CHAPTER 1

INQUIRY AND SAMPLING

Everything must have a beginning, a middle, and an end—good research is no different. Much like a perfect day, a good relationship, or a job interview, starting a **research** paper right is crucial to its success. Often, this part of the process is challenging for researchers at all levels: *what topic to choose, where to begin, how to review the literature*, and especially *how many pages to write*! These are the questions that haunt all researchers. The activities in this chapter are designed to streamline the brainstorming and **literature review** portions of research as well as to teach proper sampling methods. These concepts form the foundation of your research.

The secret to enjoying research and succeeding at it is choosing a topic that is important to you but not too close that you cannot step back and be objective. For example, you might want to study how students balance school-work and Facebook or socializing. This topic is quite broad but could be a good launching point. However, if you decide to research why a specific employer has policies that are unfair to working mothers and your mother happens to work for this company, it might be more difficult for you to be objective.

Once you've chosen an area of research you care about, you have to narrow it down to a research question because your **research topic** and research question are two different things. It is important to pick a question that you care about, one that you'll find interesting, and one you really want to know the answer to. If you enjoy cooking, then you may want to investigate the

connection between cooking and happiness or, if you're not a fan, the connection between culinary skill and obesity. With an interesting topic, the process of research and writing is more fun and ultimately more fulfilling.

Students in our classes report that one of the most complicated parts of the research process is the literature review. A literature review is just what it sounds like. It is a review of the **scholarly research** related to your topic. You might wonder how to approach all the literature that is out there (and there is a lot!), how to find the studies and papers and books most appropriate for your topic, how to discern between good sources and bad sources, and how to organize the information you do find. Knowing how to do a thorough and scholarly review of the literature pertinent to your topic is one of the most important skills the social science researcher can have. We build our research on the foundation of the research that has come before us: Without knowing what others have learned, each generation of researchers would have to reinvent their fields from scratch. We don't doubt that you could, we just think it's easier this way.

The *sampling method* you choose is very important for your research; it's how you judge the trends of a larger population while researching only a portion of it. When a survey says that 80% of Americans are Christians (don't quote us on that), the researchers didn't actually ask every single American what their religion is. They chose a representative group and asked them, and then made the assumption that this group was an accurate sampling of the larger American public and published their results. How they chose that representative group is what sampling is all about, and some activities in this chapter will help you see the benefits of different sampling methods and choose the best one for you. The goal of sampling is to capture the most accurate representation of a larger group without surveying every member of it. Without proper sampling methods, data could be obtained only in the way the census does, by talking to every member of the population—and nobody likes census workers.

The concepts introduced in this chapter all take time and effort. The good social science researcher knows that it is worth it.

CONCEPT MAPPING, FINDING YOUR WAY
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OVERVIEW

Researchers at all levels may find it difficult to narrow the focus of their research. Similarly, you might struggle with defining your topics, either including too much detail or leaving the topic too broad. This activity of *concept mapping* will help you define your research focus, identify contributing factors, and clarify the relationships among concepts.

Objectives

By the end of this activity, you will be able to

- graphically represent relevant concepts and variables, including those beyond the scope of the current investigation,
- place the idea in a greater context,
- define the variables and concepts for the investigation, and
- justify the exclusion of variables and concepts not chosen for the current investigation.

INSTRUCTIONS

Materials

This activity is best completed on a large scale. You may want large poster paper, an interactive whiteboard, or some other avenue that will allow you to display ideas, concepts, and variables on a scale large enough for you to stand back and get a view of your work from a different perspective.

