyze them; and use them as the basis for your own conclusions.

And so you have to cite them.

Citation is a necessity for a couple of reasons. First, the people who did the work before you want and need credit for the work they've done. Research is tough. You're experiencing that right now. You don't want someone to run off and claim the work you've done as their own, right? Citation is the best way to acknowledge the work that others have done.

Your article is wicked good, yo.

Just write a proper citation, already!

Second, you have to make it possible for researchers to retrace your footsteps and see if the conclusions you reached are justified and verified by your research. For example, are there objective resources that support the claim that your parents have the worst taste in music ever?

Your readers want to see how you came to that conclusion based on the resources you used. A citation is just a way to say:

"Hey, I used this resource, and you can find it here!"

The Process
FINALLY, REMEMBER TO ALWAYS KEEP TRACK OF YOUR RESEARCH. WHAT DATABASES ARE YOU USING? WHAT ARTICLES HAVE YOU FOUND THAT YOU WANT TO COME BACK TO? WE ALL KNOW HOW EASY IT IS TO START SEARCHING FOR SOMETHING ONLINE AND QUICKLY GET SIDE-TRACKED JUST BY CLICKING A LINK.

I can haz ruin ur research?

BE SURE TO RECORD THE SEARCH TERMS YOU'RE USING. AS WE'LL SEE, MINOR CHANGES IN THOSE TERMS CAN COMPLETELY ALTER YOUR SEARCH RESULTS. NOTE WHAT IS SUCCESSFUL AND WHAT DOESN'T WORK.

RECORD THE CITATION INFORMATION OF BOOKS, ARTICLES, WEBSITES, AND OTHER RESOURCES EITHER BY COPYING AND PASTING THE INFORMATION IN A DOCUMENT OR E-MAIL, OR BY USING THE CITATION GENERATORS AVAILABLE IN CATALOGS AND DATABASES.

YOU CAN ALSO USE FREE OR SCHOOL-PROVIDED CITATION MANAGEMENT SOFTWARE* TO TRACK ALL THE RESOURCES YOU FIND, KEEP AN ONGOING LIST OF WHAT YOU'VE FOUND, WHAT YOU'VE LOOKED AT, AND WHAT YOUR THOUGHTS ARE ON THAT RESOURCE. THIS CAN SAVE A LOT OF TIME AND HASSLE.

NOW THAT YOU HAVE AN IDEA OF WHAT THE RESEARCH PROCESS IS LIKE, LET'S TAKE A CLOSER LOOK AT HOW INFORMATION IS ORGANIZED, BOTH IN THE LIBRARY WORLD AND ONLINE. ONCE WE HAVE AN IDEA OF HOW IT'S STRUCTURED, WE CAN DO A BETTER JOB OF FINDING THE INFORMATION WE NEED.

*ZOTERO, ENDNOTE, AND REFWORKS ARE JUST A FEW EXAMPLES.
CRITICAL THINKING EXERCISES

REMEMBER TO USE YOUR ONLINE TOOL TO RECORD YOUR RESPONSES TO THE QUESTIONS.

1. Take a closer look at your research question. Is it too broad or too specific? Often students have problems narrowing their question. Try to think about the different components in your question, and ask yourself if they can be broken down any further.

2. You might also try using something called a concept map to break down your question:

![Concept Map]

Try this out with your own topic, and see if you can develop a good research question or even multiple questions.

3. How do you find background information for your topic? How do you get started? Be honest, is it Wikipedia? Explain why you use a specific resource for background information, and share your thoughts on why that resource is the most useful for you. Do you use the information as a starting point, or do you use it as the core of your research? Which way is the correct way? [Hint: Reread the chapter!]

4. Try to find an expert on your topic. See who is writing academic articles on the topic, or search for a professional organization devoted to that topic. How do experts use the open Web to communicate? How are they using blogs, wikis, and social media to interact with
one another and the greater public? How is this information different than information you’d find in a book or a journal article?

5. Locate an academic resource on your topic, as well as a general online resource. For example, you might find a professional website on cancer treatment, as well as an online forum with public opinions on cancer treatment. How does the information in the two resources differ? How can you tell if one is “better” than the other? How do you know if you can trust the information in either resource?