Process

Once you have your materials, it is time to clearly identify your main research topic, and consider the major and minor concepts associated with this topic. You may wish to use Tables 1 and 2 as a guide to help you organize these concepts and create your **concept** map. As you add words to the concept map, keep in mind that you will not be researching all of these, so feel free to fill up the space. You may find it helpful to brainstorm with a partner or two because researchers

often find that they are so involved in their work that it becomes difficult to see all of the influencing factors.
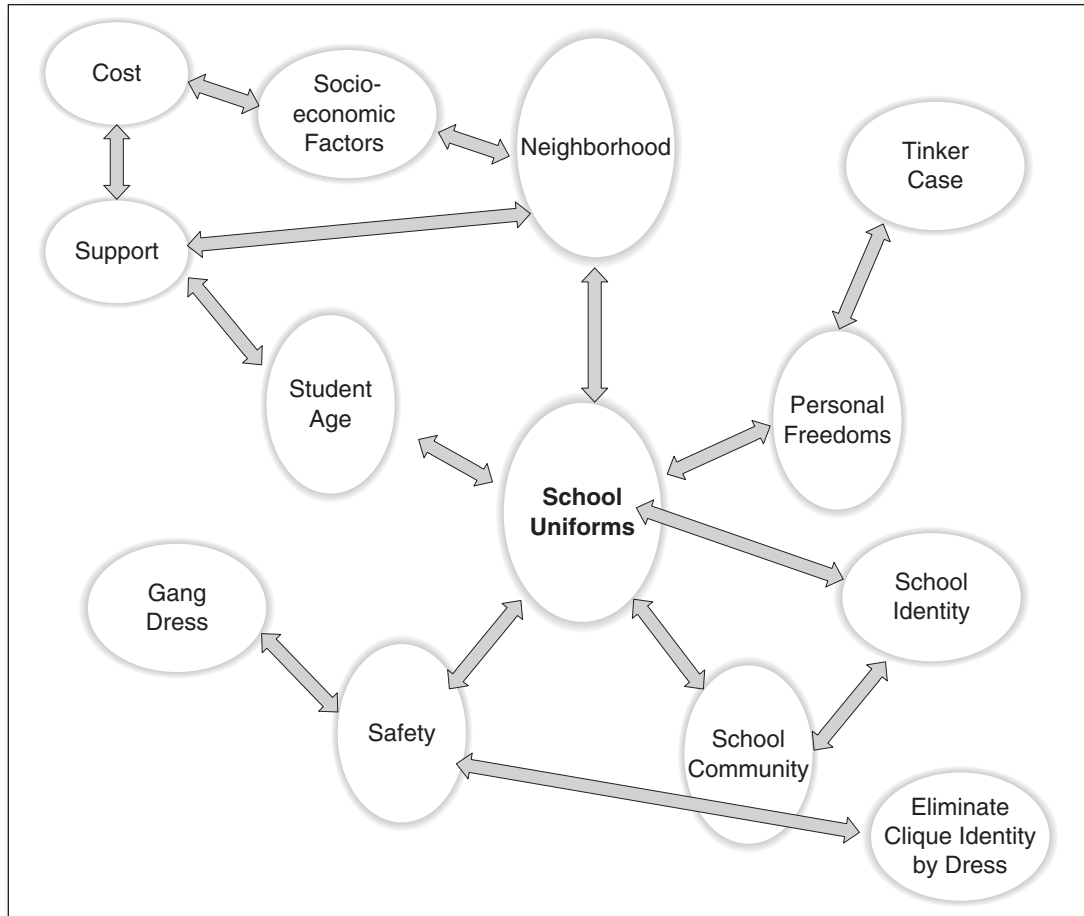

Figure 1   An Example of a Concept Map for the Factors Relating to Student Uniforms

Your concept map might resemble the one shown above in Figure 1 or might resemble a table, as in Table 2. Either one is acceptable; you should choose the one that best fits your learning style.

Once your concept map is completed (either as a map shown in Figure 1 or as a table), think about how the ideas are connected or work together. You now have terms that will inform your literature review search.

Table 1 Blank Table of Main Ideas

MAIN IDEA/CONCEPT:			
Major Ideas/Things/Concepts			
Connected Ideas/Things/Concepts			

Table 2 Table of Main Ideas for School Uniform Example

MAIN IDEA/CONCEPT: SCHOOL UNIFORMS			
Major Ideas/Things/Concepts			
Safety	Freedoms	Community	Demographics
Connected Ideas/Things/Concepts			
Gangs	Personal freedom	School/Local	Student age
Cliques/Bullying	Self-expression	School identity	Urban?
ID students	Tinker Case	Support school	Transient?
–Intruders stick out	Group vs. individual	All or some schools	Can parents afford it?
–In/out of school students identifiable		Can community afford to provide uniforms?	

The point of this project is for you to come up with a keyword list of searchable terms, which you will use to investigate the literature. However, through your reading you may find more terms to add to the concept map or draw in new connections. This will expand your keyword list. The map will continue to be modified through the research process, and that is to be expected. Once you have done some initial research, you have to make some tough decisions. You are going to have to choose a few of the pieces of the concept map and acknowledge but exclude the rest. This is to keep your project at manageable level.

GRADING

You will know that your concept map is done well when it illustrates all the relevant ideas and demonstrates the connections between them.

Your instructor will give you further details, but generally, grading for this type of project is a measure of completeness and evidence of thought. Have connections been made clear? Are concepts that should be related connected? Is the map showing different views of the central idea? Are there major omissions?

WORKSHEET A

MAIN IDEA/CONCEPT:

Major Ideas/Things/Concepts	

Connected Ideas/Things/Concepts	

THE LUCK OF THE IRISH: SAMPLING GREEN M&M'S

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DESCRIPTION

In doing research, we are not always able to measure characteristics for an entire population. Frequently, we have to take a sample of individuals and measure the characteristics only for that sample. We use that sample to estimate the characteristic for the entire population. The question is, How well does a sample describe the characteristics of the population? Intuitively, we would think that the answer depends on the size of the sample proportional to the population. But our intuition is wrong. Actually, the accuracy depends on the raw number of cases in our sample.

In this exercise, you will estimate what percentage of M&M's are green by taking a sample. If our intuition was correct and we needed a certain proportion of M&M's to be accurate, we would be in trouble. There are 124 billion M&M's made each year. Even if we sampled only one hundredth of 1%, we would need to sample 12.4 million M&M's to get an accurate sample. In this activity, you will see that samples of 30, 150, and 900 are able to estimate the total percentage of green M&M's with a reasonable degree of accuracy. It is the raw number of M&M's in our sample that determines the accuracy of our estimate.

Your professor will provide you with a small sample of M&M's from which you will determine what percentage is green. You will then get into small groups in order to see that the small number of M&M's in your sample and the samples of your classmates will be fairly close together. You will then increase your sample size by pooling your results with that group of classmates. These larger samples will yield estimates that are even closer to the population. Finally, you will add all of the M&M's in the class together to get an even larger sample, which will come very close to the population percentage of greens.

The Luck of the Irish: Sampling Green M&M's	*Worksheet*

Your professor will provide you with a sample of M&M's.

DO NOT EAT ANY OF THEM UNTIL THE ACTIVITY IS COMPLETED.

1. Count the total number of M&M's _____

2. Count the number of green M&M's _____

3. Calculate the percent of green M&M's in your sample:

    $$\frac{\text{No. Green}}{\text{No. Total}} \times 100 = _____ \% \text{ green}$$

4. Get together with a group of 4 to 5 class members. Select a leader to add the number of greens for the entire group, the number total for the group. Then, calculate the percent green for the group.

        No. Green   No. Total

    1.

    2.

    3.

    4.

    5.

    Group No. Green =   **Group No. Total =**   **Group % Green =**

5. On the group sheet write the No. green, No. total, and % green for the individual members as well as the group. Hand the group sheet in to the professor.

	No. Green	No. Total	% Green
1.			
2.			
3.			
4.			
5.			

Group No. Green =   **Group No. Total =**   **Group % Green =**

> ## WHAT PERCENTAGE OF THE NEWSPAPER CONSISTS OF ADVERTISEMENTS? AN EXERCISE IN UNDERSTANDING DIFFERENT SAMPLING METHODS
>
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>
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OVERVIEW

This exercise reviews four common sampling methods for **quantitative** data analysis (simple random, systematic, cluster, and stratified) and applies them to a specific research question: How much of a newspaper is advertisements?

In this exercise, you will work with 2 to 3 other students in a group. Your group will be assigned one of the four common sampling methods that we have discussed in class (simple random, systematic, cluster, or stratified). Using your assigned sampling method, you will pick a sample of pages in a daily newspaper and estimate the total amount of advertising in the newspaper based on your sample statistic. Be prepared to discuss your sampling method with the rest of the class and your findings. We will compare the results from different groups and discuss the strengths and weaknesses of the various sampling methods for this exercise.

OBJECTIVES

This exercise is designed to assist you in learning how to apply different sampling techniques, to give you the skills to evaluate the strengths and weaknesses of various sampling methods, and to build teamwork and communication skills.

INSTRUCTIONS

Each group will be given a full copy of a newspaper. Your instructor will also assign your group a particular sampling method that you must use for the activity. Follow the steps on this worksheet and answer the questions as you proceed through the activity.

What Percentage of the Newspaper Consists of Advertisements? An Exercise in Understanding Different Sampling Methods	*Worksheet*

What is your assigned sampling method? (simple random, systematic, cluster, or stratified)
_____

1. First, before you do anything, talk with your group members and make an educated guess of what proportion of the entire newspaper (not including the classified section) you think is made up of advertisements.

   Put your guess here (should be a %): _____

2. Next, talk with your group and figure out how to sample the newspaper with your assigned sampling method. Your total sample should consist of 10 to 15 pages, depending on your group's sampling method. A "page" is one side of the newspaper page. Describe how you will select the pages for your sample (be specific and detailed):

3. Look at each page in your sample. For each page, estimate how much advertising there is on that page (in the form of a percentage). Use standard approximate percentages, for example, 10%, 25%, 33%, 50%, 75%, 100% when estimating. For instance, if one of the pages in your sample has advertising on about one half of the page, you would record 50% for that page. Record your percentages in the table below.

Sample Page Number	Percentage of Page That Is Advertisements
MEAN %	

   a. Calculate a mean percentage based on your sample (this is your sample statistic).

   b. Calculate a 95% confidence interval to estimate the percentage of advertising in the entire newspaper.

4. Do you think this is the best sampling method to use for this research? Why or why not?

OBJECTIVES

This project is designed to teach the analytical tools necessary for a literature review. The key here is to avoid the trap of writing one "book report" style paragraph for each scholarly article you find. Taking the research out of the picture often helps to clarify the concepts so that when we put the research back in, it is much clearer.

INSTRUCTIONS

For this exercise you are going to list all of the things you dislike about your university. These can be listed in the left column of the worksheet. The next step is to categorize your complaints into themes.

Some examples of some complaints might be as follows:

Dining room food	*Bookstore service*	*Traffic to campus*
Dealing with financial aid	*Library closes too early*	*Dorm rooms*
Not enough class variety	*Limited parking spaces*	*Classes meet too early in the morning*
Gym hours	*Dining room hours*	

As you can see here, the list of complaints could be endless, and there is no way those complaints can all be analyzed effectively. One way to handle this is to create themes. Using the example above, one theme is "Classes" (not enough class variety and classes meet too early in the morning). Other themes might be "Administration," "Facilities," or "Finances."

The problem now is that we can also come up with an endless number of themes, which does nothing to alleviate the problem above. You will find it is easiest to limit yourself to a small handful of themes. Some issues you will need to drop from your research, and that is OK. You can't be expected to cover every single angle of the issue you are studying. Three to five themes are ideal.

Think of each theme as a section of the literature review. Your collection of peer reviewed journal articles on your topic starts off much like the unorganized list of complaints about the

university. You need to organize the literature in much the same way as you organized your complaints. There are several ways to organize you literature, but the key is to avoid writing a book report style review of each article. One of the easiest ways to organize your articles is to group them by theme. Keep in mind that some articles might fit several themes and some might fit only one. Don't try to fit every article to every theme. Similarly, avoid themes that fit only one article because that could put you back to the book report trap.

GRADING

This is not a graded assignment; rather, it is used solely to illustrate the concept of a literature review.

Learning How to Organize a Literature Review Thematically	*Worksheet*

List things from the column on the left here.

Things you dislike about college	**Theme 1**
	Theme 2
	Theme 3
	Theme 4
	Theme 5
	Theme 6
	Theme 7